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The Influence of Mating Motives on Reliance on Form Versus Function in Product Choice

Seyed Hamid Abbassi Hosseini
Old Dominion University, hamid.abbassi@live.com

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by

Seyed Hamid Abbassi Hosseini
B.Sc. 2008, Ferdowsi University of Mashhad, Iran
M.B.A. 2011, University of Tehran, Iran

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Approved by:

Yuping Liu-Thompkins (Director)

John B. Ford (Member)

Rachel E. Frieder (Member)

ABSTRACT

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Seyed Hamid Abbassi Hosseini
Old Dominion University, 2020
Director: Dr. Yuping Liu-Thompkins

Through five experiments, this research examined and supported the central hypothesis that a casual mating motive promotes higher reliance on form in product evaluation and choice, whereas a committed mating motive promotes higher reliance on function. Particularly, compared to a committed mating motive, a casual mating motive was associated with the relative preference for product options superior in form attributes as opposed to options superior in function attributes (Study 1, Study 2, and Study 4). This research applied three different operationalizations of mating motives. In studies 1 and 5, contextual priming was used. Studies 2 and 3 employed chronic mating motives using sociosexuality. Study 4 utilized a physiological operationalization by assessing fertility in women's menstrual cycle. It was demonstrated that the underlying mechanism for this effect lied in differential reliance on form- versus function-related product cues (Study 2). In addition, two moderating effects were demonstrated. First, Study 3 provided support for the moderating role of information ambiguity type (form vs. function). Second, Study 5 showed the interactive effect of mating motive and product choice strategy. By directing consumers to pursue a form-based versus a function-based strategy, Study 5 illustrated the effect of congruence between mating motives and choice strategy on product valuation such that consumers with a casual mating motive were willing to spend more on their product choices when they were based on form than when they were based on function, whereas consumers with a committed mating motive indicated higher willingness to pay when the product choices were

made based on function than when they were made based on form. Finally, theoretical contributions and managerial implications were discussed.

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INTRODUCTION

Previous research has suggested that consumer choices and evaluations can be primarily made based on either form or function (Creusen and Schoormans 2005; DeBono and Snyder 1989). Form-focused product choice entails responses toward product physical cues whereas function-focused consumer decision making relies on assessment of intangible product cues (Hoegg and Alba 2011). In addition, since function-focused consumer decision making requires relatively more subjective information input, the corresponding decision processes can engender more uncertainly than do form-focuses decision processes (Gill 2008) . However, uncertainty does not imply lack of sophistication in the choice process. Indeed, the opposite could be true (Reisen et al. 2008). A considerable number of research papers have conceptualized and tested the distinctive attributes and conditions of these two mechanisms. For instance, function-focused choice can be more effortful and thus slower than form-based evaluations (Gill 2008; Klein and Melnyk 2014). In addition, as suggested earlier, while relying on function might result in more well-thought choices, it also requires more cognitive processing, which might require numerical or linguistic skills to analyze (Lee 2013).

The literature has also examined the contextual variables that make consumers more likely to rely on form versus function. For example, when a consumption decision is associated with perceived risk, consumers tend to exhibit relatively less reliance on form (Ravasi and Stigliani 2012). On the other hand, if form evokes strong negative emotions, functional benefits can be almost completely disregarded. For instance, recent research on edible insect consumptions has demonstrated this effect (Baker et al. 2016). Furthermore, it has been suggested that when consumers have a personal interest in a product category, they are likely to more elaborately evaluate a large assortment as a means of mental stimulation and reward (Hoch

2002). On the other hand, it is documented that choices based on product form can be used as a mechanism that compensates for a lack of sufficient consumer resources such as time (e.g., Silayoi and Speece 2007) or consumption experience (Veryzer and Borja de Mozota 2005).

The current research examines the role of mating motives as a factor that can affect consumers' reliance on form versus function in product choice. Mating motives or mindsets, either committed or casual, are psychological states that encourage individuals to develop attitudes and engage in behaviors that can result in attracting new mates or retaining existing ones (Schmitt 2005a). The extant literature indicates that mating motives influence consumer behavior in various domains such as conspicuous consumption (Griskevicius et al. 2007; Sundie et al. 2011), statues products (Griskevicius et al. 2007; Janssens et al. 2011; Sundie et al. 2011), variety seeking (Chen et al. 2015; Durante and Arsena 2015; Faraji-Rad et al. 2013), reward seeking (Festjens et al. 2013), risk taking (Chan 2015; Hill and Durante 2011), temporal discounting (Van den Bergh et al. 2008), and evaluating brand extensions (Monga and Gürhan-Canli 2012). The present research contributes to this stream of literature by studying the role of mating motives in determining consumers' reliance on form versus function attributes when making consumption decisions. In particular, this research tests the central hypothesis that a casual mating motive is more likely to induce form-based product choices whereas a committed mating motive is more likely to activate function-based product choices.

Since form and function have been used to mean different things in the literature, a few clarifications will be made regarding the definitions used in this research.

Even though the terminology has been used interchangeably (Chitturi et al. 2007; Noseworthy and Trudel 2011), the form-function distinction does not equate the hedonic-utilitarian classification. In this research, hedonic consumption is different from form-based

product choice in that the former is necessarily associated with pursuit of pleasure (Alba and Williams 2013). Therefore, what is implied by form is those tangible and physical attributes of products that determine how consumers perceive the appearance of a product and also more implicitly its sensory associations.

Another point to be made is that form does not necessarily imply aesthetics either, even though the two constructs overlap. As will be argued in the literature review chapter, the evolutionarily reason why form and appearance have been used as decision making cues is that they can reflect genetic fitness. This view is more aligned with the universal attributes of sexual attractiveness than the arts and aesthetics perspective. For instance, symmetry has been shown to be a reliable sign of health and fertility in potential mates while asymmetry has been show to signal the opposite; in aesthetics however, asymmetrical designs could evoke positive responses as do symmetrical designs (Creusen et al. 2010).

There is research on the association consumers make between form attributes of products and their expected functionality (Chitturi et al. 2007; Hoegg and Alba 2011) . However, the current research focuses on how, everything else being constant, the presence of an unconscious mindset shifts consumers' reliance on one rather than another in evaluating products. In particular, evidence suggests that the form-function association is not always positive. Essentially, while some form cues can signal specific functions in products, there exists considerable variance in product functionality that is unexplainable by form (Noseworthy and Trudel 2011).

I. LITERATURE REVIEW

The aim of this chapter is to review the basic tenets of the theory of sexual selection and how they might affect consumer decision making in general, and consumers' reliance on form versus function in product choice in particular. In doing so, the evolved sexual strategies of both genders will be discussed using a life history perspective (Mittal et al. 2014). Next, a comprehensive review of the application of evolutionary mating motives in consumer behavior will be presented. Three sources of variance in mating motives will be identified and discussed, namely contextual, individual differences, and hormonal sources. In addition, the effect of each type of variance on consumer choice will be highlighted by looking at both psychology and marketing literatures. Finally, a discussion of the distinction between product form and function will be provided with a focus on how the processing of each can engage different mental modules. It will, later, be argued that mating mindsets, as fundamental evolutionary mental states, can determine consumers' reliance on form versus function in product evaluations.

Evolutionary Mating Strategies

Men and women pursue differential mating strategies. The two sexes have evolved distinct, but related, psychological mechanisms to detect, attract, and retain mates (Buss 2007). Mating strategies are, broadly speaking either short term or long term. Human males and females, as is the case in other primates, are equipped with mental modules for each strategy. However, there is variation in how the two strategies are applied both between and within the sexes (Gangestad and Simpson 2000; Schmitt 2003).

Gender Differences

Males, on average, pursue short-term mating more than females do. In doing so, males, primarily and unconsciously, pay attention to female fertility cues such as youth, clear skin (Swami et al. 2008), the lumbar curvature (Lewis et al. 2015), and breast size (Zelazniewicz and Pawlowski 2011). On the other hand, when males purse a long-term strategy, their mate choices also reflect parenting qualities in females (Confer et al. 2010b); such qualities include kindness, willingness to spend time with offspring, responsibility, and desire for children (Simpson and Gangestad 1992). Even though a similar pattern exists in the way females approach mating, there are important distinctions. As noted earlier, females do not desire short term mating as much as males do. However, when it does come to short-term mating, females are very selective (Bleu et al. 2012). They too focus on signs of genetic fitness in the opposite sex. In this case though, for a member of the opposite sex to qualify as a short-term partner, he must display high standards. In other words, even though males and females both pay attention to genetic fitness, females exhibit a higher threshold for it than males. In addition, genetic fitness in males is not assessed based on physical aspects only. Qualities such as dominance, social status, and access to resources, too, signal mate value to females (Wong and Candolin 2005). These qualities increase the likelihood of a male's being able to not only reproduce, but also reproduce offspring who will later have a good chance of reproduction themselves. For this reason, these features are *adaptive*, therefore genetically desirable. According to parental investment theory (Trivers 1972), since female humans must allocate disproportionately higher resources before an infant is born, female choosiness is advantageous as it reduces the chance of investment in low quality genes. Nonetheless, raising the infant calls for resources other than good genes. Therefore, from a long-

term mating perspective, females should pursue potential mates who are also likely and willing to provide for the offspring (Li et al. 2002).

In the short-term mating context, people tend to place special emphasis on physically attractive features in potential partners (Li and Kenrick 2006). Such a preference has had evolutionary benefits since it increases the chances of passing good genes to one's offspring. In addition, attention to men's social dominance and status plays a major role in women's short-term mate choices, whereas the same traits in women do not significantly affect short-term mate preferences of men (Li 2007). On the other hand, females with a primary long-term mating orientation look for caring and committed men. Males, however, value faithfulness and parenting potential in females in this context (Gangestad and Simpson 2000). Such different preferences must be manifested in behaviors and signals that the potential mates would be able to reliably perceive and respond to aligned with one's primary mating goals (Ryan 1998). For instance, a woman who signals her sexual availability to a casual man is discouraging potential long-term partners from courting her; in a short-term mating context, her strategy is effective, nonetheless.

Intragender Differences

In addition to the differences in how males and females pursue mating strategies, there is variance within each gender (Schmitt 2005b). Some males are more short-term oriented than others, and not all females pursue similar mating strategies. One explanation for such differences concerns one's perceived mate value (Clark 2004; Jackson and Kirkpatrick 2007). For a highly attractive (i.e., possessing signs of genetic fitness) male, seeking multiple short-term mates would make evolutionary adaptive sense in that such a strategy maximizes the number of his offspring whereas for an unattractive male, the same strategy could result in genetic suicide since few females would be willing to partner with him (Gangestad and Scheyd 2005). However, the

same unattractive male can have offspring if he is a committed and caring partner who is capable of providing resources necessary for raising the offspring. A similar logic applies to females with the distinction that in this case the problem would be more about mate retention than attraction (Buss and Shackelford 2008).

Individual Differences

Individual differences in mating strategies have been conceptualized as sociosexual orientation or sociosexuality (Simpson and Gangestad 1991). Simpson and Gangstad (1991) were the first to propose a scale for measuring sociosexuality. They developed a one-dimensional seven-item measurement tool called the Sociosexual Orientation Inventory (SOI). It includes questions such as "with how many different partners have you had sex within the past year?" A low sociosexuality score shows a *committed* orientation towards mating whereas a high score reflects a casual orientation. People with a casual sociosexual orientation tend to be more comfortable about and in casual sexual relationships. People with a committed orientation, on the other hand, show more overall monogamous attitudes and behaviors (Schmitt 2005b).

The SOI suffers from psychometric shortcomings such as construct heterogeneity, as a result of the one-dimensional conceptualization, and variance heterogeneity, as a result of the open response format of the behavioral items; the first three items on the SOI can contribute an amount of variance that is several times greater than the variance shown by the other four items (Penke and Asendorpf 2008). In addition, the SOI is essentially about short-term mating attitudes and behaviors. It might be argued that a lack of interest in short-term mating, indicated by low scores on the original SOI, implies a tendency towards long-term mating. This is not necessarily true. At least two scenarios can illustrate the asymmetry between short-term versus long-term mating. First, an extreme example is discussed to highlight the point. Consider the case of a

female who is sexually both inactive and uninterested; the SOI score will be low indicating, expectedly, a committed orientation. However, the same woman will, ironically, exhibit commitment towards long-term mating as well (Asendorpf and Penke 2005). The second and more important scenario is the case of a mixed strategy (Gangestad and Simpson 2000). Variations in mating attitudes (favoring short- vs. long-term mating) and behaviors (engaging in short- vs. long-term mating) create four types of mixed strategies, not all of which are equally effective. From an evolutionary adaptiveness perspective, a female maximizes her inclusive fitness by doing two things: securing a caring and resource-providing long-term partner and mating with males with good genes (Thornhill and Gangestad 2003). Since it is rare to achieve both goals with the same male (Møller 2000), females who are casual toward short-term mating with attractive partners and, at the same time, are interested in long-term relationships should have the highest chance of raising offspring with good genes (Greiling and Buss 2000). A similar analysis, with a focus on paternal certainty (Starratt et al. 2007), can be applied to argue for the asymmetry in the male mating strategies.

Further attempts were made to enhance the psychometric properties of the SOI by proposing a multi-dimensional scale. Jackson and Kirkpatrick (2007) developed a three-dimensional scale that includes Short-Term Mating Orientation (STMO), Long-Term Mating Orientation (LTMO), and Past Behavior. This measurement tool is theoretically aligned with the strategic pluralism theory, the idea that optimal mating entails a combination of short-term and long-term strategies (Gangestad and Simpson 2000). This expanded scale makes a clear distinction between shot-term versus long-term mating strategies whereas traditional sociosexuality measures focused on attitudes toward short-term mating or casual sex only. In another conceptuality convincing and methodologically rigorous work, Penke and Asendorpf

(2008) took a different approach by including the fantasy component of sociosexuality. Their three-factor scale, the Revised Sociosexual Orientation Inventory (SOI-R), measures attitudes, behavior, and desire in regard to casual sexual relationships.

Jackson and Kirkpatrick's (2007) attempt to conceptualize and measure sociosexuality has explicitly differentiated between short-term and long-term mating strategies. In their Expanded Multidimensional Sociosexual Orientation Inventory (EM-SOI), Jackson and Kirkpatrick developed three sub-scales: Short Term Mating Orientation (STMO), Long Term Mating Orientation (LTMO), and Past Behavior.

A casual sociosexual orientation combined with positive attitudes towards long-term relationships should make the most evolutionary sense (Gangestad and Simpson 2000). This is supported by animal studies (e.g., Leclaire et al. 2013; Mennill et al. 2004) as well as research on infidelity and extra-pair mating patterns in humans (e.g., Pillsworth and Haselton 2006; Scelza 2013). Even though the obvious downside of the strategy is risking losing the long-term partner, not all modern variations of this strategy include cheating behavior. If an individual chooses to have children with an attractive mate who is unlikely to be an effective parent, the individual can still benefit from a committed partner later in life while raising a child who possesses genetic fitness.

The changes in the relative effectiveness of mixed mating strategies associated with modern times are more pronounced for women than men because of socioeconomic improvements. This observation is supported by both sociological (Sweeney 2002) and psychological (Buss et al. 2001) examinations. As a woman becomes more financially and socially independent, she can more easily raise children without help from a partner. Therefore, socioeconomic status can affect women's attitudes towards long-term relationships. In terms of

ability to provide resources, increased income can function similarly to a long-term partner (Li et al. 2002). It would have been too risky for females to not pursue long-term relationships in the evolutionary past (Schmitt 2005a). However, considering the socioeconomic changes in modern times, low interest in long-term mating can be a functional approach for females with a casual short-term orientation provided they have access to sufficient resources (Baumeister and Vohs 2004).

Individuals with a committed short-term orientation, too, can have either a low or high interest in long-term relationships; the former represents the most ineffective of all strategies whereas the latter is traditionally the most socially accepted. Since a dysfunctional reproduction strategy would have already been eliminated through natural selection, it can be argued that those who typify an almost asexual profile must have been significantly conditioned by sociocultural variables (Brom et al. 2014). Irrespective of the causes of such ineffective mating strategy, the associated manifestations in such domains as consumption are still of interest and importance.

Mating Motives in Consumer Behavior

Because reproduction, as a primary evolutionary force along survival, has played a major role in the development of our mental modules (Duchaine et al. 2001) , a considerable number of our decisions in other domains are affected by mating motives (Confer et al. 2010a). In the context of consumption, recent research has identified some of these influences (Durante and Griskevicius 2016; Griskevicius and Kenrick 2013; Saad 2014).

The Effect of Ovulation

One stream of research has looked at the effect of the menstrual cycle on product choice. The research draws upon the *ovulatory shift hypothesis (Gangestad et al. 2005)*, the observation

that females tend to change their mating preferences during the fertile phase of ovulation to favor mates who signal signs of genetic fitness. For example, in the fertile days of their cycle, women consume more beauty products and less food than in the non-fertile days (Saad and Stenstrom 2012). While it is understandable how beauty products can enhance a women's mate value, the decrease in food consumption has been more controversial since the fertile phase of the ovulatory cycle is associated with higher calorie needs. One plausible explanation mentions the trade-off between food searching and mate searching time that, in the hunting and gathering context, could have determined reproduction success of ovulating females (Fessler 2003). Other studies have similarly shown that ovulating females are more likely to pick revealing clothing (Durante et al. 2008), dress in pink or red (Beall and Tracy 2013), seek more variety in product choice (Durante and Arsena 2015; Faraji-Rad et al. 2013), purchase status enhancing products to overcome same-sex competition (Durante et al. 2014), and pay increased attention to conspicuous consumption by men (Lens et al. 2012).

Contextual Factors

Not all mating-related consumption behavior is because of changes in the menstrual cycle. Changes in mate value as a result of environmental variables can also affect consumption patterns. For example, it has been shown that in times of economic recessions, women use more cosmetic products (Hill et al. 2012). This, referred to as the *lipstick effect*, is explained by a decrease in the size of overall male mating pool due to heightened scarcity of financial resources, resulting in increased competition among females over the fewer number of potential mates. Another finding is the shift in spending more money on daughters rather than sons during economic recessions (Durante et al. 2015). Similar to the explanation for the lipstick effect, the

unconscious motive behind this shift is enhancing the mate value of daughters in a mating market with a reduced effective number of males (Stone et al. 2007).

The effect of mating motives on consumer decision making has mostly been studied with a focus on intra-individual variance. Researchers have done this by either examining physiologically-induced changes such as ovulatory patterns in females (e.g., Durante et al. 2011) and testosterone-related differences in males (e.g., Nepomuceno et al. 2015) or examining the effect of temporarily available mating motives using, for example, priming techniques (e.g., Monga and Gürhan-Canli 2012).

The priming studies are based on the role of environmental cues in unconsciously activating mating motives, which leads to specific preferences in mate choices and, in turn, to specific preferences in other contexts such as consumption (e.g., Griskevicius et al. 2006a). So far, three types of manipulations have been used in the priming studies. The most common one is showing pictures of attractive members of the opposite sex to participants. The second method is exposing participants to written scenarios describing romantic situations. Finally, the use of tactile manipulations has proved effective in activating mating goals both in male and female consumers (e.g., Festjens et al. 2013).

Regardless of the type and effectiveness of the mating primes, if mating motives do play a role in economic and consumption decisions, individual differences in mating strategies must affect such decisions not only through interaction with mating manipulations but also directly through specific cognitive and affective states relevant to consumption (Li et al. 2010).

There is little research on how individual differences in mating strategies affect consumer choice. In addition, with the exception of only a handful of studies that have considered the differences between long-term and short-term mating primes (e.g., study 2 in Griskevicius et al.

2007; Monga and Gürhan-Canli 2012), mating has been treated as a homogeneous set of attitudes and behaviors whereas research outside the consumer behavior literature has documented the different effects in short-term versus long-term mating contexts (Buss 2007).

As discussed earlier, measuring such individual differences has not been without problems. Almost all the mating strategies research in the business literature has applied the original SOI (Simpson and Gangestad 1991) to identify sociosexual orientation (e.g., Kusuma 2014; Saad et al. 2009; Wang and Griskevicius 2014).

With a mating mindset, consumers engage in an automatic goal-pursuit process (Bargh et al. 2012; Hill and Durante 2011). The attitudes and behaviors associated with this unconscious goal pursuit reflect the primary functions of humans mating psychology as well as the specific context in which goal pursuit occurs (Dijksterhuis et al. 2005). Some examples of these carryover effects include consuming beauty-enhancing products with risky side effects (Hill and Durante 2011), purchasing luxury products as a signal of one's partner's commitment (Wang and Griskevicius 2014) , seeking more variety in product choices (Chen et al. 2015; Durante and Arsena 2015), modifying gift-giving behavior (Nepomuceno et al. 2016; Segev et al. 2013), increasing food consumption in men (Kniffin et al. 2015), decreasing food consumption in women (Saad and Stenstrom 2012), and becoming less loss averse in financial decision making (Li et al. 2012).

However, even though some research papers have differentiated between mate acquisition versus mate retention motives (e.g., Wang and Griskevicius 2014), little research has examined the effect of individual differences in propensity for short-term versus long-term mating on consumption outcome variables. In addition, while research based on the ovulatory shift hypothesis has examined different aspects of consumer behavior, priming effects have not

been examined extensively. The importance of priming research is twofold. First, while ovulation or other hormonal changes essentially affect short-term mating preferences, external primes can trigger both short-term and log-term mating motives. Second, marketers can more easily incorporate priming effects in the marketing mix while hormonal fluctuations are dependent upon consumers' physiology.

Different cognitive and affective processes are involved in short-term versus long-term mating. For example, more conscious information processing is required when a long-term mating goal is pursued whereas in the short-term context, there is more reliance on peripheral and subtle cues (Förster 2010). Furthermore, visual cognition is more involved in short-term than long-term mating (Butori and Parguel 2014). For instance, dating apps like Tinder, designed for *hook-ups*, is picture-based and contains far less text information than more traditional matchmaking services used for long-term relationships (Khan and Chaudhry 2015). Additionally, research shows that narcissism, psychopathy and Machiavellianism, the dark triad, can be effective in attracting females for short-term, but not long-term, mating (Jonason et al. 2009). This finding suggests that information processing tends to be less analytical when pursuing short-term mates. Similarly, it has been shown that reminders of love and lust differentially affect people's perceptions of their existing partners (Förster et al. 2010).

In terms of consumption context, mating goals are related to consumer behavior in at least two ways. First, if a product or service is romantically- or sexually-linked, mating motives can be of influence to the extent that the product holds a place in the consumer's mental network of associations with mating related concepts. For example, beauty products' primary function is to make consumers more attractive, therefore, more valuable in the mating market. As such, the category of beauty products has more to do with sexuality compared to, say, electronics,

everything else being equal. Second, when consumption is used to communicate mating related messages to potential mates or sexual rivals, analyzing mating goals helps explain behavior. For example, research has shown that female consumers tend to become more compliant in their choices in the presence of male consumers but not of other female consumers (Griskevicius et al. 2006b). These two considerations are useful in designing and conducting mating-related consumer research because they can allow researchers to distinguish between consumers' pursuit of unconscious versus semi-conscious mating goals. As discussed earlier, unconscious mating goals can affect consumer decision making even in a consumption scenario where neither the product is sexually linked nor sexual signaling occurs. However, in the two contexts explained in this section, mating goals are relevant as a function of the nature of the consumption experience. When consumption entails a mating-related product or service, activation of mating motives becomes a basic component of the consumer decision making process. What constitutes a mating-related product or service, however, could vary from person to person. While for an individual consumer, a specific consumption experience can be consistently associated with mating, there are consumption experiences that incorporate mating motives because of situational factors. These situational cues can include the presence of attractive members of the opposite sex or the mere occurrence of special occasions or holidays.

In the remaining sections of this chapter, the discussion will shift toward the role of product form and function, as well their interaction, in consumer choice. As the main hypothesis of this dissertation concerns the effect of mating motives on reliance on form versus function in consumer decision making, a review of the literature on form and function will shed light on the nuances regarding how product evaluations can be influenced by specific form or functions cues in the presence of different contextual or motivational variables.

Product Form

Product form refers to a wide range of components or attributes that are selected and combined to create a whole. This blend of elements is intended to convey a specific sensory message. Product form is comprised of such elements as shape, proportion, color, texture, material, and reflectiveness (Bloch 2011; Bloch 1995). More recently, researchers have examined other sensory attributes that were not traditionally regarded as form constituents. These elements include olfactory, auditory (Spangenberg et al. 2005), and tactile (Peck and Wiggins 2006) cues. Clearly, the importance of these sensory elements varies from one product category to another. For example, gustatory elements are relevant to food and drinks but few other product categories. Furthermore, the decision of what constitutes form and what does not, should be relatively made rather than absolutely (Okada 2005). One can find examples in which the same element can either represent form or function. For instance, smell has more to do with function than form in fragrances compared to shampoos. Finally, product from has been identified as a clearly distinct component in product design, and as one that is influential in consumers' decision making. The literature suggests that product form can strategically affect consumers' responses to product modifications, product line extensions, and brand extensions in addition to new product development (e.g., Kreuzbauer and Malter 2005; Lee and Milewicz 2014; Townsend et al. 2013).

Research has suggested that product form can influence product adoption and consumption in multiple ways. First, in today's cluttered marketing communication channels, product form can attract and direct consumers' attention (Crilly et al. 2009; Geissler et al. 2006). Second, product form facilitates the mental categorization of the product. Many experiments in cognitive psychology have shown that the mind uses categories to identify and evaluate objects

and concepts (Mahon and Caramazza 2009). In product choices too, consumers rely on form cues to categorize products (Rosa and Porac 2002), in particular new and unfamiliar products (Moreau et al. 2001). Third, form elements can create an aesthetically appealing whole, thereby, positively affecting consumers' judgments of a product (Sevilla and Townsend 2016; Tilburg et al. 2015). Aesthetically valuable products have also been shown to affect consumers' experience of ownership and consumption of the product over its lifetime cycle (Joy and Sherry 2003). Finally, just as physical appearance affects the perception of personality in people, product form can be interpreted to convey symbolic and experiential information about a product (Orth and De Marchi 2007; Van Rompay et al. 2009).

The appearance of a product plays a major role in how consumers mentally categorize the product. Prototypicality, defined as how well a product fits a specific category, has been shown to positively influence product evaluations (Veryzer and Hutchinson 1998). For example, high performance cars are stereotypically expected to have a complex frontal design. Therefore, auto designers can rely on complex car fronts as a sales booster, everything else being equal (Landwehr et al. 2013). On the flip side, product prototypicality can hinder a brand's strategic expandability. Research shows that too much prototypicality can convey a lack of breadth in the offering mix of a brand or product line (Kreuzbauer and Malter 2005). Another implication of product prototypicality is that subtle changes in product design can over time lead to perceived additional functions without negatively affecting mental categorization fluency (Rubera 2014). In addition, research has illustrated that products with visually novel features elicit positive affect in consumers (Radford and Bloch 2011). If a product is radically innovative, however, lower levels of design novelty are more effective (Mugge and Dahl 2013).

Product form can denote symbolism. For instance, specific design patterns and shapes in wine bottles have been shown to communicate such symbolic concepts as naturalness or tranquility (Bruwer et al. 2011). Furthermore, specific shapes in advertising and product design have been linked to different emotional states. For examples, rounded shapes are interpreted as more pleasing and unified than angular shapes, which can be interpreted as more aggressive (Westerman et al. 2012). Similarly, product dimension ratios can symbolically convey dominance or submissiveness and control or chaos (Raghubir and Greenleaf 2006). A specific application of symbolism related to product form is when form attributes are associated with a particular function. For example, a study demonstrated that even when consumers are faced with conflicting features in a product, form cues affect function judgments of the product (Hoegg and Alba 2011). Product functionality information is mostly interpreted based on the visual components of product form (Wyer et al. 2008). However, as mentioned earlier, the advent of both more innovative product designs and more advanced research methods has facilitated the examination of other sensory product form features that can convey functional information. For example, tactile cues have been shown to influence perceived product performance (Grohmann et al. 2007). In addition, research on sustainable products supports the notion that form attributes can communicate function-related messages to consumers (Hoegg and Alba 2011).

Individual differences moderate the effect of product form features on consumers' choice and evaluations. For instance, research shows that individuals vary in need for touch (Peck and Childers 2003). Therefore, the message communicated by a product's tactile cues depends on a consumer's chronic need for touch. Similarly, the propensity of consumers to be affected by visual product cues has been shown to differ from one consumer to another (Bloch et al. 2003).

As represented by the examples mentioned earlier, a considerable amount of product form research has investigated the effect of product shape. Product shape affects both cognitive and affective consumer reactions to new product designs. It has been proposed that shape serves as a basis for the process of consumers' conceptualization of a product's features and therefore as a proxy for perceived benefits (Creusen and Schoormans 2005).

Another important and well-researched component of product form is color. Consumer responses to different colors in product and packaging design are related to two separate activation mechanisms: arousal and appraisal (Crowley 1993). Colors with a longer wavelength, such as red or orange, have been found to be consistently more effective in arousal than colors with a shorter wavelength, such as blue. The longer wavelength colors evoke automatic neurophysiological activities such as increased heartbeat (Singh 2006). On the other hand, appraisal responses are independent of arousal yet effective in attitude change. Colors with shorter wavelengths (e.g., blue or green) are more effective in activating evaluative responses (Labrecque and Milne 2012).

Form is especially important because it not only concerns the product itself, but also is relevant to product packaging. Research shows that consumers' choices can be significantly affected by packaging, particularly in low-involvement products such as fast moving consumer goods (FMCG) (Silayoi and Speece 2007). Package size has been shown to influence consumption volume (Wansink 1996; Wansink 2015) and perceived quality (Yan et al. 2014). Package proportions is another factor determining consumer' perceptions as well as buying intentions (Raghubir and Greenleaf 2006).

Product form cues can be designed to either accentuate or conceal a specific facet of a product's properties (Townsend et al. 2013). For example, form can highlight technological

complexity in a product to appeal to a tech-savvy consumer segment. Alternatively, for a less technologically literate segment, form elements could be designed so as to convey ease and simplicity of use even if the product is indeed technologically advanced (Griffith and Rubera 2014). In addition, product form cues can trigger different mental paths through which consumers interpret product. These paths can include specific sensory processes that can elicit certain emotional responses. Compared to its substitutes, a product is considered superior in form to the extent that it elicits favorable beliefs and positive affective responses (Bloch 2011). One way of doing these is through evoking symbolic implications. As suggested earlier, form can contribute to the social meaning associated with a product. The social manning of a product can be interpreted in relation to the ownership, consumption, and display of the product. Suggested by the symbolic interaction theory (Solomon 1983) and empirically supported by recent research (Townsend et al. 2013), product form can influence consumers' perception and evaluation independently from product function.

Product Function

Product function entails at least two dimensions. The first dimension concerns the view that product functions are derived from product features (Orth and De Marchi 2007). For example, consumers' evaluation of a new cell phone can be affected by what function a specific new feature will have. The second aspect is related to how a product as a whole will create a specific consumption experience. This second view of product functionality goes beyond product features. Consumption experience could be the result of the holistic contribution of all the features, maybe with some features playing a larger role, or the result of how an individual consumer believes what a product can do for him or her (Hagtvedt and Patrick 2014).

Product features are associated with perceived functionality (Hoegg and Alba 2011). Therefore, consumers might prefer products that have several features as an indicator of product performance capability. For instance, innovative or technologically advanced product features have been shown to affect consumers' perception of product performance (Luchs et al. 2015). However, a trade-off exists between the number of features and the level of usability of a product. Accordingly, it has been suggested that a wider set of specialized products can be more appealing to consumers than a single product with many different features (Zhou and Nakamoto 2007).

Perception of functionality is differentially affected by hedonic versus utilitarian benefits of a product (Chitturi et al. 2007). This effect is particularly important when consumption experience can vary as a function of product usage over time. In other words, the way consumers view the functionality of a product can differ from the point of purchase to a later point in the lifespan of the product (Holbrook 2006). Past research has suggested that if a product exceeds utilitarian expectations, it can induce customer satisfaction whereas if a product exceeds hedonic expectations, customer delight becomes a likely outcome (Pallas et al. 2014). Segmentation research indicates that there is variance in the importance that different types of consumers place on product function attributes as drivers of satisfaction (Tsiotsou 2006).

Another aspect of product function is product sustainability. There has recently been considerable attention to sustainability in the product research literature (e.g., Page 2014). Basically, sustainability considerations such as environmental issues have been shown to affect consumers' evaluation of product functionality. For example, consumers have been shown to generally favor green products. However, this relationship can be modified by consumers' confidence in the functionality of green products as well as by the identifiability of green

products compared to regular products (Pickett-Baker and Ozaki 2008). This effect can be analyzed at two levels. First, individual consumers can be especially concerned about certain sustainability issues. Second, the actual impact of sustainability issues can change the wants and preferences of a group of consumers. Research indicates that both these influences play a significant role in product function evaluations (e.g., Olsen et al. 2014; Yan et al. 2012).

Product function is associated with the utility a product is expected to deliver. This implies that consumer perspective is critical in determining the functionality of a product. Each consumer's utility equation can be unique, suggesting that functionality consideration in product development should heavily rely on consumer feedback (Townsend and Sood 2011).

In the product development process, it is crucial for marketers to have a clear understanding of the functions expected by a specific market segment. Functional attributes are key factors in consumer perceived benefit maximization (Mugge and Dahl 2013). Effective product design engenders functional capabilities that bring about efficiency and comfort in the consumption experience. Furthermore, function cues have been shown to reflect the level of expected performance in products. Similarly, product functionality is what enables consumers to respond to their needs and wants. Marketers should, therefore, include those product function characteristics that are directly designed for consumer problem solving. This idea, known as functional association (Bhat and Reddy 1998), has been the focus of considerable research (e.g., Cheng-Hsui Chen 2001; Voss et al. 2003) as it provides a meaningful link between two major sides of the consumption experience: the consumer and the marketer.

However, the relationship between functional attributes and consumer utility reaches a plateau after a critical point. Research suggests that adding functional features works only up to a saturation or overload threshold (Townsend et al. 2013). One explanation for this observation is

that the cognitive load of processing the added features outweighs the potential function (Thompson et al. 2005). Figuring out the point at which functional factors start to have a diminishing effect is important in product development and design as failing to do so incurs both financial and marketing costs.

Consumers' evaluation of newness in a product is moderated by the level of familiarity with or expertise in the product or product category (Zhou and Nakamoto 2007). The same logic extends to the relative reliance on form versus function as a function of where a consumer falls on the expert-novice dimension. Another moderator in the link between form versus function and consumer evaluation is, as mentioned earlier, the level of product innovation. Research has shown that radically new products (RNP) are processed differently compared to incrementally new products (INP) in terms of how functional or form attributes are associated with product performance (Alexander et al. 2008).

Interaction of Form and Function

Both product form and product function are important aspects of product design because each have been shown to affect consumer responses. Furthermore, the interactive effect of form and function can also influence consumer perception and judgment of products (Hoegg and Alba 2011). In other words, the influence of form and function on consumer decision making has three components: the exclusive influence of form, the exclusive influence of function, and the interactive influence of the two (DeBono and Snyder 1989).

Although it is difficult to accurately capture each component using statistical modeling, the conceptual distinction is very important. Accordingly, the extant literature on the interaction of form and function in product design and consumer responses is mostly theoretical. In one major empirical work (Chitturi et al. 2007), the researchers have looked at the emotions evoked

in consumers when they are faced with a form-function trade-off. Using experimental design, this research has shown that when a minimum level of expectation is met in both form and function attributes, the relative importance of form increases. As a result, the authors have also concluded that form attributes will have a compounding positive effect on consumers' judgments. Not only each desirable form component enhances the perception of product performance, there is a synergistic effect of the combination of different form elements. Also, different functional elements interact with one another to enhance consumers' evaluation of product performance. Finally, the research indicates that different outcome variables affect the relative importance of form and function. Form plays a more important role in willingness to pay, whereas function has more impact in the context of product choice tasks.

Another empirical work has yielded similar results in the automobile category (Townsend et al. 2013). The findings support the idea that form and function are both clearly instrumental in consumers' evaluation of automobile design. The research specifically illustrated the positive influence of balance, symmetry, and volume on customer responses. In line with previous propositions in the literature, several interesting interaction effects between different form components were found. For example, it was shown that volume negatively affects the direct relationship between symmetry and perceived performance. As for functional elements, power was an important dimension that had a significant positive effect on consumer judgment. Capacity was another important functional component that had an inverted u-shaped relation to consumer judgment. Similar to form components, functional elements interacted with each other to influence consumer opinion. In addition, form elements interacted with function elements to affect consumer decision making. However, the direction of interaction effects depended on contextual variables such as brand status of the automobiles (e.g., high-opinion vs. low-opinion).

Lee (2010) has shown that product functionality moderates the relationship between product form and product evaluations such that, at high functionality compared to low functionality, form, interestingly, plays a more important role in consumers' attitude toward a product. However, in a different experiment the author observed that this relationship is a function of processing fluency such that higher functionality products or conditions might have increased the clarity of form cues. This observation is consistent with other research. In addition, familiarity with product can affect the form-function interaction. Research suggests that a product average in functionality might be preferred to a product high in functionality if the former communicate a more familiar form to consumers than the latter.

As suggested so far, product form can induce expectations regarding functionality. However, such expectation could be actual or false. Consider these examples: construction material can imply durability; size can communicate power; shape can signal aerodynamic capabilities. Each one of these, nonetheless, could be subject to examination. In some cases, based on past research, visual cues can reliably indicate functional performance (Radford and Bloch 2011). For example, a larger product can indeed have more power or a flimsy-looking material may, in actuality, not last long. However, product form can mislead consumers' judgments in other instances when evaluating actual product performance is difficult.

To investigate the effect of misleading versus actual form-induced functionality expectations, Hoegg and Alba (2011) conducted experimental research using different product categories such as shoes. In one experiment, respondents were asked to choose between two shoes. The researchers created four conditions based on appearance (superior vs. inferior) and functionality (superior vs. inferior). When the shoe signaling superior functionality was described using objectively inferior attributes, it was observed that consumers' evaluations of

performance were influenced in favor of the shoe superior in appearance. In contrast, there was no change toward the shoe superior in appearance when the written features accompanying the product were objectively superior in functionality. The authors concluded that consumers may develop expectations about functionality when different forms are being compared.

II. CONCEPTUAL FRAMEWORK AND HYPOTHESES

Mating is a fundamental evolutionary motive (Griskevicius and Kenrick 2013). The humans living today are the descendants of those early Homo sapiens that not only managed to survive but were also able to reproduce and raise their offspring. Research in evolutionary psychology has suggested that the human brain has evolved mating-specific modules to achieve specific goals like attracting potential partners or guarding existing mates (Miller 2011; Saad 2013a). Since the brain neural structure has been unchanged in at least the past 80,000 years (Buss 2015), these evolved modules still affect problem solving in contexts, such as consumption, that were non-existent in the evolutionary history of humans. These carryover effects of a mating mindset differ depending on whether a committed or casual mating motive is activated (Griskevicius and Kenrick 2013).

Casual mating is characterized by a focus on attracting partners for brief sexual encounters. In contrast, committed mating entails emotional bonding as well as resource sharing that results in a stable relationship (Shackelford et al. 2005). Regardless of gender differences in mating strategies—a very important topic not focal to the current research—the strategies that have proved effective in each mating context are quite divergent. In casual mating, attention to signs of genetic fitness is the primary mechanism to ensure reproductive success. Committed mating, on the other hand, renders the ability to provide resources and taking care of offspring essential. When casual mating motives are activated, individuals place a special emphasis on physical attributes when evaluating and choosing members of the opposite sex (Perilloux et al. 2013). Even though the specific physical traits vary between genders, the traits are linked to sex hormones in each gender and are reliable proxies for fertility or health. When pursuing committed mating goals, individuals mainly focus on positive psychological traits associated

with care giving and kindness. This is, however, only relevant when a minimum level of physical attractiveness is met (Gangestad and Simpson 2000).

The variance in mating motives is observed at three levels: intersexual, intrasexual, and intraindividual. The intersexual variance refers to differences that the two genders exhibit in pursuit of mating goals. For instance, males engage in more casual mating efforts than females (Bleu et al. 2012). The intrasexual differences are those that members of the same gender display. For example, some women favor casual mating more than other women do (Schmitt 2005b). The intersexual and intrasexual differences are essentially gender-moderated individual differences. The third level of analysis is the variance in mating motives within an individual. Such variance could be caused by internal factors such as hormonal changes or external variables such as environmental cues or priming effects (Gangestad et al. 2002; Miller and Maner 2011).

It is argued in the current research that mating motives have implications for the extent to which consumers rely on form versus function in product choices and evaluations. The argument is mainly based on the following line of reasoning: Consumers with a committed versus casual mating mindset vary in the level of attention they give to physical attractiveness in potential mates, which would in turn translate into differences in generalized attention to visual physical cues, and thereby influencing reliance on form- versus function-focused product choice. In the next section, this theorization will be extended, and empirical support will be provided form past research.

Mating motives should affect the relative attention consumers pay to physical versus non-physical cues in potential mates, which would result in differential activation of form-focused or function-focused evaluations. A casual mating motive involves one's elevated focus on physical attributes that can signal attractiveness (Li and Kenrick 2006). In this mating context, mate

preferences rely heavily on facial and bodily cues that the two sexes can decode effortlessly and quickly (Kurzban and Weeden 2005; Maner et al. 2007). In contrast, when pursuing committed mating goals, men and women show increased attention to non-physical traits in potential partners (Shackelford et al. 2005). Such traits reflect what potential mates are capable of delivering in a long-term committed relationship. Past research suggests that physical attributes can be unreliable indicators of the desirability of potential mates as committed long-term partners (Gangestad and Simpson 2000). In addition, more subjectivity and uncertainty are involved in committed mating decisions (Penke et al. 2007). Therefore, it is argued that a casual mating mindset should induce a greater attention to physical cues when evaluating choices, whereas a committed mating mindset should induce a greater attention to non-physical cues.

Extant research provides empirical evidence for the proposition that mating motives induce differential attention to physical or non-physical cues in consumer decision making. Such differential focus, in turn, induces different levels of relative reliance on form versus function in consumer choice and decisions making. For example, it has been shown that mere exposure to attractive members of the opposite sex, as a casual mating cue, causes attentional adhesion—an automatic visual fixation (Maner et al. 2007). However, in a further study, when primed with reminders of romantic love and current committed relationships, participants showed drastically decreased attentional adhesion to attractive members of the opposite sex (Maner et al. 2008); the participants consciously avoided looking at pictures of attractive opposite-sex people. Furthermore, people in committed relationships who exhibit greater resistance to tempting physical cues also possess higher executive control, which has been shown to be related to mental processing of concepts rather than objects (Pronk et al. 2011). Finally, neuroimaging studies also suggest a similar biological connection between mating mindsets and focus on form

versus function cues. The consistent distinctive patterns in neuroimaging of different mating contexts show that only when committed mating is induced, activation in the ventral tegmental area (VTA) and caudate nucleus occurs (Acevedo et al. 2011; Song et al. 2015). The VTA plays an important role in cognition and also contains neurons that extend to the prefrontal cortex which is the brain center for assessing intangible cues such as product functionality or people's intentions. Similarly, the caudate nucleus is implicated with goal directed action, information processing, and learning (Redish and Mizumori 2015). These faculties primarily rely on information input from non-physical cues. In contrast, the brain regions that have been reliably activated across different neuroimaging studies of casual sexual contexts include the putamen, hypothalamus, and visual cortical areas which are all involved in those mental processes targeted towards physical aspects of environmental stimuli (Diamond and Dickenson 2012). For instance, consumer research has shown that the putamen region becomes activated when consumers evaluate attractive product packaging (Hubert et al. 2013).

Previous research has also suggested that increased attention to physical cues induces a tendency for choices that are based on form rather than function, whereas the opposite holds when attention is directed towards non-physical attributes. For example, it has been observed that adding visual stimuli in brand extension evaluations shifts consumers' focus from perceived fit to tangible cues like logo and brand name (Meyvis et al. 2012). Further evidence supports the notion that product form becomes more important in consumer decision making when consumers' attention is directed towards olfactory (Madzharov et al. 2015) and tactile (Krishna 2012; Morales and Fitzsimons 2007) cues. On the other hand, other studies have also shown that led to think about consequences of consumption decisions, consumers tend to base their product choices on functional aspects in such categories as food (Raghunathan et al. 2006; Walsh 2014),

fashion (Stolz et al. 2013), and cars (Cornelissen et al. 2008; Tangari and Smith 2012). A similar effect can be observed if a generalized focus towards non-physical cues is induced. For example, under both laboratory and real purchase conditions, when consumers were exposed to an intangible cue, their subsequent choice of a CD player was based on mental associations rather than physical attributes of the products (Darke et al. 2006). Taken together, these pieces of evidence are consistent with the prediction that mating motives can affect the relative reliance of consumers on form or function cues in product choice. Thus, the main hypothesis of the current research states that consumers with a casual mating motive are more likely to base their product choices on form, whereas with a committed mating motive, consumers are more likely to base their product choices on function.

As discussed earlier, mating motive variance can be explained at different levels of analyses. Accordingly, it can be operationalized in different ways. First, temporarily made available mating motives can affect consumers' reliance on form versus function in product choice. Research has documented the effectiveness of situational primes in inducing mating motives in consumers (Griskevicius et al. 2007). This source of variance, of the three addressed in this research, is the most relevant to the elements of the promotion mix because marketers can directly utilize these priming effects in creating marketing stimuli. The effect of mating motives on reliance on form versus function is hypothesized to be observed by, among other sources of variance, priming consumers with mating cues.

Furthermore, this research examines relative preference for products superior in form versus function as affected by mating motives. It will be argued and empirically shown that such relative preference operates via relative reliance on form versus function in consumer decision making. Thus, the first hypothesis of this research is formally stated as follows:

H1a: *Consumers primed with a casual mating motive will exhibit higher relative preference for products superior in form (vs. function) compared to those consumers primed with a committed mating motive.*

Similarly, sociosexuality—individual differences in chronic mating motives—should affect consumers' relative reliance on form versus function in product choice, which will be reflected in a relative preference for products superior in form versus products superior in function. Individuals display consistent and chronic preferences and behaviors in regard to mating orientation. Sociosexuality reflects such individual differences. Sociosexually casual individuals tend to favor and engage in more casual sexual relationships, whereas committed individuals tend to favor and engage in more committed relationships. Therefore,

H1b: *Sociosexually casual (vs. committed) consumers will tend to relatively prefer products superior in form, whereas sociosexually committed consumers will tend to relatively prefer products superior in function.*

A third factor that can drive varying mating motives in an individual is hormonal changes in different phases of the menstrual cycle for women, which has been shown to affect consumption behavior (e.g., Saad and Stenstrom 2012). At peak fertility, females' mating psychology shifts toward preferences for casual mating. Even though actual casual mating with males possessing high quality genes may or may not happen, the changes in attitudes and behaviors can still influence consumptions decisions. Fertility, therefore, is hypothesized to affect women's relative preferences for form versus function in product choice:

H1c: *Female consumers in the fertile phase of their ovulatory cycle will exhibit higher relative preference for products superior in form compared to female*

consumers in the non-fertile phase. In the non-fertile phase of the menstrual cycle, women relatively prefer products superior in function compared to women in the fertile phase.

Differential reliance on form versus function caused by mating motives should affect product choice, as stated in previous hypotheses. The next two hypotheses explicitly address the proposed relationships between mating motives and reliance on function versus form as well as how this effect is manifested in relative product preferences (which were already stated in H1's):

H2: *Consumers with a casual mating motive will show higher relative reliance on form versus function compared to consumers with a committed mating motive.*

H3: *The effect of mating motives on preference for the products superior in form versus function is driven (mediated) by consumers' differential reliance on form versus function.*

Different sources of variance in mating motives can have interactive effects. Research has suggested that physiological changes in mating motives are affected by individual differences (Kenrick et al. 2002). The effect of fertility on women's consumer behavior should be influenced by their sociosexual orientation. Committed sociosexuality can have a suppressive effect on how the ovulatory-related changes in female sexual psychology translate into product choices and evaluations. By the same rationale, a casual woman, who typically has a liberal view of sexual relationships, can display less variance between ovulating versus non-ovulating phases of her menstrual cycle. However, even though the differences induced by sociosexuality can be smaller, the direction of attitude and behavior change is toward being more committed, which

will still be aligned with the predicted moderation effect. Therefore, the next hypothesis of this research is as follows:

> **H4:** *Sociosexuality moderates the effect of fertility on product preference such that relative preference for options superior in form versus function will be stronger for casual women compared to committed women.*

If mating motives indeed affect relative reliance on form versus function in product choice, then to the extent that a product choice strategy is congruent with the motivational state induced by a mating mindset, consumers' valuation of the product choices, reflected in consumers' willingness to pay (WPT) for the choices, should be positively associated with the motivation-decision congruence. This value transfer effect from choice strategy congruence to product valuation is consistent with past research (Higgins et al. 2003). The next hypothesis is as follows:

> **H5:** *Consumers with a committed mating motive will have a less positive valuation of their selected product when they are directed to make a decision based on form instead of function; those with a casual mating motive will indicate less positive product valuation when they are directed to make a decision based on function instead of form.*

The underlying mechanism through which mating motives induce product choices based on form versus function concerns how mating motives differentially activate a generalized focus on physical versus non-physical situational cues, which in turn results in differential reliance on form versus function. If this is true, the relationship between mating orientation and product choice modes will be moderated by the level of clarity of product cues. Therefore, it is

hypothesized that for consumers with a casual mating orientation, preference for products superior in form decreases when ambiguity of physical cues increases. Similarly, for consumers with a committed mating orientation, preference for options superior in function decreases when non-physical cues are ambiguous. For example, for a product whose function in not clear but looks interesting, there will be a shift of focus towards form when consumers have a committed mating mindset. Thus,

> **H6:** *For consumers with a casual mating orientation, relative preference for options superior in form decreases when product physical cues are ambiguous. Similarly, for consumers with a committed mating orientation, relative preference for options superior in function decreases when non-physical cues are ambiguous.*

The conceptual framework, hypotheses and related studies of this research are schematically represented in FIGURE I.

[Insert FIGURE I about here]

The hypotheses will be tested within five experiments. Mating motives will be operationalized in three different ways: temporarily made available through priming, individual differences (sociosexuality), and physiological changes (ovulation). In addition, three product categories—cookware, office chairs, and space heaters—will be used in multiple decision tasks to provide convergent support for the predictions of this dissertation. Given that choice in these product categories is not strongly driven by sexuality (as opposed to, say, cosmetics), the

anticipated findings of the studies of this research would represent a more robust test of the effects of mating motives. In other words, if the hypotheses are supported, an even stronger effect can be anticipated for more sexually-linked products.

III. METHOD AND DATA ANAYLIS

The data collection protocols and use of human participants in this dissertation were approved by the Old Dominion University College of Business Human Subjects Review Committee on 11/11/2018 under the exempt category 2. The IRBNet ID for the dissertation is 909186-1. The Institutional Review Board (IRB) approval letter is provided in APPENDIX H.

PRETESTS

To ensure the effectiveness of the stimuli used to collect responses from participants in this research, three pretests were conducted. First, the stimuli used to induce mating motives in respondents were tested. Next, two pretests were conducted to demonstrate the effectiveness of the product choice tasks stimuli.

Pretest for the Mating Motive Manipulations

To induce mating motives in participants, they were asked to read a passage. This method has been successfully used in past research (e.g., Wang and Griskevicius 2014) . Three scenarios were adapted from Griskevicius et al. (2006a): casual mating (casual encounter) scenario, committed mating (committed relationship) scenario, and a control condition. In particular, the casual encounter scenario describes a romantic situation in which the participant meets an attractive opposite-sex person on the last day of a trip to an exotic destination. The encounter continues with a romantic conversation over coffee and a candlelit dinner. This is followed by a walk on the beach during which the person expresses that he or she finds the participant attractive. The couple first gently kiss but soon find themselves passionately kissing. In contrast, in the committed relationship scenario, participants read a passage in which they imagine the

time they have spent with a partner over five years. The couple go to bed together each night and wake up happily in the morning. They are still attracted to each other after the years and find peace and joy in their relationship. The scenario describes the couple's romantic interaction when they decide to dine out one night. The control scenario describes a situation in which the participant goes to the movies with a same-sex friend (The scope of this research is limited to heterosexual individuals only). The three scenarios are similar in length (approximately 185 words). The mating manipulations are provided in APPENDIX A.

Even though these manipulations have been validated in past research, to check whether they were effective with the participant population used in Study 1, a pretest was conducted.

Eighty-eight responses were collected on Amazon Mechanical Turk. Power analysis and sample size calculations proposed by Cohen (1991) for a desired power of minimum .80, df = 2, $\alpha = .05$ and for medium effect sizes (.5) were consulted in sample size estimations in this research. A series of qualifications were used for recruiting respondents on MTurk to improve the quality and generalizability of the responses. Only *master workers* were hired. Master workers are those who have shown exceptional levels of accuracy and performance (Cheung et al. 2017). In addition, a minimum of 95% approval rate was set as a requirement to participate in the research. Another qualification applied was location; only US based MTurk workers participated in the study.

Thirteen cases were removed due to one or more of these issues: the response time was too short (e.g., 9 seconds), the survey code or Worker ID was not provided, or the answer to the attention check question was wrong. For the final dataset, survey completion time was acceptable (*Min* = 41s, *M* = 94s, *SD* = 51.9) based on the number and complexity of the

questions. The average age of the respondents was 42.4 years old (*SD* = 10.5) and 37.8% of the sample were females.

Each respondent was paid $.5. In addition, an average of $.50 per respondent was paid as a total fee for the qualifications applied.

Respondents were randomly assigned to one of the three conditions. They read the corresponding scenario for manipulating sexual motivation and reported the extent to which reading the passage made them think about committed romantic relationships and casual sexual encounters on two separate 7-point Likert scales (1 = *not at all*, 7 = *very much*). To test whether the mating manipulations evoked significantly different thoughts related to committed versus casual relationships, two one-way ANOVA tests with mating manipulation as a between-subject factor and the extent of each evoked thought type as the dependent variable were employed. The results showed a highly significant effect of mating motive scenario (casual vs. committed vs. control) on type of mindset evoked ($F(2, 72) = 84.163$, $p < .001$ for committed and $F(2, 72) = 184.063$, $p < .001$ for casual). Further, the results of two Tukey HSD tests indicated that pair comparisons for different mating scenarios were significant and meaningful for both casual thoughts and committed thoughts. Those participants exposed to the committed relationship scenario reported thinking much more about committed romance ($M = 6.67$, $SD = .577$) than casual sex ($M = 3.03$, $SD = .1.88$, *Mean Difference* = 3.633, $p < .001$). On the other hand, those respondents who read the causal mating passage reported having significantly more thoughts about casual sexual relationships ($M = 5.9$, $SD = 1.269$) than committed romantic relationships ($M = 1.33$, SD = .796, *Mean Difference* = 4.567, $p < .001$). The control scenario averaged very low on both types of thoughts ($M = 1.46$, $SD = .721$ for committed thoughts and $M = 1.46$, $SD = 1.062$ for casual thoughts). The committed scenario induced significantly higher committed

thoughts (M = 6.67, SD = .577) than the control scenario (M = 1.46, SD = 1.062, *Mean Difference* = 5.208, $p < .001$) and the casual scenario induced significantly higher casual thoughts (M = 5.90, SD = 1.26) compared to the control scenario (M = 1.46, SD = .721, *Mean Difference* = 4.442, $p < .001$).

Product Choice Task Stimuli

In the main experiment of Study 1, participants were given a set of three choice tasks, each between two products from the same category (e.g., two office chairs). In each choice task, the two options were described using six attributes, three related to form and three related to function. In each task, one option was superior in form and one in function. This type of decision task has been previously used in consumer research (e.g., Chang and Pham 2013). Three product categories were used in the tasks: office chairs, cookware, and space heaters. Similar products have been successfully used in previous research (e.g., Hoegg et al. 2010; Noble and Kumar 2010) to examine different modes of decision making in product choice or to demonstrate differential attention to specific attributes. The products used in the choice tasks could be selected based on both form and function. For each task, the two products were comparable in price, but differed in form and function. The order of presenting the two options was randomly selected so that there was no sequence bias in the three product choices. In addition, the order in which the three product categories appeared on screen was randomized based on a similar logic. The products were selected from the online retailer Amazon.com. Any logo, brand name or other identifying signs were digitally removed. The lists of the attributes used to describe the products were also taken from actual product descriptions from Amazon.com, with minor modifications to control for word count and comparability. However, the exact combination of the six attributes

did not belong to any specific actual product in any of the three categories. The stimuli used for the product choice tasks are provided in APPENDIX B.

To validate the stimuli for the choice tasks, two pretests were conducted. The first pretest aimed to verify whether the six attributes indeed pertain to form versus function dimensions of product consumption.

Pretest for Product Attributes

For the product attributes pretest, sixty-eight responses were collected on MTurk, for a total of 136 cases (two product options) in each product category. The sample size is adequate for a minimum desired power of .8, $\alpha = .05$ and medium effect sizes (.5) based on the guidelines proposed by MacCallum et al. (1999) for factor analysis. A series of qualifications were used for recruiting respondents on MTurk to improve the quality and generalizability of the responses. Only *master workers* were hired. Master workers are those who have shown exceptional levels of accuracy and performance (Cheung et al. 2017). In addition, a minimum of 95% approval rate was set as a requirement to participate in the research. Another qualification applied was location; only US based MTurk workers participated in the study. Furthermore, custom qualifications (Buchheit et al. 2018) were created and applied to prevent MTurk workers from participating in more than one study. Respondents were asked to rate the six attributes for each product category on a Likert scales from 1 to 7 (1 = *related to how the product looks*, 7 = *related to what the product does*). Eight respondents were excluded from the data because of answering the attention check question incorrectly, not entering their Worker ID, failing to report the survey code, or giving all the attributes the same rating (e.g., all 7's). The final dataset used for analysis included sixty respondents (M_{age} = 41.667, SD = 9.50, 40% female).

Each participant was paid $.55 directly. This amount was adjusted based on the length of the questionnaire completed in this study. In addition, an average of $.50 per respondent was paid as a total fee for the qualifications applied.

To confirm that the selected form attributes indeed pertain to form while the function attribute pertain to function, I conducted a separate factor analysis on the participants' ratings of the attributes in each product pair/category. As each respondent rated both products (black chair and white chair) in each product pair, this led to 120 total observations for each factor analysis. I used principle components factor analysis. The number of factors was determined using scree plots (eigenvalues > 1). The rotation method used was Varimax. For all the three product categories, two factors were extracted. Overall, the results confirmed the existence of form and function dimensions in product choice. For the office chair category, the first factor extracted explained 51.92% of the variance and the second factor explained 20.17%. The cumulative variance explained by the two factors was 72.09%. The three form related attributes loaded heavily on one factor with factor loadings of .89, .87, and .92 while the three function related attributes loaded heavily on the other with loadings of .76, .75, and .53. For the heater category, the first factor extracted explained 59.92% of the variance and the second factor explained 16.87%. The cumulative variance explained by the two factors was 76.79%. The three form related attributes loaded on one factor with factor loadings of .33, .60, and .92 while the three function related attributes loaded heavily on the other with loadings of .90, .91, and .82. Finally, for the cookware category, the first factor explained 51.38% of the variance and the second factor explained 21.427%. The cumulative variance explained by the two factors was 72.81%. The three form related attributes loaded heavily on one factor with factor loadings of .80, .78,

and .78 while the three function related attributes loaded heavily on the other with loadings of .85, .86, and .79.

Furthermore, a mean rating for the three form attributes and a mean rating for the three function attributes were formed. The results of a one-way repeated-measure ANOVA test with attribute type as the independent factor and mean rating as the dependent variable indicated a significant effect of attribute type such that the form-related attributes ($M = 2.72$) indeed pertained more to form (how the product looked) than to function (what the product does) compared to function-related attributes ($M = 6.27$; $F(1, 359) = 898.52$, $p < .001$).

Pretest for Choice Strategy

Another pretest was conducted to check the validity of the proposition that if a consumer was instructed to make a product choice based on form (function), he or she would indeed choose the option designed to be superior in form (function).

For the choice strategy pretest sixty-four responses were collected on Mechanical Turk. The sample size was estimated for a minimum power of .8, $\alpha = .05$, $df = 1$, and medium effect sizes (i.e., .5) using power calculations proposed by Cohen (Cohen 1991) for chi-square tests. A series of qualifications were used for recruiting respondents on MTurk to improve the quality and generalizability of the responses. Only *master workers* were hired. Master workers are those who have shown exceptional levels of accuracy and performance (Cheung et al. 2017). In addition, a minimum of 95% approval rate was set as a requirement to participate in the research. Another qualification applied was location; only US based MTurk workers participated in the study. Furthermore, custom qualifications (Buchheit et al. 2018) were created and applied to prevent MTurk workers from participating in more than one study. Each participant was paid $.5 directly. This amount was adjusted based on the length of the questionnaire completed in this

study. In addition, an average of $.50 per respondent was paid as a total fee for the qualifications applied.

In this pretest, respondents were randomly assigned to one of two experimental conditions. In one, respondents were given instructions to choose between two products based on how the products look (form condition) and in the other based on what the product does (function condition). To ensure that respondents indeed understood the instructions, a confirmation question was included before the choice task section asking respondents to indicate what the choice strategy would be: The instructions read "*Select one of the two below:",* and the two choices were "*based on how the product looks (form)*," and "*based on what the product does (function)*." In each condition, there was only one respondent who indicated the wrong choice (chose the strategy that was not what the instructions required). These two responses were excluded from the data. Five other responses had a completion time of less than 10 seconds and were excluded from the dataset. Four more respondents were also excluded from the data because of answering the attention check question incorrectly, not entering their Worker ID, or failing to report the survey code. Fifty-three responses were included in the final data analysis. The average age of the respondents was 39.9 years old (*SD* = 11.2) and 34% of the sample were females.

To test if there is an association between choice strategy and product choice, three chi-square tests were conducted. The dependent variable for each product category was preference for the two options (1 = *preference for option superior in form*, 2 = *prefer for option superior in function*). The independent variable was the assigned choice strategy (form- vs. function-based). The results of three chi-squares tests indicated that for all the product categories, there was a significant association between the assigned choice strategy and product choice (x^2 (1) = 13.37, p

< .001 for cookware, x^2 (1) = 9.6, p = .002 for Heater, and x^2 (1) = 7.24, p = .007 for Office Chair). Of the participants instructed to follow a form-based strategy, the percentage that indeed selected the product superior in form was 56.5%, 73.9%, and 69.6% for the chair, heater, and cookware categories, respectively. Similarly, of those participants directed to follow a function-based strategy, the percentage that indeed chose the option superior in function was 86.2%, 90%, and 90% for the chair, heater, and cookware categories, respectively.

STUDY 1

Study 1 tested the central hypothesis that consumers with a casual mating motive are more likely to base their product choices on form, whereas with a committed mating motive, consumers are more likely to base their product choices on function. In order to test this prediction, respondents' mating motives were manipulated; participants were then asked to perform a set of three product choice tasks. In each task, the objective was to indicate preference for two products, one superior in form and one superior in function. This overall method has been successfully used before to show consumers' relative reliance on a specific type of product attribute (Hoegg et al. 2010) or a mode of decision making (Chang and Pham 2013). It was hypothesized that respondents primed with a casual mating motive would exhibit higher preference for the options superior in form compared to those participants primed with a committed mating motive. In contrast, respondents primed with a committed mating motive would exhibit higher preference for the options superior in function than would respondents primed with a casual mating motive (H1a).

Participants

Ninety Mechanical Turk workers were recruited to participate in the experiment. Each respondent completed three product tasks. This created a total sample size of 270. Power analysis and ample size calculations proposed by Cohen (1991) for a desired minimum power of .80, α = .05, df = 2, and medium effect sizes (.5 suggested by Cohen) were utilized in sample size estimations in this research. The same guidelines were consulted for all the other ANOVA models in this research as well.

A series of qualifications were used for recruiting respondents on MTurk to improve the quality and generalizability of the responses. Only *master workers* were hired. Master workers are those who have shown exceptional levels of accuracy and performance (Cheung et al. 2017). In addition, a minimum of 95% approval rate was set as a requirement to participate in the research. Another qualification applied was location; only US based MTurk workers participated in the study. Furthermore, custom qualifications (Buchheit et al. 2018) were created and applied to prevent MTurk workers from participating in more than one study.

Each participant was paid $.65 directly. This amount was adjusted based on the length of the questionnaire completed in this study. In addition, an average of $.50 per respondent was paid as a total fee for the qualifications applied.

Design and Procedures

Participants were randomly assigned to one of the three experimental conditions (mating motive: casual vs. committed vs. control). In each condition, participants were first asked to read the mating motive manipulations as explained in the first pretest. After the mating manipulation, participants were given the three product choice tasks. Participants were instructed to imagine that they were going to buy a set of cookware, an office chair, and a space heater. For each

product category, participants were shown the pictures of two products of similar price. Each product picture was accompanied by text descriptions of six product attributes as mentioned in the pretest. Participants were asked to indicate their preference for the options (1 = *strongly prefer option on the left*, 7 = *strongly prefer option on the right*). Since the order of the options was randomized for the three categories, the preferences were recoded such that for all the three categories higher scores indicated a preference for the product superior in function. This was used as the main dependent variable in Study 1. Following the procedures outlined in past research (Griskevicius et al. 2006a), participants were also asked to report their mood since one possible reason why mating manipulations may affect product choice is by affecting participants' mood. The mood items included *happy*, *upset*, *excited*, and *nervous*. Participants rated each mood item on a 7-point scale (1 = *not at all*, 7 = *very much*). In addition, sexual arousal was measured as a construct that could influence the anticipated main effect in Study 1. Participants' sexual arousal triggered by the manipulation scenarios was measured using two items adapted from a sexual arousal scale developed by Mosher, Barton-Henry, and Green (1988) and used in consumer research as well (e.g., Reichert and Zhou 2007). Participants were asked to rate (1 = *not at all*, 7 = *very much*) how sexually enticing they thought the scenarios were, and how sexually aroused they were (α = .821). In addition, participants were asked to indicate their level of familiarity and experience with each product category. Finally, demographic data was collected from each participant (M_{age} = 38.23, SD = 9.1, 41.1% female).

Results and Conclusion

Preliminary Tests. In order to check that the mating manipulations did not inadvertently influence respondents' mood, which could in turn affect their product choice, a one-way MANOVA test with the four mood measures as the dependent variables and mating motives as

the independent factor was conducted. The results indicated that the mating motive manipulations did not influence respondents' happy ($F(2, 83) = .030$, $p = .971$), upset ($F(2, 83) = .033$, $p = .967$), excited ($F(2, 83) = .042$, $p = .959$), or nervous ($F(2, 83) = .440$, $p = .646$) moods, leaving out mood change as an alternative mechanism for the observed effect. A similar analysis was performed for sexual arousal. The results of a one-way ANOVA indicated that sexual arousal levels were overall low ($M = 1.78$, $SD = 1.1$). Nonetheless, at these low levels arousal was associated with mating motive ($F(2, 86) = 8.29$, $p = .001$). However, a post hoc Tukey test showed that the effect is only significant for the control scenario; the two mating scenarios (casual vs. committed) were not significantly different from each other in the level of induced arousal (*Mean Difference* = .62, $p = .086$).[1]

Product Choice. First, a mixed ANOVA with mating motive as the between-subject factor and product category as the repeated-measure was conducted to rule out the interactive effect of product category on the association between mating motive and product preference. The dependent variable was preference (measured three times for each respondent as a within-subject factor). The results revealed that the interactive effect of product category and mating scenario on product preference was not significant ($F(4) = .567$, $p = .687$). However, the main effect of mating motive scenario remained significant ($F(2) = 8.178$, $p = .001$).

Next, a one-way ANOVA with mating motive as the between-subject factor and the average of product preferences for the three categories as the dependent variable was conducted. The results indicated the significant effect of mating motive on product preference ($F(2, 87) = 8.474$, $p < .001$). A post hoc Tukey test revealed that the casual sex scenario was significantly more likely ($M = 1.8$, $SD = .87$) to induce a preference for products superior in form than the

[1] Since this mean difference was close to significance, the main model for the study was also run with sexual arousal as a covariate, however, no change in the results were observed.

committed relationship scenario (M = 2.5, SD = 1.06, p = .01) or the control scenario (M = 2.7, SD = .8, p = .001). There was no significant difference between the control and committed conditions *(Mean Difference* = .196, p = .69).

All the models were also run with age, gender, product familiarity and experience as covariates; however, no significant effect was observed for any of the covariates.

Taken together, the results provided support for the main hypothesis of the research (H1). Specifically, H1a was supported in Study 1.

STUDY 2

In this study, the aim was to first find more support for the observation in Study 1 by explicitly testing the degree to which respondents' choices are based on form versus function. Second, Study 2 sought to validate the effect in Study 1 by applying an alternative operationalization of mating motives based on individual differences rather than temporarily induced intra-individual variance. This was done by measuring respondents' sociosexuality, the extent to which individuals are willing to engage in casual sexual relations (Penke and Asendorpf 2008), whereas in Study 1, the focus was on examining the effect of mating motives induced by contextual priming. Finally, a plausible alternative explanation for the effect observed in Study 1 was tested in Study 2. Previous research has, based on construal level theory (CLT), shown that a casual mating motive is associated with a focus on concrete details whereas a committed mating motive is characterized by a focus on abstraction (Förster et al. 2009). Applied to time orientation, this would imply that a casual mating motive makes one focus on the present, whereas a committed mating motive makes one focus on the future. Moreover, in the domain of consumer choice, it has been suggested that construal levels are associated with a differential

focus on concrete versus abstract cues (e.g., Dhar and Kim 2007; Fiedler 2007). For example, research has found that at high construal levels (i.e., more abstraction), function-based marketing messages are more persuasive than those focused on physical attributes of products (Hernandez et al. 2015). On the contrary, attribute-based communication is either equally or more persuasive to consumers with a low construal level predisposition (Hernandez et al. 2015). Thus, Study 2 aimed to test, in addition to H1b, the possibility whether the effect of mating motives on relative preference for the option superior in form versus the option superior in function could be alternatively explained by different construal levels associated with casual versus committed mating motives.

Participants and Procedures

Seventy participants were recruited from Amazon MTurk to participate in Study 2 (M_{age} = 40.01, SD_{age} = 8.78, 42.9% female). The sample size rules of thumb proposed by VanVoorhis and Morgan (2007) for regression analysis were consulted for sample size estimations of this research. A series of qualifications were used for recruiting respondents on MTurk to improve the quality and generalizability of the responses. Only *master workers* were hired. Master workers are those who have shown exceptional levels of accuracy and performance (Cheung et al. 2017). In addition, a minimum of 95% approval rate was set as a requirement to participate in the research. Another qualification applied was location; only US based MTurk workers participated in the study. Furthermore, custom qualifications (Buchheit et al. 2018) were created and applied to prevent MTurk workers from participating in more than one study.

Each participant was paid $1 directly. This amount was adjusted based on the length of the questionnaire completed in this study. In addition, an average of $.50 per respondent was paid as a total fee for the qualifications applied.

The procedures followed a similar design to that in Study 1 with the following modifications. First, while Study 1 manipulated mating motives in participants, Study 2 measured participants' chronic mating orientation, or sociosexuality, using the Revised Sociosexual Orientation Inventory (SOI-R) (Penke and Asendorpf 2008). Sociosexuality scores were calculated by aggregating the nine items on the SOI-R (α = .846). The range of aggregate scores were 9 to 90 (Penke and Asendorpf 2008). Lower scores indicated a committed orientation while higher scores reflected a casual sociosexual orientation. The SOI-R is provided in APPENDIX C. Also, participants' chronic construal level was measured using the Revised Behavior Identification Form (RBIF) (Slepian et al. 2015). RBFI includes 10 items describing various target behaviors in two distinct ways: how the action is performed and why the action is performed. Participants were asked to choose the description for each behavior that best reflected their opinion. An overall score was calculated by counting the number of abstract statements (the why descriptions) for each respondent (α = .886). Higher scores indicated a *high* construal level (i.e.., higher abstraction) while lower scores indicated a *low* construal level. The RBFI is provided in APPENDIX D. In addition, the Brief Social Desirability Scale (BSDS) (Haghighat 2007) was used to measure respondents' tendency to want to be perceived favorably (α = .877). This was done to control for the potential bias in respondents' self-reported sociosexuality. Finally, in Study 2 the product choice tasks were done in the beginning of the survey and the measurement of respondents' traits (e.g., sociosexuality and construal levels) was done afterwards.

To better understand the process through which participants made their product choice, they were asked to specify their decision strategy using a *reliance index*. This index included six items that measured the relative weight respondents placed on specific form (e.g., "Color

combination was an important factor in my decision") or function (e.g., "Energy efficiency was an important factor in my decision.") attributes in addition to two items measuring overall reliance on form ("My choices were based on how the products look") or function ("My choices were based on how the products would function"). Participants indicated the importance of each of the eight statements on a 7-point scale (1 = *not important at all*, 7 = *very important*). The form related items were reverse coded; the reliance index was then calculated by averaging the scores on the eight items (α = .711). Lower scores reflected a greater relative reliance on form whereas higher scores indicated a greater relative reliance on function. This method of operationalizing product choice strategy has been successfully used in the consumer research literature (e.g., Yoon et al. 2012). The reliance index items for each product category are available in APPENDIX E.

Results and Conclusion

Product Choice. A regression analysis was conducted with respondents' mean-centered sociosexuality score as the independent variable and product choice preferences as the dependent variable. Each product preference was treated as a separate observation, creating 210 repeated-measure observations, with three observations for each respondent. The result indicated a negative significant effect of sociosexuality on preference (β = -.412, $p < .001$). Recall from Study 1 that the product choice preference variable was recoded such that a higher score indicated a preference for the product superior in function. Therefore, sociosexually casual participants showed a stronger preference for the option superior in form within each pair than sociosexually committed participants. The effect of product category, included as two dummy variables, on preference was nonsignificant as predicted, thus product category was dropped

from further analysis. These findings provide support for H1b as well as replicate the effect observed in Study 1.

Another regression model was run using both participants' construal level and sociosexuality as predictors of the likelihood of consumers' preference for the products superior in form (function). No significant main effect of construal level on product preference was observed, ruling out the variance in construal levels as the main determinant of the observed variance in product preference (β = - .120, p = .058). More notably, sociosexuality remained significant (β = -.401, p < .001) when simultaneously included as a predictor of relative product preference along with construal levels. These results further highlight the explanatory power of mating motives in reliance on form versus function in product choice.

To ensure that social desirability bias did not confound the effect of sociosexuality on product preference, a similar regression analysis was performed with both sociosexuality and social desirability as predictors of preference. No significant main effect of social desirability was observed (β = - .045, p = .485). whereas sociosexuality remained significant in the presence of social desirability (β = - .422, p < .001).

Taken together, these results provided additional support for the main hypothesis of the research (H1). Specifically, H1b was supported in Study 2.

The results of another regression analysis with participants' sociosexuality as the predictor of the reliance index yielded a significant main effect such that participants with a predominantly casual mating motive showed higher relative reliance on form versus function (β = -.234, p < .001) compared to those with a predominantly committed mating motive. Thus, H2 was supported.

Mediation. A mediation analysis followed to examine the mechanism through which mating motives influenced relative preference for products superior in form versus function. Mediation analysis was performed using Hayes' (2018) PROCESS macro model 4. The 95% confidence interval (CI) for the indirect effect was generated using 5000 bootstrapped samples. The model was run with sociosexuality as the predictor, product preference as the dependent variable, and reliance index as the mediator. As hypothesized, the analysis revealed the significant mediating role of reliance index in the relationship between sociosexuality and product preference (β_{indirect} = -.0079, *SE* = .0031; 95% CI [-.0146, -.0024]). Therefore, H3 was supported in Study 2 in addition to H1b.

STUDY 3

The objective of Study 3 was to examine the moderating role of attribute clarity in the effect of mating motives on the relative use of form- versus function-based choice strategies (H6). As discussed in the theory section, the underlying process linking mating motives to product choices based on form versus function is concerned with how mating motives differentially activate a generalized focus on physical versus non-physical cues, which in turn results in differential reliance on form versus function. Therefore, the link between mating orientation and product choice should be moderated by the extent to which physical cues are unambiguous. Formally, it was hypothesized that for consumers with a casual mating orientation, reliance on form decreases when ambiguity of physical cues increases. Similarly, for consumers with a committed mating orientation, reliance on function decreases when non-physical cues are ambiguous.

Participants and Design

196 MTurk workers participated in the study (M_{age} = 39.66, *SD* = 11.67, 38.9% female). Participants were randomly assigned to one of 2 (form attributes: clear vs. ambiguous) × 2 (function attributes: clear vs. ambiguous) experimental conditions. In each condition, participants indicated their preference for 3 product categories. Each preference was treated as a separate observation resulting in a total of 588 cases. Power analysis and sample size calculations proposed by Cohen (1991) for a desired minimum power of .80, α = .05, df = 2, and medium effect sizes (.5 suggested by Cohen) were utilized in sample size estimations in this research.

A series of qualifications were used for recruiting respondents on MTurk to improve the quality and generalizability of the responses. Only *master workers* were hired. Master workers are those who have shown exceptional levels of accuracy and performance (Cheung et al. 2017). In addition, a minimum of 95% approval rate was set as a requirement to participate in the research. Another qualification applied was location; only US based MTurk workers participated in the study. Furthermore, custom qualifications (Buchheit et al. 2018) were created and applied to prevent MTurk workers from participating in more than one study.

Each participant was paid $.65 directly. This amount was adjusted based on the length of the questionnaire completed in this study. In addition, an average of $.50 per respondent was paid as a total fee for the qualifications applied.

Procedures

To manipulate the clarity of function attributes information, the procedures used by Novemsky et al. (2007) were adopted. The product descriptions were presented using an italicized gray Haettenschweiler font. This font has been shown to be difficult to read, however, the font could be accurately read if extra effort is made (Diemand-Yauman et al. 2011). The

figure below illustrates an example of the manipulation stimuli created with this font next to the regular font used in the clear condition.

[Insert FIGURE II about here]

In addition, for the form attributes ambiguity condition, the product pictures were blurred using Adobe Photoshop, as seen in FIGURE III. This method of manipulating form attributes has been successfully used in past research (e.g., Nielsen and Escalas 2010).

[Insert FIGURE III about here]

Once participants were assigned to one of the four experimental conditions, the procedures were similar to those used in Study 2. Participants were asked to imagine that they needed to purchase a cookware set, an office chair, and a space heater. For each product category, participants indicated their preference for the two options available. One option was superior in form attributes and the other was superior in function attributes. The main dependent variable was relative preference for the two types of options in each product category (measured as a repeated measure). The relative preferences were indicated on a 7-point scale (1 = *strongly prefer option on the left*, 7 = *strongly prefer option on the right*). In addition, for checking the

validity of the stimuli used, participants were asked to indicate their agreement with four statements regarding the clarity of form and function information in the options presented to them (1 = *strongly disagree*, 7 = *strongly agree*; α = .78 for picture clarity ratings and .69 for text clarity ratings). For each product pair, participants were asked to indicate their level of familiarity and experience with the category. Finally, participants completed the sociosexuality scale (Penke and Asendorpf 2008) and answered demographic questions.

Results and Conclusion

Manipulation Check. The results of two two-way ANOVAs and post-hoc mean-comparison tests confirmed the validity of using the information ambiguity stimuli. In the first model (F_{model} = 140.494, $p < .001$), the average of the two picture clarity ratings was the DV and the experimental conditions (picture: clear vs. blurred * text: clear vs. blurred) were the fixed factors. The main effect of picture clarity manipulation was significant in the model (F = 23.033, $p < .001$). In addition, the main effect of text clarity manipulation (F = 377.409, $p < .001$) and the interaction of picture and text clarity manipulations (F = 10.876, p = .001) were also significant. Participants indicated that picture clarity rating was higher in the clear-picture-clear-text condition (M = 5.812, SD = 1.33) than the blurred-picture-clear-text condition (M = 3.890, SD = 1.572; *Mean Difference* = 1.922, $p < .001$). Similarly, picture clarity rating was reported higher in the clear-picture-blurred-text condition (M = 5.640, SD = 1.069) than the blurred-picture-blurred-text condition *(*M = 2.902, SD = 1.656; *Mean Difference* = 2.738, $p < .001$).

In the second ANOVA model (F_{model} = 68.868, $p < .001$), the average of the two text clarity ratings was the DV and the experimental conditions (picture: clear vs. blurred * text: clear vs. blurred) were the IVs. The main effect of text clarity manipulation was significant (F = 7.621, p = .006) in the model. Additionally, the main effect of picture clarity manipulation (F =

187.058, $p < .001$) and the interaction of picture and text clarity manipulations ($F = 4.522$, $p = .034$) were also significant. Participants indicated that text clarity rating was higher in the clear-text-clear-picture condition ($M = 5.888$, $SD = 1.170$) than the blurred-text-clear-picture condition ($M = 4.625$, $SD = 1.357$; *Mean Difference* = 1.262, $p < .001$). Similarly, text clarity rating was reported higher in the clear-text-blurred-picture condition ($M = 5.830$, $SD = 1.092$) than the blurred-text-blurred-picture condition *(*$M = 4.115$, $SD = 1.525$; *Mean Difference* = 1.714, $p < .001$).

Product Preference. Sociosexual orientation was determined by calculating scores using the same method explained in Study 2. Lower scores indicated a casual sociosexual orientation whereas higher scores indicated a committed sociosexual orientation. To test the main hypothesis of this experiment (H6), a linear regression model was created with sociosexuality (mean-centered) and picture and text ambiguity manipulations (dummy coded 0 and 1) as the main independent variables along with the two-way and three-way interaction terms; the dependent variable was respondents' relative product preference, where a higher score indicates a stronger preference for the function-superior product.

A significant direct effect of sociosexuality was observed ($B = -.072$, $SE = .012$, $p < .001$), suggesting that a more committed sociosexual orientation led to preference for the functionally superior product. This replicates the findings of Study 1 and Study 2. More important to the hypothesis of current experiment, the three-way interaction term was significant ($B = -.077$, $SE = .024$, $p = .001$). All the two-way interaction terms were significant as well, including the interactions between sociosexuality and picture ambiguity ($B = .057$, $SE = .017$, $p = .001$), between sociosexuality and text clarity ($B = .038$, $SE = .017$, $p = .031$), and between text clarity and picture clarity ($B = .854$, $SE = .361$, $p = .018$).

For illustration purposes, the procedures proposed by Dawson (2014) were followed. The procedures derived slopes and significance statistics from the covariance matrix of the regression model. For the two categorical variables (picture and text ambiguity) low values were set at 0 and high values were set at 1. For sociosexuality, the low and high values were set at two standard deviations below and above the mean respectively. As Figure IV illustrates, when product pictures were clear (held constant), the effect of sociosexuality on relative product preference was significantly weaker when text was blurred (line 3: *Slope* = -.034, $t_{\text{simple slope}}$ = -2.615, $p_{\text{simple slope}}$ = .009) compared to when text was clear (line 4: *Slope* = -.072, $t_{\text{simple slope}}$ = -6.197, $p_{\text{simple slope}}$ < .001; *Slope Difference* = .038, *t* = 2.179, *p* = .030, 95% CI [.004, 072]). When text descriptions were clear (i.e., easy to read), the effect of sociosexuality on relative product preference was significantly weaker when pictures were blurred (line 2 *Slope* = -.015, $t_{\text{simple slope}}$ = -1.268, $p_{\text{simple slope}}$ = .205) compared to when pictures were clear (line 4: *Slope* = -.072, $t_{\text{simple slope}}$ = -6.197, $p_{\text{simple slope}}$ < .001; *Slope Difference* = .038, *t* = 2.179, *p* = .030, 95% CI [.004, 072]).

[Insert FIGURE IV about here]

All the models were also run with age, gender, product familiarity and experience as covariates; however, no significant effect was observed for any of the covariates.

The results of Study 3 provided support for H6.

STUDY 4

Study 4 sought to examine the effect of the ovulatory cycle, as a physiological source of variance in mating motives, on relative preference for products superior in form versus function in female consumers (H1c). In addition, Study 4 assessed the moderating role of sociosexuality (H4) in the effect of ovulatory cycle on choice. Women's product choices were examined in the same three categories used in the earlier studies: cookware, office chairs, and space heaters.

Participants and Design

Sixty-eight women aged between 19 and 50 who met fertility estimation criteria were recruited from MTurk (M_{age} = 34.60, Sd = 7.018, 100% female). The sample size rules of thumb proposed by VanVoorhis and Morgan (2007) for regression analysis were consulted for sample size estimations of this research. A series of qualifications were used for recruiting respondents on MTurk to improve the quality and generalizability of the responses. Only *master workers* were hired. Master workers are those who have shown exceptional levels of accuracy and performance (Cheung et al. 2017). In addition, a minimum of 95% approval rate was set as a requirement to participate in the research. Another qualification applied was location; only US based MTurk workers participated in the study. Furthermore, custom qualifications (Buchheit et al. 2018) were created and applied to prevent MTurk workers from participating in more than one study. Finally, gender was used as a premium qualification; only females could participate in this study.

Each participant was paid $.75 directly. This amount was adjusted based on the length of the questionnaire completed in this study. In addition, an average of $1 per respondent was paid as a total fee for the qualifications applied.

Fertility Assessment. Ovulation days for each participant were calculated using the procedures recommended in previous research (Durante and Arsena 2015; Saad and Stenstrom 2012). Days 8-15 were considered high-fertility days. In addition to the calculation of the days in the cycle, a set of criteria was applied to make sure that participants' high versus low-fertility days in their menstrual cycle can be reliably estimated. Participants who had one or more of the following conditions were not included in the fertile category: (1) were not sure about the start date of the last menstrual cycle, (2) reported an irregular average length of their menstrual cycle (25-35 days range included only), (3) were taking or had taken some form of hormonal contraception within the last 90 days, and (4) reported being pregnant or breastfeeding. APPENDIX F provides the items used for fertility assessment.

Procedures

Each participant completed three product choice tasks. The choice tasks were the same as those used in Study 1. Participants were asked to indicate their product preference between two options in three categories: cookware, office chairs, and space heater. One option was superior in form whereas the other option was superior in function. For each product pair, participants were asked to indicate their level of familiarity and experience with the category. Also, sociosexuality was measured using the SOR-R (Penke and Asendorpf 2008). Finally, fertility was measured using the fertility assessment scale (Durante et al. 2014) as described earlier.

Results and Conclusion

A linear regression analysis with fertility (dummy coded *high* = 1 and *low* = 0) and sociosexuality (mean-centered) along with their interaction term as the independent variables and relative product preference (1-7 scale; higher scores indicating preference for products superior

in function) as the dependent variable was conducted. The direct effect of fertility on product preference was significant in the model (B = -1.658, SE = .393; t = -4.215, $p < .001$), suggesting that female consumers in the fertile phase of their ovulation cycle were more likely to prefer the product superior in form than those not in the fertile phase. In addition, the results also indicated a significant direct effect of sociosexuality on preference (B = -.074, SE = .011; t = -6.543, $p < .001$), replicating the findings of S1 and S2. The interaction effect of fertility and sociosexuality was not significant (B = .006, SE = .024; t = .258, p = .796).

The model was also run with age, gender, product familiarity and experience as covariates; however, no significant effect was observed for any of the covariates.

The findings of Study 4 provide further support for the central hypothesis (H1) of the research. Specifically, H1c was supported in Study 4. Together with the findings of Study 1 and Study 3, there was converging evidence that mating motives have a significant impact on preference for products superior in form versus product superior in function whether mating motives were operationalized contextually (S1), chronically (S2), or physiologically (S4).

However, the hypothesized interactive effect between fertility and sociosexuality was not observed; Study 4 failed to support H4. One possible explanation is that for sociosexually casual women, the additional variance in the tendency for reliance on form versus function as a result of fertility could be simply statistically marginal because of the strength of the effect of sociosexuality. This could be true despite the direct effect of fertility being significant itself.

STUDY 5

In Study 5, the aim was to provide further evidence for the effect of mating motives on product choice by examining the congruence between the motivational state of participants and

the decision strategy used in the product choice tasks. It could be argued that if mating motives indeed influence the relative reliance on form versus function in product choice and evaluation, then there should be an association between the strategy-mindset fit (i.e., the extent that a product choice strategy is congruent with the motivational state resulting from a mating mindset) and consumers' valuation of the preferred product. This value transfer effect from choice strategy congruence to such product valuation indicators as willingness to pay is consistent with past research (Higgins et al. 2003).Therefore, the hypothesis in this experiment was that consumers with a committed mating motive would have a less positive valuation of their selected product when they were directed to make a decision based on form instead of function whereas those with a casual mating motive would indicate less positive product valuation when they were directed to make a decision based on function instead of form (H5).

Participants and Design

One hundred ten participants were recruited from MTurk for this experiment (M_{age} = 35.74, *SD* = 10.834, 33.7% female). Each response included three product preferences for a total sample size of 330 cases. Power analysis and sample size calculations proposed by Cohen (1991) for a desired minimum power of .80, $\alpha = .05$, df = 2, and medium effect sizes (.5 suggested by Cohen) were consulted in sample size estimations in this research.

A series of qualifications were used for recruiting respondents on MTurk to improve the quality and generalizability of the responses. Only *master workers* were hired. Master workers are those who have shown exceptional levels of accuracy and performance (Cheung et al. 2017). In addition, a minimum of 95% approval rate was set as a requirement to participate in the research. Another qualification applied was location; only US based MTurk workers participated

in the study. Furthermore, custom qualifications (Buchheit et al. 2018) were created and applied to prevent MTurk workers from participating in more than one study.

Each participant was paid $.65 directly. This amount was adjusted based on the length of the questionnaire completed in this study. In addition, an average of $.50 per respondent was paid as a total fee for the qualifications applied.

The experiment had the following four between-subject conditions: 2 (mating motive: casual vs. committed) × 2 (choice strategy: form-based vs. function-based).

Procedures

The overall procedures resembled those used in Study 1 with some modifications. First, after participants read the mating manipulations, they were given the same product choice stimuli used in the other studies of this research. However, unlike the other experiments, Study 5 instructed participants to pursue a specific choice strategy. As done in an earlier pretest, half of the participants were asked to make product decisions based on how the products looked while the other half were instructed to make their choices based on how they thought the products would function. This method of inducing choice strategies was adopted from previous research (Chang and Pham 2013; Hong and Chang 2015). In addition, participants were asked to indicate their willingness to pay (WTP) by deciding where they thought each product fell on the price range of that product category. The details of how WTP was measured will be explained shortly.

Second, the product choice stimuli were modified for the current experiment such that one option was obviously superior regardless of the decision strategy. This was done so that the product valuations could be comparable among all participants. The dependent measure in this experiment was relative WTP as a function of the congruence between mating motivational state and choice strategy (the IVs) rather than the relative preference for options superior in form

versus function, as was the case in the previous experiments. For each product category, the same six attributes were used to describe the two options. However, in all the three paired-product tasks, the function attribute descriptions of the two products were swapped so that in the new product pair, one option was superior in all the six attributes (Hong and Chang 2015). In short, one option (the one superior in form in the previous experiments) beat the other in all the six attributes, making it the obvious preference. The modified product choice task stimuli are provided in APPENDIX G.

Product Valuation. The traditional method of asking participants to indicate their willingness to pay (WTP) as a standalone dollar amount is prone to biases stemming from factors such as participants' familiarity with and interest in a specific product category (Breidert et al. 2006) or anchoring effects (Simonson and Drolet 2004). Thus, in this experiment, a relative measure of WTP was adopted from previous research (e.g., see Chernev 2003; Karmarkar et al. 2015). After making a product choice based on one of the two instructed strategies explained earlier in this section, participants were asked to indicate their WTP by deciding where they thought each product fell on the price range of that product category. The price ranges provided were based on real prices of similar product on the market. Participants indicated their WTP by entering a dollar value from the price range provided. The ratio of the entered price to the mid-point price in the range was used as a measure for WTP. This relative WTP measure reduced the possibility of meaningless outliers and worked as a logical and relevant frame of price reference.

Finally, the same reliance mode index used in experiments 3 and 4 was adopted in the current study as a manipulation check for choice strategy. After respondents indicated their product preferences, they were given the reliance mode items for each product category. They were asked indicate the level of importance (1 = *not important at all*, 7 = *very important*) they

placed on the different form or function attributes by responding to statements such as "color combination was an important factor in my product choice" or "energy efficiency was an important factor in my product choice." The details of the reliance mode index items and calculations were similar to those used in Study 3 and Study 4. More details are provided in APPENDIX E.

Results and Conclusion

To make sure the respondents were paying attention to the experimental stimuli, 12 respondents who did not indicate a preference for the clearly superior product (i.e., relative product preference scores > 4) were excluded from the analysis. The final analysis included 98 participants with a total of 294 product preference ratings.

Manipulation Check. First, an analysis was conducted to ensure the effectiveness of the product choice strategy manipulations. Two choice strategy indices were formed based on the eight reliance mode items: (1) a form-based choice strategy index calculated by averaging the four form related items (α = .729), and (2) a function-based choice strategy index calculated by averaging the four function related items (α = .843). A 2 (mating motives) × 2 (instructed choice strategy) ANOVA with the form-focused strategy index as the DV yielded a significant direct effect of instructed choice strategy ($F(1, 293) = 30.758$, $p < .001$) such that, indicated by a follow-up t-test, respondents directed to pursue a form-based strategy exhibited higher reliance on form (M = 5.431, SD = 1.084) than those directed to adopt a function-based strategy (M = 4.720, SD = 1.155; *Mean Difference* = .711, $t(292) = 5.434$, $p < .001$). The effect of mating manipulation ($F(1, 293) = 1.810$, $p = .180$) on reliance index was insignificant in the model.

Also, a similar ANOVA test with the function-based strategy index as the DV revealed a significant direct effect of choice strategy ($F(1, 293) = 5.123$, $p = .024$) such that, indicated by a

follow-up t-test, respondents instructed to apply a function-based strategy demonstrated greater reliance on function (M = 5.250, SD = 1.107) than those directed to follow a form-based strategy (M = 4.883, SD = 1.590; *Mean Difference* = - .367, t (292) = - 2.310, p = .022). The effect of mating manipulation (F(1, 293) = .283, p = .595) on reliance index was insignificant in the model.

Willingness to Pay. The main hypothesis of that study was that a form-focused choice strategy should be congruent with a casual mating motive, whereas a function-focused choice strategy should be congruent with a committed mating motive. A congruent choice should result in more positive valuations of the preferred product and hence a higher willingness to pay for the product (H5). To test the hypothesis, a 2 (mating motives) × 2 (choice strategy) ANOVA with respondents' relative WTP as the DV was conducted.

The results revealed that while, as expected, the direct effect of both strategy type (F(1, 293) = 1.325, p = .251) and mating motive (F(1,293) = .053, p = .334) on relative WTP were insignificant, the interactive effect of the two factors was indeed significant (F(1,293) = 38.514, p < .001). The results of post-hoc mean comparisons showed that respondents with a casual mating motive were willing to spend more on their product choices when they were based on form (M = 1.013, SD = .258) than when they were based on function (M = .808, SD = .197; *Mean Difference* = .205 , p < .001). Participants with a committed mating motive exhibited the opposite effect; they indicated higher willingness to pay when the product choices were made based on function (M = 1.008, SD = .241) than when they were made based on form (M = .868 , SD = .255 ; *Mean Difference* = .141 , p = .002). All the models were also run with age, gender, product familiarity and experience as covariates; however, no significant effect was observed for any of the covariates. The results provided support for the hypothesis of this study (H5) that a

form-focused choice strategy is more congruent with a casual mating motive while a function-focused strategy is more aligned with a committed mating motive.

[Insert FIGURE V about here]

IV. CONCLUSION

General Discussion

This research examined the effect of mating motives on form-based versus function-based product choice. In five experiments employing different operationalizations of mating motives (contextual priming in studies 1 and 5, chronic mating motives using sociosexuality measures in studies 2 and 3, and physiological using fertility assessments in Study 4), convergent evidence was provided for the hypothesis that consumers with a casual mating motive are more likely to rely on form, whereas consumers with a committed mating motive are more likely to rely on function in making product evaluations and choice. In addition, it was demonstrated that the observed effects are moderated by the clarity of form and function related information cues (Study 3) and the fit between type of mating motive and choice strategy used (Study 5).

Study 1 revealed that participants primed with a casual (committed) mating mindset were more likely to prefer a product option superior in form (function) attributes. The results provide initial support for central hypothesis of this research (H1) that consumers with a casual mating motive rely more on form in product decision making whereas consumers with a committed mating motive rely more on function. Specially, this study illustrated the effect of contextual mating motive variation, through priming either a casual or committed mating mindset, on reliance on form versus function (H1a).

The findings of Study 1 were replicated in Study 2 by examining a chronic rather than induced source of mating motive variation in consumers. Respondents' sociosexuality was measured and used as the main independent variable in Study 2. It was found that participants with a chronic casual mating motive (i.e., higher sociosexuality scores) were more likely to

prefer product choices superior in form attributes, while those with a chronic committed mating motive (i.e., lower sociosexuality scores) were more likely to prefer product choices superior in function attributes (H1b). Additionally, respondents with casual sociosexuality reported a higher reliance on form than function compared to respondents with committed sociosexuality. More importantly, the results of the mediation analysis indicated that the observed effect of sociosexuality on respondents' relative preference was mediated by reliance on form versus function in product choice. This provides support for the hypothesis that consumers with casual sociosexuality tend to rely more on form cues in product choice, whereas consumers with committed sociosexuality tend to rely more on function (H2). Moreover, the analysis demonstrated that the effect of sociosexuality on reliance on form versus function is independent of the effect of construal levels.

Study 3 provided additional support for the mechanism through which consumers with different mating motives base their product choices on form versus function. In experiment 2, it was demonstrated that differential reliance on form versus function cues is the underlying mechanism for consumers' preference for products superior in form versus function. In the current study, the clarity of presenting form- versus function-related information was manipulated to further support the mediating role of reliance on form versus function in product preference. The results showed that for consumers with casual mating orientation, relative preference for options superior in form decreased when form-related information was ambiguous. Similarly, for consumers with a committed mating orientation, relative preference for options superior in function decreased when function-related information was ambiguous (H6). This, along with the findings of Study 2, suggests that when form-related information is presented ambiguously, sociosexually casual consumers' reliance on form decreases, whereas

when function-related (e.g., text) information is presented ambiguously, sociosexually committed consumers' reliance on function weakens when; thus the differential preference for products superior in form and function observed in the current experiment.

In Study 4, the objective was to provide further support for the central hypothesis of this research (H1). By examining the effect of ovulation, as a biological source of variance in mating motives, Study 4 provided evidence that a mating mode makes consumers more likely to prefer products superior in form versus function (H1c). Specifically, women who were in the high-fertility days of the menstrual cycles tended to prefer products superior in form than function more than did women in the low-fertility days. In addition, this study replicated the direct effect sociosexuality on relative preference as well. However, the hypothesized interactive effect of fertility and sociosexuality on product preference (H4) was not observed in the study. A possible explanation could be that at high levels of sociosexuality, the additional variance in the tendency for reliance on form versus function as a function of fertility could be simply statistically marginal because of the strength of the effect of sociosexuality. This could be true despite the direct effect of fertility being significant itself.

By instructing respondents to pursue a form-based versus a function-based strategy and illustrating an alignment effect between mating motives and choice strategy on product valuation, Study 5 provided further support for the role of mating motives on reliance on form versus function in product choice. In addition, the findings highlighted a secondary effect: Congruence between a consumer's mating motive and the choice strategy would result in more positive choice valuation.

Theoretical Contributions

The current research contributes to the extant consumer behavior literature on product choice and evaluations in multiple ways. First, this research identifies and introduces mating motives as an antecedent in reliance on form versus function in consumer decision making. Second, the findings illustrate a favorable downstream effect of applying a form-based versus function-based choice strategy, demonstrating about 20% increase in willingness to pay for a preferred product when the strategy is congruent with consumers' mating mindset (function-based strategy under a committed mating motive, form-based strategy under a casual mating motive) compared to when it is not congruent (form-based strategy under a committed mating motive, function-based strategy under a casual mating motive; Study 5). This is consistent with a body of research documenting the positive effects of strategy-mindset congruence on product valuations and choice (e.g., Cornelis et al. 2012; Etkin and Ratner 2013; Higgins et al. 2003) . Third, the mechanism through which fundamental mating motives can have carry-over effects in the context of consumer decision making is proposed and examined. Previous research in psychology has documented the role of physical versus non-physical cues in mate selection (Lee 2015; Wlodarski 2015) and research in consumer behavior has examined the effect of different form and function cues in decision making (Lee 2013; Lee and Milewicz 2014). The current research combines and extends these findings by conceptualization and examining reliance on form versus function as an outcome of mating motives.

Managerial Implications

This research offers practical implications for marketers. In the age of highly customized marketing communication and offerings, differences in mating motives could be used by marketing practitioner as a reliable basis for segmentation. Sociosexuality, as an indicator of

chronic mating motives, is relatively easy to measure and effective in consumer marketing. The findings of this research suggest that for sociosexuality casual consumers, marketers should emphasize form cues in product design and integrated marketing communication. On the other hand, for sociosexually committed consumers, function-related cues can be more effective in product design and branding. In addition, the current work implies that for female consumers, marketing practitioners can use a reliable biological precursor of mating motives, changes in the menstrual cycle, to customize marketing messages and offerings. The number of women using mobile apps to track their menstrual cycles has been steadily increasing (Epstein et al. 2017). During the fertile days of their menstrual cycle, female consumers should have more favorable responses to form-based marketing cues. Another managerial implication of this work concerns the design of contextual cues to influence consumer decision making. It was shown that priming consumers with committed versus casual mating motives triggers differential reliance on function versus form cues. Marketers can benefit from this in two ways. First, if one type of product attributes is superior to the other (e.g., form attributes superior to function attributes), consumers' reliance on the desired type of attribute (i.e., form in this case) could be increased through contextual priming. Second, if neither form nor function product attributes are highly differentiated, positive product valuation can be induced by encouraging a specific decision-making strategy that matches the primed mating motive.

Limitations and Suggestions for Future Research

One limitation of the research is that form and function evaluations are assumed to be independent, and more importantly separable. Even though there is compelling evidence confirming the existence and distinction of form and function dimensions in product choice (Hoegg and Alba 2011; Sylcott et al. 2013), the exact mechanisms for consumers' perception of

form and function are unknow (Noseworthy and Trudel 2011). Therefore, future research should look more closely at operationalizing form and function, propose new methods for rating form and function attributes, and more importantly examine the interactive effect of form and function.

Another limitation of the current research is that in the product choice task, all the product choices were presented to consumers as digital pictures and text, therefore, eliminating the possibility of engaging any non-visual form perception mechanism such as haptic or olfactory. Future research can expand on the findings of the current work by exposing consumers to actual products and engage multiple senses. A similar drawback exists for the priming effects. In the current work, priming was done through reading and processing text. The literature suggests the robustness of using olfactory, auditory, and haptic primes in mating motives (Saad 2013b). Future experiments can be designed to investigate these antecedents in reliance on form versus function.

In conceptualizing the general relationships in the current research, it was hypothesized that the effect of fertility on preference for products superior in form versus function should be moderated by sociosexuality. In the results of Study 4, however, this moderation effect was not observed. A possible explanation could be that at high levels of sociosexuality, the additional variance in the tendency for reliance on form versus function as a function of fertility could be simply statistically marginal because of the strength of the effect of sociosexuality. This could be true despite the direct effect of fertility being significant itself. A helpful avenue for future research is to delve deeper into this interaction. It is possible that the interaction between fertility and sociosexuality follows a nonlinear pattern. Future research can apply quadratic models to reexamine the effect.

Fertility calculations were measured using a self-reported survey in the current work. Future research can benefit from more reliable data collection methods be it a tracking app data or hormonal testing.

Even though the use of three different product categories allows the generalizability of the findings of this work, there are still many product categories with unique form and function aspects. Future research should explore the implications of form and function reliance in new product areas.

Finally, to enhance the generativity of the findings, new sampling frames could be considered in future research. For example, participants of this research were all located in the United States; future work can explore international markets and consumers.

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FIGURES

FIGURE I. CONCEPTUAL FRAMEWORK, HYPOTHESES (H), AND CORRESPONDING STUDIES (S) OF THE DISSERTATION

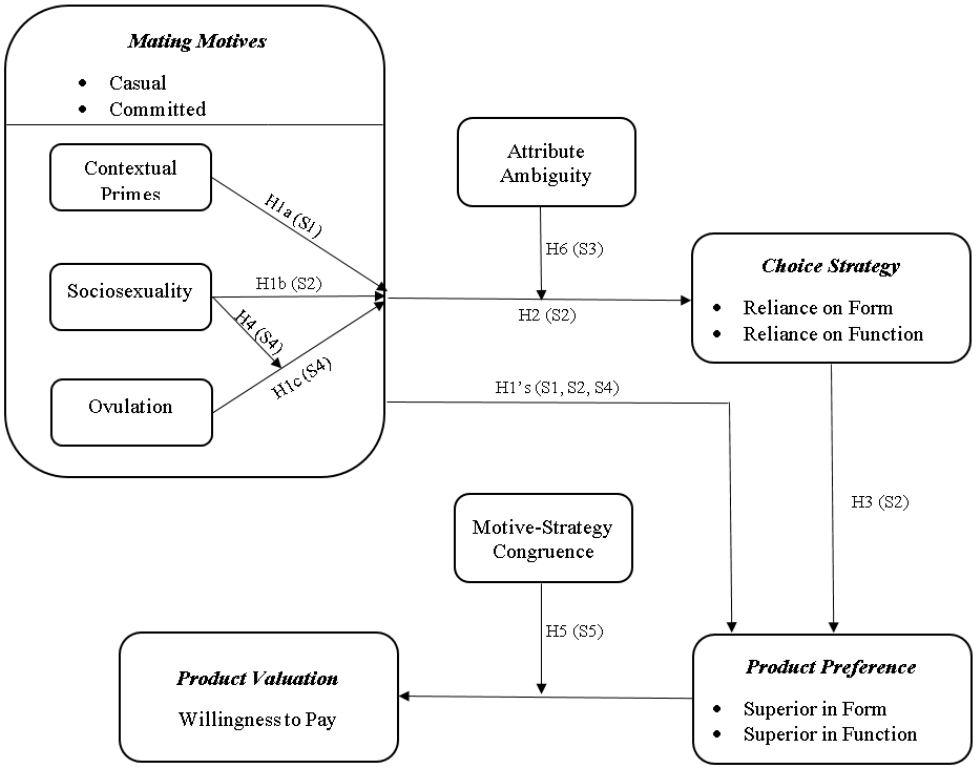


FIGURE II. NORMAL FORMAT (LEFT) VERSUS DIFFICULT-TO-READ FORMAT (RIGHT) OF PRESENTING PRODUCT ATTRIBUTES

- Color: white
- Nearly 100% efficient
- 9,000-BTU radiant heater
- Plastic wire guard
- For spaces up to 200 square feet
- Simple polymer base

- Color: white
- Nearly 100% efficient
- 9,000-BTU radiant heater
- Plastic wire guard
- For spaces up to 200 square feet
- Simple polymer base

FIGURE III. EXAMPLES OF NORMAL (LEFT) VERSUS BLUURED (RIGHT) PRODUCT PICTURES

FIGURE IV. INTERACTION OF SOCIOSEXUALITY AND INFORMATION AMBIGUITY TYPE

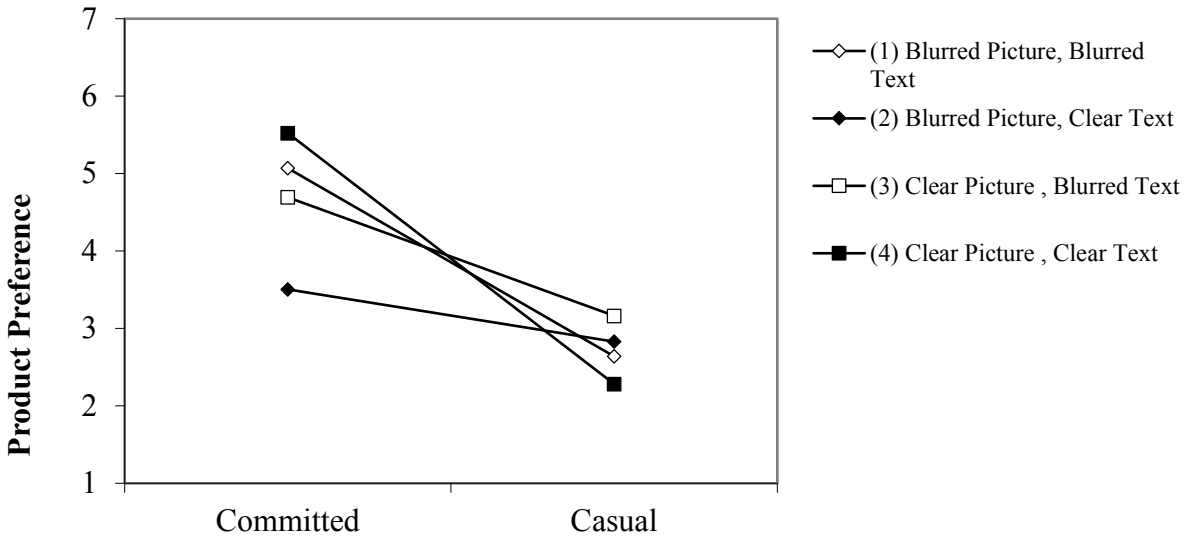
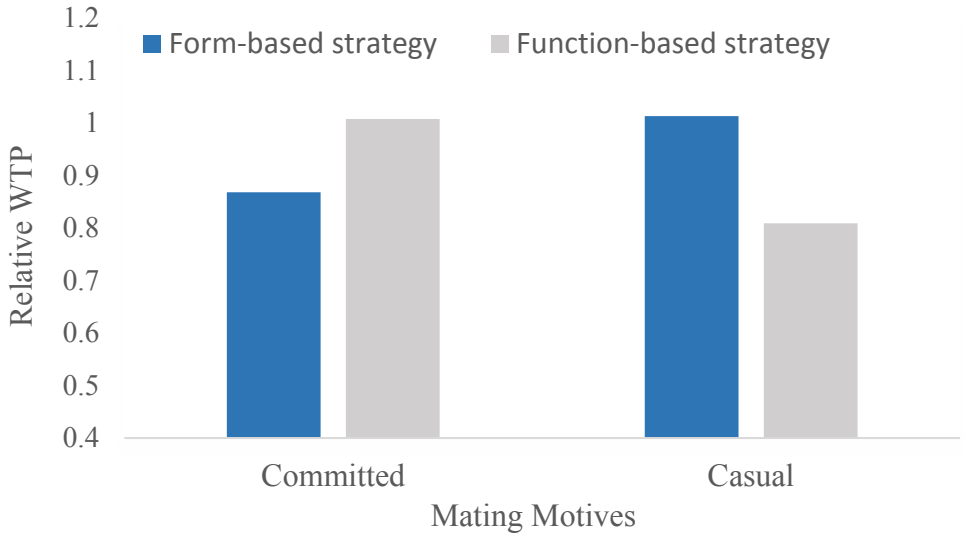


FIGURE V. THE EFFECT OF STRATEGY TYPE AND MATING MOTIVE ON WILLINGNESS TO PAY (STUDY 5)



APPENDICES

APPENDIX A: MATING MOTIVE MANIPULATIONS

(adapted from Griskevicius et al. 2006a)

Casual Encounter

Imagine that you are on the last day of your vacation on an exotic island. You and your friends will be flying out tomorrow. You meet someone new - a person who you haven't seen before and are not likely to see again. You are physically attracted to this person. You think he/she is very sexy. You begin talking with the person, and you find that conversation is easy and pleasant. Before you know it, you have been talking for hours. You decide to spend the afternoon together, and soon afternoon turns to evening. The two of you have a romantic candlelit dinner at a restaurant overlooking the ocean. Each time you look into the person's eyes, you feel very excited and thrilled even though you don't really know the person. When you finish dinner, the two of you walk as your bodies slightly touch. You kiss gently at first, but soon you find yourselves kissing passionately on the moonlit beach.

Committed Relationship

Imagine that you are just waking up from a good night's sleep. You turn over in your bed and you see your partner. You are not surprised, because this person has been your constant companion for the last five years. You go to sleep together every night, and two of you wake up next to each other every morning. As you look at the person, you feel content, and you think about how nice it is that you are still attracted to each other after the amount of time you've been together. After you both are awake, you go through your morning routines and get ready for the day. You each grab a quick breakfast from the kitchen. On your way out of the door, you say to

the partner: “Instead of eating at home tonight, do you want to go out and grab dinner sweetheart?” Your partner says yes and you head off for work/school. After your day of work/school, you are at a restaurant for dinner. Conversation comes easy, as it often does at the dinner table at home. After dinner, you drive home together. Later that night, as you prepare to go to bed, you gently kiss goodnight.

Control Scenario

Imagine it is evening and you are spending time at home watching a TV show. The phone rings and you answer. It is a same-sex friend you hang out with every now and then. The friend asks if you want to go see a new movie that was recently released. You ask for the show time and find out that you will have enough time to get dressed and eat something before you leave. The two of you decide to meet at 8:00 pm in front of the motive theater. You say goodbye and hang up. You go to the fridge and grab a salad plate that you had made earlier. You eat the salad while watching the rest of the show. After you finish eating, you brush your teeth. Then, you get dressed and leave your apartment to meet with your friend. The weather is pleasant outside, so you decide to walk instead of drive. You have more than enough time and the theatre is 10 minutes away. You check what actors play in the movie using your phone. You think the movie must be a good one.

APPENDIX B: PRODUCT CHOUCE TASKS STIMULI

Cookware Set A

- Shiny copper-like exterior
- Hand wash with care
- Coated interior
- Non-induction cooking only
- Temperature resistant up to 350 °F
- New delicately designed metal handles

Cookware Set B

- Black exterior
- Dishwasher durable
- Black interior
- Induction compatible
- Temperature resistant up to 600 °F
- Sturdy plastic handles

Office Chair A

- Black
- Patented 120° recliner
- Double paddle control
- Nylon mesh
- Black base
- Weight capacity 350 pounds

Office Chair B

- White
- 65° recliner
- Single paddle control
- Leather upholstery
- Silver base
- Weight capacity 250 pounds

Space Heater A

- Silver
- Energy efficiency: 85%
- 6,000-BTU radiant heater
- Pewter looking ventilation guard
- For spaces up to 140 square feet
- Sleek adjustment controls

Space Heater B

- Black
- Nearly 100% efficient
- 9,000-BTU radiant heater
- Metal wire guard
- For spaces up to 200 square feet
- Simple adjustment controls

APPENDIX C: SOCIOSEXULAITY SCALE

The Revised Sociosexual Orientation Inventory (SOI–R) (adapted from Penke and Asendorpf 2008)

Please respond honestly to the following questions:

1. With how many different partners have you had sex within the past 12 months?

0 1 2 3 4 5-6 7-9 10-19 20 or more

2. With how many different partners have you had sexual intercourse on one and only one occasion?

0 1 2 3 4 5-6 7-9 10-19 20 or more

3. With how many different partners have you had sexual intercourse without having an interest in a long-term committed relationship with this person?

0 1 2 3 4 5-6 7-9 10-19 20 or more

4. Sex without love is OK.

1 2 3 4 5 6 7 8 9
strongly disagree strongly agree

5. I can imagine myself being comfortable and enjoying "casual" sex with different partners.

1 2 3 4 5 6 7 8 9
strongly disagree strongly agree

6. I do *not* want to have sex with a person until I am sure that we will have a long-term, serious relationship.

1 2 3 4 5 6 7 8 9
strongly disagree strongly agree

7. How often do you have fantasies about having sex with someone with whom you do not have a committed romantic relationship?

1. never
2. very seldom
3. about once every two or three months
4. about once a month
5. about once every two weeks
6. about once a week
7. several times per week
8. nearly every day
9. at least once a day

8. How often do you experience sexual arousal when you are in contact with someone with whom you do not have a committed romantic relationship?

1. never
2. very seldom
3. about once every two or three months
4. about once a month
5. about once every two weeks
6. about once a week
7. several times per week
8. nearly every day
9. at least once a day

9. In everyday life, how often do you have spontaneous fantasies about having sex with someone you have just met?

1. never
2. very seldom
3. about once every two or three months
4. about once a month
5. about once every two weeks
6. about once a week
7. several times per week
8. nearly every day
9. at least once a day

Items 1-3 should be coded as 0 = 1, 1 = 2, …, 10-19 = 8, 20 or more = 9; they can be aggregated to form the Behavior facet. After item 6 is reverse coded, items 4-6 can be aggregated to form

the Attitude facet. Aggregating items 7-9 results in the Desire facet. Finally, all nine items can be aggregated as the total score of global sociosexual orientation.

APPENDIX D: CONSTRUAL LEVEL SCALE

Shortened Behavior Identification Form (BIF) (adapted fromSlepian et al. 2015)

We are interested in your personal preferences for how a number of different behaviors should he described. On the following section you will find several different behaviors listed. After each behavior will be two choices of different ways in which the behavior might he identified.

Here is an example:

- Picking an apple
    a) Getting something to eat
    b) Pulling an apple off a branch

Your task is to choose the option, a or b, that best describes the behavior for you. Of course, there are no right or wrong answers. People simply differ in their preferences for the different behavior descriptions, and we are interested in your personal preferences.

1. Picking an apple
    a. Getting something to eat
    b. Pulling an apple off a branch
2. Painting a room
    a. Applying brush strokes
    b. Making the room look fresh
3. Locking a door
    Putting a key in the lock
    Securing the house
4. Voting
    a. Influencing the election
    b. Marking a ballot
5. Filling out a personality test
    a. Answering questions
    b. Revealing what you're like
6. Taking a test
    a. Answering questions
    b. Showing one's knowledge

7. Greeting someone
    a. Saying hello
    b. Showing friendliness
8. Resisting temptation
    a. Saying "no"
    b. Showing moral courage
9. Traveling by car
    a. Following a map
    b. Seeing countryside
10. Talking to a child
    a. Teaching a child something
    b. Using simple words

The scale has been shown to have high internal consistency ($\alpha = .85$). High scores indicate higher, or more abstract, construal level.

APPENDIX E: RELIANCE INDICES

(based on the method used in Yoon et al. 2012)

1 2 3 4 5 6 7
Not important at all very important

Please indicate how important each of these factors was in your decision to choose between the two options. (1 = *not important at all*, 7 = *very important*)

Reliance Index Items for Cookware Sets

1. Exterior color and design 1 2 3 4 5 6 7
2. Washing instructions 1 2 3 4 5 6 7
3. Interior finish and design 1 2 3 4 5 6 7
4. Induction compatibility 1 2 3 4 5 6 7
5. Temperature resistance 1 2 3 4 5 6 7
6. Handle material and design 1 2 3 4 5 6 7
7. How the product looks 1 2 3 4 5 6 7
8. How the product would function
   1 2 3 4 5 6 7

Reliance Index Items for Office Chairs

1. Color 1 2 3 4 5 6 7
2. Recliner 1 2 3 4 5 6 7
3. Paddle control 1 2 3 4 5 6 7
4. Seat fabric 1 2 3 4 5 6 7
5. Base color 1 2 3 4 5 6 7
6. Weight capacity 1 2 3 4 5 6 7
7. How the product looks 1 2 3 4 5 6 7
8. How the product would function
   1 2 3 4 5 6 7

Reliance Index Items for Space Heaters

1. Color combination 1 2 3 4 5 6 7
2. Energy efficiency 1 2 3 4 5 6 7
3. Power capacity 1 2 3 4 5 6 7
4. Ventilation guard material and finish
   1 2 3 4 5 6 7
5. Square footage 1 2 3 4 5 6 7
6. Adjustment controls design 1 2 3 4 5 6 7
7. How the product looks 1 2 3 4 5 6 7
8. How the product would function
   1 2 3 4 5 6 7

APPENDIX F: FERTILITY ASSESSMENT

(adapted from Durante et al. 2014)

Instructions: Please answer the following questions. Keep in mind, your answers are completely ANONYMOUS, and you may skip any question without penalty.

1. Please indicate your gender:

____ Male ____ Female

(Only women are taken to the following questions):

2. Are you currently using an oral contraceptive (the "pill" or the "patch") or other hormonal contraceptive (Mirena, Depo-Provera, Norplant, Vaginal Ring)? Yes/No

3. If yes, please select the contraceptive that best matches what you are currently on?

A. The Pill B. The Patch C. Hormonal IUD (e.g., Mirena) D. Vaginal Ring E. Norplant F. Depo-Provera Shot G. Other

4. If you are not currently using oral or hormonal contraceptives, have you used them within the last 3 months? Yes/No

5. Are you currently pregnant or breastfeeding a child? Yes/No

Use a calendar for the following questions:

6. Please give your best estimate of the date on which you started your last period (please be as precise as possible). This date was probably within the last few weeks. Sometimes thinking of where you were when you started your last period helps. For instance, was it on a weekend? were you in class? was it during a football game? etc. …… (The calendar feature of Qualtrics has been used for this and other date questions for the online questionnaire.)

7. How sure are you about that date?

1 2 3 4 5 6 7 8 9

Not at all Somewhat Completely

8. Please give your best estimate of the date on which you started the period before your last period (please be as precise as possible). ……

9. How sure are you about that date?

1 2 3 4 5 6 7 8 9

Not at all Somewhat Completely

10. What is your best estimate of the date on which you expect to start your next period (please be as precise as possible)? ……

11. How sure are you about that date?

1 2 3 4 5 6 7 8 9

Not at all Somewhat Completely

12. How many days long are your menstrual cycles? (For most women, the range is between 25–35 days) Keep in mind this is the # of days from the start of one menstrual period to the start of the next menstrual period and NOT the length of your menstrual bleeding. ……

13. How sure are you about your menstrual cycle length?

1 2 3 4 5 6 7 8 9

Not at all Somewhat Completely

14. How well can you predict the date on which you will have another period? That is, how regular is your cycle?

1 2 3 4 5 6 7 8 9

Not at all Somewhat Completely

15. Have you been sick within the past few days? For instance, with the flu or other illness more serious than a common cold? Yes/No

16. To your knowledge, do you currently have or have you previously been diagnosed with an endocrine or hormonal disorder of any kind (e.g., overactive thyroid, polycystic ovarian syndrome, pituitary disorder)? Yes/No

17. To your knowledge, do you currently have a chronic or more serious illness such as cancer, diabetes, or a neurological disease or disorder? Yes/No

18. Are you currently taking any prescription medication? Yes/No

Days 8-15 are considered high-fertility days.

APPENDIX G: MODIFIED PRODUCT CHOICE TASK STIMULI (S5)

Cookware Set A

- Shiny copper-like exterior
- Dishwasher durable
- Coated interior
- Induction compatible
- Temperature resistant up to 600 °F
- New delicately designed metal handles

Cookware Set B

- Black exterior
- Hand wash with care
- Black interior
- Non-induction cooking only
- Temperature resistant up to 350 °F
- Sturdy plastic handles

Office Chair A

- Black
- 65° recliner
- Single paddle control
- Nylon mesh
- Black base
- Weight capacity 250 pounds

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APPENDIX H: INSTITUTIONAL REVIEW BOARD (IRB) APPROVAL

IRBNet ID: 909186-1

OLD DOMINION UNIVERSITY

OFFICE OF THE VICE PRESIDENT FOR RESEARCH

Physical Address
4111 Monarch Way, Suite 203
Norfolk, Virginia 23508
Mailing Address
Office of Research
1 Old Dominion University
Norfolk, Virginia 23529
Phone(757) 683-3460
Fax(757) 683-5902

DATE:	November 11, 2018
TO:	Yuping Liu-Thompkins
FROM:	Old Dominion University Business Human Subjects Review Committee
PROJECT TITLE:	[909186-1] THE INFLUENCE OF MATING MOTIVES ON RELIANCE ON FORM VERSUS FUCNTION IN PRODUCT CHOICE
REFERENCE #:	
SUBMISSION TYPE:	New Project
ACTION:	DETERMINATION OF EXEMPT STATUS
DECISION DATE:	December 1, 2018
REVIEW CATEGORY:	Exemption category # *[6.2]*

Thank you for your submission of New Project materials for this project. The Old Dominion University Business Human Subjects Review Committee has determined this project is EXEMPT FROM IRB REVIEW according to federal regulations.

We will retain a copy of this correspondence within our records.

If you have any questions, please contact Kenneth Yung at (757) 683-4048 or kyung@odu.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Old Dominion University Business Human Subjects Review Committee's records.

VITAE

SEYED HAMID ABBASSI HOSSEINI

Strome College of Business, Old Dominion University

Department of Marketing, Norfolk, VA

ACADEMIC POSITIONS

Fayetteville State University, North Carolina
Assistant Professor of Marketing, 2020-

Methodist University, North Carolina
Marketing Instructor, 2016-2020

EDUCATION

Old Dominion University
Ph.D. Business Administration (Marketing and International Business), 2020

University of Tehran
M.B.A. Marketing, 2011

Ferdowsi University
B.Sc. Metallurgical and Materials Engineering, 2008

RESEARCH INTERESTS

Marketing Analytics, Consumer Behavior, Evolutionary Psychology

SELECTED CONFERENCE PROCEEDINGS

Abbassi, Hamid, and Elmira Shahriari. "The Effect of Evolutionary Mating Cues on the Perception of Attractiveness in Celebrity Endorsement." In *Creating Marketing Magic and Innovative Future Marketing Trends*, pp. 213-224. Springer, Cham, 2017.

Shahriari, Elmira and **Hamid Abbassi**, "How Food Craving Drives Consumption of Healthy Foods: A Theoretical Framework Based on the Elaborated Intrusion Theory." In *the Proceedings of the American Marketing Association 28*, pp. A3-A11. AMA, 2017.