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Hormonal Influence on Female Consumption of Revealing and Sexy Fashion Products

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HORMONAL INFLUENCE ON FEMALE CONSUMPTION OF REVEALING AND SEXY
FASHION PRODUCTS

A Dissertation

by

NGOC B. PHAM

Submitted to the Graduate College of
The University of Texas Rio Grande Valley
In partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

December 2017

Major Subject: Business Administration

HORMONAL INFLUENCE ON FEMALE CONSUMPTION OF REVEALING AND SEXY
FASHION PRODUCTS

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December 2017

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ABSTRACT

Pham, Ngoc B., Hormonal Influence on Female Consumption of Sexy and Revealing Fashion Products. Doctor of Philosophy (Ph.D.), December 2017, 101 pp., 41 tables, 2 figures, 93 titles, 4 appendices.

This doctoral dissertation addresses the biological and psychological components of consumers' decision-making processes. Particularly, it investigates the impact of female sex hormones on women's consumption behaviors regarding fashion products. These hormones reach peak level when women are near ovulation, and this research examines how these hormones, when at peak level, influence women's attitudes and purchase intention towards sexy and revealing fashion products.

The research is based on two theoretical frameworks: ovulatory shift hypothesis (OSH) and theory of reasoned action (TRA). Specifically, the OSH, based on the female ovulatory cycle, postulates that women change their sexual preferences for men with perceived good biological indicators of genetic fitness when comparing high and low fertility days of the cycle. Moreover, women near ovulation may also exhibit increased mating interest and higher motivation to act in ways that would help secure a desirable partner. The theory of reasoned action sheds light on the indirect relationship between women's ovulatory period and their choice of apparel with attitude as a mediator. A within-subject survey design was used to examine the proposed phenomenon. Women were invited to take two ovulation tests using the over-the counter urine applicator test Clearblue ® Easy Ovulation Test Kit. Each urine test was

followed by a survey. Subjects were recruited from a large women's hospital in Vietnam for the pre-test. For the main study, subjects were recruited from three large hospitals in the Texas Medical Center (TMC) in Houston, Texas, U.S.

Consistent with the OSH, the findings suggest that when near ovulation, women show more favorable attitudes and stronger purchase intentions toward sexy and revealing fashion products. As predicted by TRA, attitudes toward sexy and revealing fashion products mediate the relationship between ovulation and purchase intention. The results of this study add to related streams of research that suggest hormonal fluctuations influence consumers' attitudes and purchase intentions. For managers, the results provide suggestions on how to approach female consumers with sexy and revealing appearance-related products more effectively.

DEDICATION

I dedicate this dissertation to the members of my family — my father, mother, brother, and pets—who loved and supported me unconditionally during this long and challenging journey. Their encouragement and support has enabled me to persist through difficult times, work hard even when I didn't feel like it, and bear without complaint the sacrifices I've had to make.

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CHAPTER I

INTRODUCTION

The application of human biology to help explain consumer behavior in marketing is a relatively new endeavor when compared to the ongoing application of psychology, sociology, and economics to marketing problems. One of these problems, marketing fashion and other appearance-related products to women, becomes less problematic when women's ovulatory cycle is considered. Women's hormonal changes during this cycle may influence female consumption patterns such as the preference for sexy and revealing fashions and other apparel products seen in this research. Recent studies show that a positive and significant relationship exists between peak fertility, fashion preferences, and the selection of sexy and revealing fashion products (e.g., Durante et al., 2008; 2011; Haselton et al., 2007). Saad and Gill (2000) were the first to propose that women's menstrual cycle and their consumer behavior may be related. It is unclear yet how peak fertility leads to a shift in women's preferences for revealing and sexy fashion products and whether this effect is direct or indirect. There is also a question regarding whether there are other important factors or traits that can account for women's choice of apparel. An interesting matter for further research would be to investigate whether Asian women are similar to their Western counterparts in regard to their fashion consumption tendencies. Gildersleeve, Haselton, and Fales (2014) have pointed out that the bulk of research on fashion

consumption has focused on young and educated Western women. Thus, there is a need for similar research on non-Western women and/or women from different educational levels and age groups.

The previous studies on women's fashion consumption have been limited to laboratory experiments. The design of these experiments has shown a positive and significant relationship between women's ovulation and their preference for sexy and revealing fashion products. However, because this finding is limited to a laboratory, a need exists to investigate this relationship in a broader setting with a survey design that enables an investigation of the moderating effects of some relevant psychographic characteristics—self-control and fashion consciousness—and key demographic factors on the relationship between ovulation and the choice of revealing and sexy fashion products.

This research aims to fill this gap by contributing a field study that will help marketers better understand the influence women's ovulatory cycles have on their attitudes towards revealing and sexy fashions and the subsequent effect of these attitudes on their purchase intention. Furthermore, this study emphasizes the moderating effects of self-control, fashion consciousness, and key demographic factors on the relationship between ovulation and women's attitudes and purchase intention toward sexy and fashion products. Consequently, the following three research questions were proposed:

RQ1: How do women's ovulatory cycles influence their attitudes toward revealing and sexy fashion products and, subsequently, their purchase intention regarding such products?

RQ2: What are the moderating effects of self-control and fashion consciousness on the relationship between ovulation and women's preference toward these products?

RQ3: What moderating effects do education, income, occupation (occupational formality), and age have on this relationship?

To answer these questions, research was conducted on 1) the influence of women's ovulation on their attitudes toward revealing, sexy fashions, and other appearance-related products, 2) the subsequent indirect influence of women's ovulation on their purchase intention, (3) the moderating effect of relevant women's psychological characteristics, and 4) the moderating effects of women's key demographic characteristics. The four objectives are briefly explained below.

The Influence of Women's Ovulation on Their Purchase Intention

A laboratory experiment study by Durante et al. (2011) has shown that when near peak fertility (the time around ovulation characterized by a spike in estrogen and luteinizing hormones), women display a high purchase tendency toward revealing and sexy clothing and that they may accent this apparel with other sensual accessories. Moreover, this study also suggested that ovulation motivates women to dress to impress because the hormonal changes associated with fertility heighten female sensitivity to same-sex competition (intra-sexual competition). In other words, highly fertile women are more motivated to use fashion to compete directly with attractive rivals than to catch the attention of ideal men. Other studies have also concluded that on fertile days, women dress in a more attractive and sexy manner (Grammer, Renninger, & Fischer, 2004; Haselton et al., 2007; Durante, Li, & Haselton, 2008).

The positive correlation between women's ovulation and their purchase intention toward revealing and sexy fashion products should be grounded on the assumption that hormonal

changes in women at peak fertility affect their attitudes toward this apparel, which in turn influences their purchase intention.

Faraji-Rad, Jazani, and Warlop (2013) suggested that when women are influenced by hormonal shifts as they near ovulation, they tend to experience an enhanced sensitivity to rewards that extend further than those related to mating. These may include food, psychoactive drugs and monetary rewards. In addition, women also show a heightened interest for variety in the rewards they seek. These researchers emphasize that women's desire for a greater variety of rewards does not encompass such non-rewards as non-hedonic food and may prompt women to seek rewards in a wide variety of reward domains.

Studies by Durante and Arsena (2014) also demonstrate that high fertility affects women's consumption behavior. They found that when women are at high fertility, they tend to choose a larger number of options from sets of consumer products than were apt to do at low fertility. This effect seems more pronounced among women in strong relationships. This research has a connection with that of Faraji-Rad, Jazani, and Warlop (2013), for they also found that an increase in fertility leads to variety-seeking behavior, albeit of a slightly different kind. They discovered that the desire for product variety is motivated by a desire for new options in men, which triggers a variety-seeking mindset.

This study proposes that attitude plays a mediating role in the relationship between women's ovulation and their purchase intention. The theory of reasoned action was employed to study this relationship. Four key demographic characteristics (age, income, education, and occupation/occupational formality) and two psychological traits (self-control and fashion consciousness) were examined to understand their moderating effects on the relationship between attitude and purchase intention toward revealing and sexy fashion products.

The Moderating Effect of Women's Psychological Characteristics: Fashion Consciousness and Self-Control

Fashion Consciousness

Fashion consciousness refers to the degree to which people interested in fashion will expend time and effort on fashion-related activities (Steven et al., 2004). Previous research suggests that an important difference exists in fashion consciousness between highly developed and less developed countries, as well as between the East and the West (Steven et al., 2004). Within the Western individualist culture, for instance, an individual is thought to be independent, autonomous, and separate from society (Kashima et al., 1995), and fashion enables a person to be perceived as unique among peers. Their Asian counterparts, on the other hand, typically prefer to wear clothing that facilitates acceptance by peers as conformity is privileged over the pursuit of pleasure. Within Eastern collectivist culture, a great emphasis is placed on (a) the views, needs, and goals of the community rather than those of the individual, (b) behavior that conforms to social norms and duty as defined by an in-group, and (c) beliefs shared by the community rather than beliefs that distinguish individuals from the in-group (Wheeler, Reis, and Bond, 1989).

Another important facet of fashion consciousness refers to a person's degree of involvement with a style of clothing (Gutman & Mills, 1982; Summers, 1970). According to O'Cass (2000), the more important the role fashion plays in women's lives, the greater their involvement with fashion will be. Generally, people are interested in clothing because it provides pleasure and helps them express their identity (Cardoso, Costa, & Novais, 2010; Naderi, 2013). It is not surprising, then, that fashion marketers heavily employ the basic evolutionary incentive,

sex, to satisfy customers' motivations for consuming fashion items and sustaining their attachment to them.

Self-control

A second psychological variable that may potentially moderate the relationship between ovulation and attitudes toward sexy and revealing fashion products is self-control. Self-control is the capacity to resist temptation, especially when it comes to impulsive purchases and other expenditures that are likely to be regretted later (Baumeister et al., 2008; Hoch & Lowenstein, 1991). It is assumed that the more self-control women have, the less likely they are to purchase expensive or revealing and sexy products.

The literature shows that both internal and external forces can control, facilitate, or impede performance of a behavior (Ajzen, 2002). Skill and willpower are the internal locus of control for the individual while task demands and the actions of others are the external forces (Ajzen, 1985). This research examined the concept of self-control to understand the moderating effect of females' self-control on their purchase intention. It is assumed that the more self-control women have, the less likely they will be to purchase expensive, revealing, and sexy fashion products.

The Moderating Effects of Women's Demographic Characteristics

Differences in age, occupation formality, education, and income may lead to differences in women's behaviors regarding preference and purchase intention for sexy and revealing products. The literature shows that for both teenage girls and adult women, clothing is intended to communicate to their age group. In particular, adult women feel it is important to dress

appropriately for their age, so they tend to avoid outfits that are too short, too tight, or too revealing (Klepp & Storm-Mathisen, 2005). Teenage girls, on the other hand, show a strong preference for tight-fitting outfits. Moreover, young girls may try to dress in a way that they may appear older, while adult women might dress to appear more youthful.

Nevertheless, age is not the only factor that can impact fashion preferences. Motherhood and work status, for instance, have a strong impact on women's dress. Short dresses on mothers and wives could make the women look desperate (Klepp & Storm-Mathisen, 2005). Women in committed relationships, unlike those in casual relationships, show distinctive choices toward revealing and sexy clothing. A dress code at work is also a key factor influencing how women dress. Businesswomen, for instance, are expected to dress professionally at work, thus those in higher managerial positions are often seen in formal outfits that help them look more authoritative. Business attire, which has many masculine components, includes straight skirts or trousers, white or grey blouses without plunging necklines, and is not accessorized with large jewelry. Female college students might wear more concealing apparel in educational settings and women with higher educations may prefer more sophisticated attire compared to those who have completed only high school or lower. Women who earn high incomes — and income is often related to education — may be more fastidious in their consumption of fashion clothing and accessories than their lower-income counterparts.

Delimitations and Limitations

This research employed a survey design that extended beyond laboratory studies to facilitate investigation of the impact ovulation has on women's consumption behavior. Although this study has its limitations, the large number of respondents available for analysis justifies this

research method. This research drew on two relevant theories. The ovulatory shift hypothesis (OSH) was utilized as the theoretical framework because it has direct relevance to this study. The theory of reasoned action (TRA) was employed to understand the mediating effect of attitude on the relationship between ovulation and purchase intention. It should be kept in mind that this research was limited to the moderating effects of a limited number of demographic traits and two relevant psychological characteristics; self-control and fashion consciousness, both of which bear particular significance for the relationship being studied. The deep motivation behind mating purposes (i.e., mate retention vs. mate acquisition) for women preferring more revealing and sexy fashion products and the selection of such products will not be explained in this study.

The remainder of the dissertation includes a review of the literature, a description of this study's methodology, and the results of both a pre-test and the main study. These are followed by a discussion of the results, the conclusions that can be drawn from them, and suggestions for future research. The literature review focuses on the two relevant theories underpinning this study. The first, the ovulatory shift hypothesis, posits a connection between women's monthly reproductive cycle and female consumption of clothing and accessories. The second, the theory of reasoned action, helps understand the relationship between attitude and purchase intention. The methodology description includes the research design employed for conducting empirical research, the test establishing product selection for the study, sampling procedures, and measurements of each of the studied variables. The results of the pretest and main study produced empirical findings that support or fail to support the hypotheses. A discussion of the statistical results and the conclusions that can be drawn from them follow. Finally, theoretical and managerial implications are also drawn from the findings.

CHAPTER II

LITERATURE REVIEW

Previous research has found that peak fertility has a positive and significant impact on women's choices for sexy and revealing products (e.g., Durante et al., 2008; 2011; Haselton et al., 2007). The ovulatory shift hypothesis is drawn from this stream of contributions. The theory of reasoned action sheds additional light on the indirect relationship between women's ovulatory period and their choice of attire. Other studies have identified the effects self-control and fashion consciousness have on the consumption of clothing and accessories (e.g., Baumeister, 2002; Baumeister et al., 2008; Leung, Yee, & Lo, 2015; Klepp & Storm-Mathisen, 2005). The literature also reports that education, age, income, and occupation strongly affect women's fashion choices (e.g., Bhardwaj & Fairhurst, 2010; Iftikhar, Kahn, & Iiyas, 2013; Kwon & Johnson-Hillery, 1998; Lang, Amstrong, & Brannon, 2013; Lee & Sontag, 2010).

Ovulatory Shift Hypothesis

The ovulatory cycle is a monthly occurrence for most women from the onset of puberty (i.e., first menstrual period) to approximately 50 years of age (Bunting & Boivin, 2008). The Ovulatory Shift Hypothesis (OSH) is characterized by specific hormonal changes in which levels of the female sex hormone, estrogen, are highest during the days closest to ovulation in women who are fertile. The luteal phase follows once ovulation has ended. Here, estrogen levels lower while progesterone rises; it is the phase in which women show less risky behavior and are less

inclined to be interested in sexy or revealing apparel. This hypothesis is employed as the main theoretical background for this study. OSH is based on women's biological reproductive nature which underscores the heavy costs of parental investment placed on women (Gangestad & Thornhill, 1998). Durante, Griskevicius, Redden, and Edward White (2015) asserted that when a family's economic conditions weaken, parents tend to privilege investment in their daughters over their sons. The reason is because in poor economic conditions, girls' reproductive value is greater than that of boys. Put another way, during recessions, parents are inclined to prefer girls because girls are less likely to be discouraged to have children as compared to boys during financial threats.

Women bear heavier obligations of parental duty than men, thus they unconsciously tend to be more selective in critical sexual decisions such as the choice of partners, the timing of sexual intercourse, and reproduction (Gangestad, Thornhill, & Garver-Apgar, 2005). Moreover, OSH postulates that for reproductive purposes, women near ovulation become choosier regarding mates and unconsciously favor males with perceived good biological indicators of genetic fitness. Moreover, these women may also exhibit increased mating interest and higher motivation to act in ways that would help secure a desirable partner. Additionally, women in relationships tend to experience a decrease in satisfaction with their current partners when they are near ovulation (Durante & Li 2009; Jones et al., 2005) and tend to be more critical of their partners' faults (Durante & Arsena, 2014).

However, all ovulatory shift effects disappear when women are using hormonal contraception (e.g., hormonal birth control pills and vaginal contraceptive rings such as NuvaRing) (Durante et al., 2011). Because contraception disrupts the normal fluctuation of

hormones across the menstrual cycle, it erases the shifts associated with normal ovulation (Fleischman, Navarette, & Fessler, 2010).

The first research to explore the relationship between women's estrogen levels (sex hormone) and their tendency to dress in a sexy and revealing manner is Grammer et al. (2004). In this seminal paper, Grammer and colleagues measured estrogen levels through salivary tests and took photographs of women in an Austrian nightclub. They discovered a correlation between women who wore tighter and more revealing clothing and higher estrogen levels. From here, other studies went on to examine this occurrence during ovulation (when estrogen levels are at their peak) in which estrogen levels served as the independent variable. Haselton et al. (2007) photographed partnered women when near ovulation and when in their luteal phase. Judges were asked to evaluate the photographs. It was discovered that behaviors like self-grooming (hair styles) and attractive clothing choices (head-to-toe clothing and jewelry) were influenced by how far along women were in their menstrual cycle. Those women in the fertile period were rated by the judges as trying to be more attractive than when in their luteal phase.

Durante et al. (2008) continued the work of Haselton et al. (2007) by photographing the same participants during their fertile and luteal phases and additionally asking them to sketch an outfit of what they would wear on a night out on a model figure. The authors found that women drew more revealing and sexy clothing on the model when they were in their fertile phase than during other stages of their menstrual cycle. Women in their luteal phase were more likely to draw looser, less sexy clothing than the women in their fertile phase. There was a discrepancy, however, between the photographs (actual attire worn to the laboratory) and the illustrations sketched by the participants. The authors believe this difference is due to a combination of factors: relationship status and satisfaction, perceived attractiveness, and sociosexual orientation

inventory score (SOI) – the extent to which women will engage in sexual intercourse without a commitment). These factors seemed to deter the participating women from actually wearing what they would ideally like to have worn when fertile. In other words, Durante et al. (2008) highlighted the tendency of women, particularly in mating-relevant contexts, to prefer clothing that is revealing and sexy when fertility is highest. Moreover, women are more likely to purchase these ideal outfits during high fertility than low fertility (Durante et al., 2011; Saad and Stenstrom, 2012). The next section addresses this phenomenon in greater detail.

Durante et al. (2011) conducted a two-phase study. The first phase measured women's preferences for certain types of clothes across their menstrual cycle. Researchers used a commonly available over-the-counter urine test to divide participants into two groups: high fertility and low fertility. Each group shopped on a mock retail website and then selected ten clothing and/or accessory items they would purchase. Women in the high fertility group chose a greater percentage of sexy clothing and accessories than those in the low fertility group. Durante et al. (2011) believed that this "ovulation product-choice effect" was motivated by intra-sexual competition. In the second phase, women again shopped on a mock retail website, but this time the women were primed to think about (1) attractive local women, (2) unattractive local women, (3) attractive local men, or (4) unattractive local men. When thinking about local attractive women (potential rivals), women in the high fertility group selected significantly more sexy items than their low fertility counterparts. Encouraging women to imagine attractive local men also led to the selection of the sexy items, but the result was the same regardless of which group the women were in.

The study by Saad and Stenstrom (2012) also demonstrated that women's menstrual cycle influences their consumption behavior. The researchers monitored women's food and

appearance-related consumption for 35 consecutive days. They utilized a counting method to estimate when participants would be at high and low fertility. Spending on items related to appearance rose when women were in the fertile phase of the menstrual cycle, and their expenditures on food rose when they were in the luteal phase of their cycle. The authors called attention to the fact that during the 35 days of the study, appearance-related and food expenditures seem to have responded to the fluctuations of estrogen and progesterone levels. This study differs from that of Durante et al. (2011) in that it witnessed actual purchases and real decision-making rather than just measuring likelihood of consumption behavior in hypothetical scenarios.

Saad and Stenstrom (2012) and Durante et al. (2011) studied the relationship of the menstrual cycle on various consumer-related phenomena. Boezio's 2012 master's thesis augmented these works by exploring the link between the menstrual cycle and personality branding. Boezio's study aimed to measure attitudes toward five brand personalities (feminine, sexy, exciting, sophisticated, and sincere) by using sunglasses to represent each personality. This research failed to identify any effect on attitudes toward brand personalities whether women were near ovulation or not.

Faraji-Rad, Jazani, and Warlop (2013) proposed that when women are in the fertile phase of their menstrual cycle, they are more sensitive to rewards – whether they be in the form of money, erotic stimuli, or food – than when not fertile. Three studies described in this seminal paper all showed that this increased sensitivity prompts women who are not using birth control to seek more variety of rewards during the fertile phase of their cycle.

In the first study, Faraji-Rad and colleagues tested the proposition that women who are in the fertile phase pursue a greater variety of dating partners than they do when they are not in the

fertile phase. They showed women nine male faces and asked them to imagine they could go on seven consecutive dates, one each day, with any combination of the men. The second study tested the proposition that women seek a greater variety of hedonic food when they are in the fertile phase of the ovulatory cycle than they do when they are not. Participants were first asked to imagine buying four scoops of ice cream in any combination of flavors from those available—vanilla, coffee, chocolate, and strawberry—but they were limited to only four scoops. The third study tested the prediction that fertile women not using contraceptive pills desire variety in hedonic food (i.e., chocolate desserts), but lack the same desire in non-hedonic food (i.e., vegetable salads). The first two studies support the proposition that during the fertile phase of women's menstrual cycle, they experience increased sensitivity to rewards, which in turn, prompts them to seek a great variety of such rewards. Furthermore, the third study's findings show that the rewards sought by fertile women do not extend to such non-rewards as vegetable salads. These findings are critical because they show that the hormonal shifts women experience during the menstrual cycle influence a pursuit of rewards that extend beyond mating.

Durante and Arsena (2014) update Durante et al.'s (2011) study by discussing how ovulation influences women's preference for new products. Durante and Arsena (2014) also conducted three studies of fertility's effect on women's desire for variety. The first study examined whether women at high fertility seek more variety in consumer choice sets and whether this effect in women is enhanced when women are in relationships. The authors examined women's choices across their cycles when asked to choose from four product categories: lipstick, high heels, yogurt, and candy bars. Women were offered 20 lip colors and asked to choose a color for each day of an imagined vacation. There were no limits on the

number they could select. The high number of choices from each category demonstrated a measure of variety seeking behavior.

The second study was intended to expand the findings of the first study by examining changes across menstrual cycles in women's desire for variety. Participants were offered nine brands of mini candy bars and were asked to select five. The high number of individual brands selected was considered a measure of women's desire for variety. The third study was intended to broaden the significance of prior results by investigating whether the concern to retain a mate would repress the effect fertility might have on the pursuit of variety. The authors investigated this question by stimulating a motive to retain a partner who was both physically attractive and attentive to her in order to measure the effect of fertility on their variety seeking.

This research offers several significant findings. First, it suggested that the hormonal shift that resulted from high fertility was positively correlated to a shift in women's increased desire for alternative choices in men. Second, it suggested that at high fertility, women's desire for variety of choice was particularly intense for women in relationships. Finally, the study also found that the effect of fertility on women's desire for variety was moderated by the intensity of woman's attachment to their partners. Women near ovulation and who have strong attachments in their partnerships lack the motivation to think about better choices in men and products.

Gildersleeve, Haselton, and Fales's (2014) meta-analysis reported that there is a significant influence of peak fertility on (1) a preference for facial symmetry, (2) a preference for scents associated with face and body symmetry, (3) a preference for structural facial masculinity, (4) a preference for structural body masculinity, (5) a preference for vocal masculinity (lower vocal pitch), (6) a preference for behavioral dominance or felt superiority over other men, and (7) a preference for facial cues of testosterone.

Moreover, this seminal paper suggested several directions for future research. Most importantly, studies in this area have primarily involved Western samples of educated young women, so researchers might examine the impact of hormonal shifts on mate preference and relationships among women from non-Western cultures. Second, future researchers might try to identify the hormonal mechanisms that trigger cycle shifts in women's mate preferences. It is still unknown whether cycle shifts in women's mate preferences are the consequence of old psychological mechanisms that have survived during human evolution or psychological mechanisms of human ancestors that were privileged by selection and thus remain in modern humans. Researchers need to measure these potential hormonal mediators so that we better understand which and how hormonal mechanisms impel cycle shifts. Third, future research could examine the impact of cycle shifts in women's mate preferences on long-term relationships functioning and longevity. We also still do not know how hormonal contraceptive use, pregnancy, menopause, and other factors that alter or eliminate cyclic variation in women's hormones impact relationships or their longevity.

Evolutionary Psychology and Consumption of Appearance-Related Products

The literature offers evidence that women tend to rely on fashion to enhance their competitiveness when facing threats from rivals, when around desirable partners, or both (e.g., Durante et al., 2008; Wang & Grikevicius, 2014). Women purchase conspicuous fashions primarily to deter rivals that threaten their current or potential romantic relationships (Sundie et al., 2011; Wang & Grikevicius, 2014). A recent study, for instance, suggests that women might use luxury products to signal to other women that their romantic partners are especially committed to them (Wang & Grikevicius, 2014). Furthermore, women may use fashion to appear

more youthful and attractive to impress their romantic partners (Benz et al., 2005; Griskevicius & Kenrick, 2013). Increases in sexual activity, sexual desire, and sexual satisfaction during the ovulatory period were also observed (Fessler & Navarrete, 2003), and showed that women at this time may be motivated to dress more attractively and appealingly.

Intra-sexual competition may prompt women to deter rivals from pursuing their own current or future romantic ideal partners instead of simply attracting mates of the opposite sex. The literature shows that the activating motivational states of women associated with intersexual courtship and intra-sexual competition elicited an increased willingness to take risks specific to attractiveness enhancement (Hill & Durante, 2011). Women choose sexier products after seeing attractive men regardless of whether the women were ovulating, which suggests that ovulation is not related to women's desire to impress men directly through these kinds of products (Durante et al., 2011). Thus, the shift in women's preference toward sexy and revealing products when they are at peak fertility tends to be driven by intra-sexual competition.

Previous studies have shown that highly fertile single women demonstrate a stronger preference for sexy and revealing clothing than those who are fertile and partnered. This finding suggests that shifts in choice of clothing and social motivations are more directly applicable to single than to partnered women. The difference here can be explained by mate retention versus mate acquisition motives.

Mate acquisition leads single women to be more attentive to attractive men (Maner et al., 2005). This behavior is triggered by the presence of real or imagined potential mates (Griskevicius & Kenrick, 2013). This mate acquisition motive prompts single women's desire to be noticed among peers, and thus inspires them to broadcast and highlight their beauty and youth (Kenrick & Keefe, 1992; Wiederman, 1993). Thereby influenced by intra-sexual competition,

highly fertile single females wear revealing and sexy fashion products to captivate a desirable mate.

The mate-retention motive, on the other hand, involves positive behaviors designed to maintain current relationships as well as behaviors intended to manage threats posed by potential romantic competitors (Campbell & Ellis, 2005). This motive appears to prompt partnered women to protect their current relationships by lavishing more love and care on their romantic partners (Buss & Shackelford, 1997; Saad & Gill, 2003) and to devalue alternative potential romantic partners (Lydon, Fitzsimons, & Naidoo, 2003). Consequently, the intersexual competition may not be the focus for partnered women as it is for single women.

The study by Durante et al. (2011) showed that when they are near ovulation, women tend to choose sexy and revealing fashion products. To test their hypothesis, they had female participants shop on a retail website at two points in time, when they were and were not ovulating. Their findings were consistent with those of other studies; women at peak fertility chose revealing and sexy clothing, shoes, and accessories. Saad and Stenstrom (2012) conducted a similar study on women's appearance-related consumption across their ovulatory cycle. Relying on a survey panel, women's food and appearance-related consumption was tracked for 35 consecutive days. The results indicated that appearance-related desires, dollars spent, and beautification behaviors increased during the fertile phase, whereas food-related desires, consumption and dollars spent were greater during the non-fertile phase. Thus, the following hypothesis was formulated:

H1: Women's ovulation has a significant and positive effect on their attitudes toward revealing and sexy fashion products.

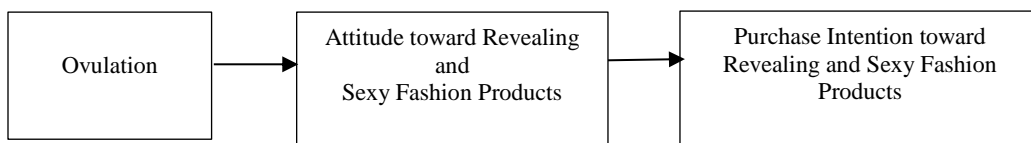
Theory of Reasoned Action

The theory of reasoned action has strong predictive and explanatory power concerning how consumers make decisions. It takes into account attitudes, subjective norms, behavioral intention, and action (Fishbein & Ajzen, 1977; Ajzen & Fishbein, 1980). According to this theory, individuals' attitudes and subjective norms influence their purchase intention, which in turn affects behavior. Attitudes may involve the perception of whether an action is right or wrong. The subjective norm for an act may lead to an internal assessment of how others will judge the act. In the light of this theory, women's attitudes toward sexy and revealing fashions have a mediating effect on the relationship between women's ovulation and their purchase intention for these fashion products. Therefore, hypothesis H2 was proposed:

H2: Women's ovulation has a significant, positive, and indirect effect on their purchase intention toward revealing and sexy fashion products, through the effect on their attitude toward such products.

Figure 1

Mediated Relationship of Ovulation and Purchase Intention toward Revealing and Sexy Fashion Products (H2)



The Moderating Effect of Women's Relevant Psychological Characteristics on the Consumption of Revealing and Sexy Fashions

Differences in such psychological traits as fashion consciousness and self-control may lead to differences in women's preferences and purchase intention for sexy and revealing clothing and accessories. The two variables can moderate the relationship between ovulation, attitude, and purchase intention toward revealing and sexy fashion products.

Fashion Consciousness

Fashion consciousness refers to a person's degree of involvement with a style of clothing (Summers, 1970; Gutman & Mills, 1982). According to O'Cass (2000), the more important the role fashion plays in women's lives, the greater their involvement will be. Generally speaking, individuals are interested in clothing because it gives pleasure and helps them express themselves (Michaelidou & Dibb, 2006). The literature shows that fashion-conscious consumers are likely to rely on the style of luxury fashion to improve their appearance (Leung, Yee, & Lo, 2015). The more fashion-conscious people are, the greater the effort they will expend choosing apparel (Klepp & Storm-Mathisen, 2005). To be specific, the more fashion-conscious women are, the more involved they will be with the selection of fashions and fashionable accessories.

Since the mid-1960s, considerable empirical and theoretical effort has been devoted to understanding the ways consumers become involved in terms of spending time, money, and effort (Bloch, 1981; Mittal & Lee, 1989; O'Cass & Julian, 2001; Richins & Bloch, 1986). Although the concept of involvement has also been widely utilized with regard to fashionable clothing (e.g., Browne & Kaldenberg, 1997; Fairhurst, Goog, & Gentry, 1989; Flynn & Goldsmith, 1993; Tigert, King, & Ring, 1976), contemporary fashion research still lacks a

consensus on the characteristics that motivate involvement with fashion-related items such as accessories or beautification, and the relevance of these characteristics is still being debated. While some researchers consider fashionable clothing a high involvement item (Michaelidou & Dibb, 2006), a considerable number of studies suggest that involvement with fashionable clothing has a multidimensional nature and forms a continuum rather than a dichotomy (O’Cass, 2000). In his seminal paper, for example, O’Cass (2000) postulated that involvement is consumer-focused and suggests that involvement should be evaluated on how consumers interact with a particular product or stimulus. The more the focal object is placed in a prominent or key position in a consumer’s life, the more involved the consumer is said to be with that object. According to O’Cass (2000), the level of involvement experienced by consumers for fashionable clothing forms a continuum, ranging from minimal to high levels. The more fashion occupies a key position in consumers’ lives, the greater the involvement. Thus consumers’ involvement level in fashionable clothing is highly individualized and primarily depends on the perceived social role of fashion brands in their lives.

Recent studies have examined the underlying dimensions of consumer involvement in fashionable clothing and suggest that consumer attachment to fashion has the characteristics of high involvement. Michaelidou & Dibb (2006), for example, have developed an involvement scale for clothing, and they indicated that consumer involvement basically stems from (1) the pleasure and enjoyment derived from shopping, and (2) the importance consumers attach to a product, which relates to a product’s symbolic nature as a means of self- expression. Individuals have been shown to be interested in clothing because apparel provides pleasure and helps them express themselves. From this perspective, fashionable clothing is a high involvement product because consumers derive pleasure from the purchase and consumption. Moreover, individuals

have also been shown to become involved with clothing because it has become an important part of their lifestyle, aspirations, fantasies, and affiliations (Michaelidou & Dibb, 2006).

Taken altogether, the literature is moving from a dichotomous understanding to a multidimensional understanding of the nature of consumer involvement in fashion, with the recent emphasis being on its high involvement characteristics (Michaelidou & Dibb, 2006). Fashionable clothing is now widely considered a high profile and economically important sector where consumers are thought to be interested in fashion both for emotional (fashion as pleasure) and socially driven (fashion for self-image and identity) reasons. It is not surprising, then, that fashion marketers heavily employ the basic evolutionary incentive, sex, to satisfy customers' motivations for consuming, as Michaelidou and Dibb (2006) pointed out, and to sustain their attachment to fashion items. Thus, the following hypothesis was suggested:

H3: Fashion consciousness has a positive moderating effect on the relationship between ovulation and attitudes.

Self-control

Self-control is the capacity to resist temptations, especially those relevant to impulsive purchases and other expenditures that are likely to be regretted later. The lack of self-control may be an important facilitator of impulsive purchasing and a promising concept for consumer research (Baumeister et al., 2008).

The literature shows that both internal and external forces can control, facilitate, or impede performance of a behavior (Ajzen, 2002). Skills and willpower are an internal locus of control, while task demands and the actions of others are external forces (Ajzen, 1985). Individuals with a strong internal locus of control believe events in their lives derive primarily

from their own actions or that they can control the outcome of an action. When receiving exam results, for example, people with an internal locus of control tend to praise or blame themselves and their abilities. People with a strong external locus of control, on the other hand, tend to praise or blame external factors such as the teacher's grading or the exam's difficulty. Thus, self-control is an inner locus of control referring to the degree that a person is able to resist the urge to perform a certain act.

The concept of self-control was examined in this research to understand the moderating effect of females' self-control on their purchase intention. It is assumed that the more self-control women have, the less likely they will be to purchase expensive, revealing, and sexy fashion products on impulse. Furthermore, the degree to which women monitor their spending should also predict consumer behavior and impulsive purchasing (Baumeister, 2002). Thus, the following hypothesis was proposed:

H4: Self-control has a negative moderating effect on the relationship between ovulation and attitudes toward revealing and sexy fashion products.

Moderating Effects of Women's Demographic Factors on the Consumption of Sexy and Revealing Fashions

Demographics age, education, occupation, and income may lead to differences in women's behaviors such as their preferences and purchase intention for sexy and revealing fashions. In other words, these demographic variables can moderate the relationship between women's attitudes and their outfit choices.

Age

The literature shows that age plays a significant role in women's fashion choices (Khare et al., 2011; Ebenkamp, 2005). The older consumers are, the less they are concerned about the fashionable attributes of apparel (Rocha, Hammond, & Hawkins, 2005). Moreover, they are more likely to engage in consumption behavior that reflects rather than compromises their key values, including personal and social identities (Rocha, Hammond, & Hawkins, 2005). In other words, older women prefer clothes that reflect their perceived identity (Lee & Sontag, 2010), and they also tend to dress in ways that are perceived to suit their age. There is a considerable degree of consensus among older women that it is wrong to dress too youthfully (Klepp & Storm-Mathisen, 2005). This apprehension about their dress suggests that older women are more concerned about exposing their bodies than they are about wearing specific articles of clothing. They report distaste for skirts that are too short, bare midriffs, or clothing that is overly tight (Klepp & Storm-Mathisen, 2005). Older fashion models can, however, influence older women's willingness to try new trends, for they are more comfortable dressed in fashions worn by fashion models around their own age (Kozar, 2010).

Younger women in their teens or their 20s, on the other hand, are considered more fashion conscious (O'Cass, 2000), and they are more flexible about changing their style and look (Ebenkamp, 2005) than older women are. They prefer fast fashion, which is inexpensive and trendy for a short period of time, and they shop for and dispose of clothing more frequently than do older women (Bhardwaj & Fairhurst, 2010). Young girls generally agree that modern fashionable clothes are close-fitting and tight (Klepp & Storm-Mathisen, 2005). Thus, the following hypothesis was suggested:

H5: Age has a positive moderating effect on the relationship between ovulation and attitude.

Education

Previous studies have asserted that dress can reflect intelligence, education, and career abilities (Cahoon & Edmonds, 1989; Gille-Knauff & Mittag, 2008). A woman in conservative clothing is often perceived to be intelligent (Gille-Knauff & Mittag, 2008). This finding is consistent with the stereotype that women of humble intellect tend to show off their physical attractiveness. This phenomenon is a particularly salient one in the fashion industry (Cahoon & Edmonds, 1989). Thus hypothesis 6 was proposed:

H6: Education has a positive moderating effect on the relationship between ovulation and attitude.

Occupation (Occupational Formality)

Being too sexually appealing can harm women's reputations and opportunities for advancement in the workplace, especially for those who are in high positions (Glick, Larsen, & Branstiter, 2005). A woman in a high managerial position perceived to dress in a sexy manner (wearing miniskirts, plunging necklines, or sporting large jewelry) is perceived as less competent and less intelligent than a modestly dressed counterpart (Sinberg, 2009). Moreover, the formality of clothing worn in some official settings such as an academic environment can be interpreted as an indication of success or significant achievement such as occupying an important position in the workplace (Francis & Evan, 1988; Kwon & Johnson-Hillery, 1998). Studies have shown that women managers avoid dress that can be perceived as too feminine so as not to undermine their

authority at meetings (Klepp & Storm-Mathisen, 2005). Furthermore, a job candidate's outfit can send a message about whether or not the candidate is suitable for a position and the future work setting (Bardack & McAndrew, 1985). This phenomenon is well established in education. Previous studies have shown a significant relationship between the formality of college professors' dress and students' perceptions of their credibility as educators (Carr, Davies, & Lavin, 2009; Lightstone, Francis, & Kocum, 2011). More specifically, students tend to adjust their perceptions and behavior in the classroom according to the formality of lecturers' attire (Carr, Davies, & Lavin, 2011). That is, the professional or unprofessional dress of instructors could conceivably impact students' learning and effort to master the material in college classrooms. Thus, clothing choices play a critical role in people's work life (Nayak, Padhye, & Wang, 2015). As a consequence, students and professionals are highly encouraged to dress appropriately in professional environments to highlight career abilities and gain the respect of peers (Gille-Knaff & Mittag, 2008). Thus, hypothesis 7 was suggested:

H7: Occupation/occupational formality has a positive moderating effect on the relationship between ovulation and attitude.

Income

The literature also indicates that individuals' income, along with their education and occupation, constitutes a major determinant of their social class, which in turn enables prediction of their buying behavior (Rich & Jain, 1968). People act according to the societal standards of their class (Iftikhar et al., 2013). The upper classes tend to set fashion trends and standards. The lower classes attempt to imitate the upper-class' style of attire, but they can imitate the upper classes only to a certain point because of financial limitations. For example, top luxury fashion

brands such as Louis Vuitton and Chanel initiate new trends for each season every year. Fast-fashion brands such as Zara and Forever 21 may imitate the luxury brands. People with money will purchase luxury products, whereas those with lower incomes will consume the more affordable products copying the name brands. However, the difference between the luxury brands and the copies is discernable, and that discernable difference distinguishes one class from the other.

The upper classes also tend to dress differently than people in the lower classes, while the lower classes attempt to mimic the higher class's clothing style (Iftikhar et al., 2013) because the way one dresses implies something about an individual's ability to be successful and to possess power and status (Turner-Bowker, 2001). Women with low incomes may have limited resources for obtaining the fashions they want. Consequently, they consume differently from the way more affluent consumers do (Hamilton, 2009). Thus social class is a major factor in the buying behavior and lifestyle of people (Rich & Jain, 1968). Hence, hypothesis 8 was proposed:

H8: Income has a positive and significant moderating effect on the relationship between ovulation and attitude.

CHAPTER III

METHODOLOGY

This chapter presents the research design employed to study ovulation and its role in women's fashion preferences, the survey design, and measurements. Two studies on two different groups of women in Vietnam and the U.S. are described.

Research Design

Field Study

Previous studies of the influence of ovulation on the selection of apparel such as that conducted by Durante et al. (2008; 2011) are limited to laboratory experiments. These experiments, and particularly the design, have shown that a positive and significant relationship exists between women's ovulation and their preference for revealing and sexy fashion products. Despite the importance of these laboratory-based studies, their results are limited; they are compromised by plausible internal validity and poor external validity, which diminishes the generalizability of the results. Thus, there is a need to investigate this relationship in a broader setting by employing the kind of field study often used to explain a phenomenon and test hypotheses so that a higher generalizability of the results can be achieved.

The next sections describe how sexy and revealing fashion products were selected for the study and the procedure used to recruit participants. Two ovulation tests and two surveys that are related to the main study are explained. This section also includes a description of the survey design employed for the empirical research germane to the main study. The measurements for each variable, i.e., attitude, purchase intention, self-control, and fashion consciousness are introduced and discussed.

Selection of Sexy and Revealing Fashion Products

To select fashion products for the main study that respondents would perceive as sexy and revealing, a survey was conducted with 143 Vietnamese female consumers (mean age = 29.63 years, range from 21 to 50 years). Participants viewed four fashion products in each of four categories: shoes, handbags, dresses, and tops. The products for the survey were chosen from an array of products offered on a popular retail website and drew on examples from *Vogue* and *Cosmopolitan*, two fashion magazines aimed at women. The revealing and sexy items selected for the survey were sexy but not blatantly sexual. Whether the fashion products were revealing or sexy was assessed along the lines of Durante et al. (2008; 2011). Sixteen products were selected in four categories, four products per category as follows:

Shoes

Shoes not considered sexy included brown flat shoes (Appendix, figure A1) and black flat shoes (Appendix, figure A2). These rather plain-looking products were selected from a popular department store website and based on examples featured in *Vogue* and *Cosmopolitan*. Durante's (2011) figure A1 of undecorated flat-heeled shoes was used as a guide for the choice.

The sexier shoes selected included red heels (Appendix, figure A3) and golden heels (Appendix, figure A4). These shoes look sexy because of their vivid colors and ornamental design. More often than not, high-heeled shoes or boots are made from lace, velvet, leather or latex and incorporate strings or decorations, thus they are deemed fancier or more sensual.

Handbags

A white handbag (Appendix, figure B1) and a brown handbag (Appendix, figure B2) were selected as the less sexy items. These two products, consistent with Durante's (2011) examples (Figure A1), hold little sensual appeal because their colors are subdued, their designs are simple, and they lack fancy decoration. In most cases, handbags designed for practical use (school or office) look rather boring. A brown or black evening clutch (Appendix, figure B3) and a black leather evening clutch (Appendix, figure B4) were selected as sexy. These handbags look a bit sexy by virtue of a nice, small design intended for social occasions.

Dresses

A long, black silk dress (Appendix, figure C1) and a long, black winkle dress (Appendix, figure C2) were picked as not revealing and sexy due to the minimal percent of skin showing. Thus these products have little sexy effect. Their loose design is not sensually suggestive, for they do not show beautiful body form. The fabric is neither soft nor transparent, and the colors are not vivid.

A white miniskirt (Appendix, figure C3) and a short yellow dress (Appendix, figure C4) were picked as relatively more revealing and sexy. These outfits were perceived to be erotic and provocative, for they reveal more skin. The design and colors are inviting.

Tops

The relatively less revealing or sexy tops were a black, long-sleeve blouse (Appendix, figure D1) and a plain, white, long-sleeve shirt (Appendix, figure D2). These products are not so sensually appealing. The design is loose and conceals body contours. The percentage of skin showing is minimal and the style is plain with little decoration. The colors, black and white, were not particularly stimulating.

The relatively sexier and more revealing tops were a black sequin tank top (Appendix, figure D3) and a yellow tank top (Appendix, figure D4). The body-hugging design of these products looks sensually inviting. The percentage of skin showing is high, especially in the chest area of the black sequin tank top. The colors are vivid, and both the fabric and design are sensually suggestive and intended for social gatherings.

Test of the Product Selection with a Convenience Sample

The *sexy* trait of all 16 selected fashion products was assessed. (Please refer to Appendix, figures A1- D4.) Only eight of the fashion products in the dress and blouse categories were evaluated for their *revealing* trait, since this trait is not applicable to shoes and handbags.

The input was run in Statistical Package for the Social Sciences (SPSS) software to identify the mean and the standard deviation (SD) of the sexy and revealing traits of the fashion products. The higher the mean of the sexy trait, the sexier the product is considered to be. Similarly, the revealing degree of a garment was assessed by the mean of the revealing trait: the higher, the better.

The results shown in Table 1 are consistent with those of Durante et al. (2011). In the shoes category, the red heels and golden heels were perceived to be more revealing and sexier than the flat black and brown shoes. In the handbag category, the brown and black evening and black leather evening clutches were considered sexier than the white and brown handbags. In the dress category, the white miniskirt and the short yellow dress were rated as more revealing and sexier than the two long black dresses. In the tops category, both tank tops were assessed to be more revealing and sexier than the black and white plain blouses.

Table 1
Revealing and Sexy Fashion Products and Less Revealing and Sexy Fashion Products

Fashion Products	Revealing		Sexy	
	Mean	Standard Deviation	Mean	Standard Deviation
Brown flat shoes (Figure A1)			3.066	1.681
Black flat shoes (Figure A2)			3.507	1.689
Red heels (Figure A3)			4.889	1.570
Golden heels (Figure A4)			5.220	1.551
White handbag (Figure B1)			4.492	1.408
Brown handbag (Figure B2)			4.125	1.526
Brown/black clutch (Figure B3)			4.580	1.606
Black leather clutch (Figure B4)			4.919	1.388
Long black silk dress (Figure C1)	2.154	1.566	2.735	1.685
Long black winkle dress (Figure C2)	2.382	1.640	2.779	1.551
White miniskirt (Figure C3)	4.474	1.499	4.896	1.329
Yellow short dress (Figure C4)	4.279	1.412	4.580	1.320
Black long-sleeve blouse (Figure D1)	3.147	1.713	3.978	1.588
White plain long-sleeve shirt (Figure D2)	2.867	1.800	3.674	1.641
Black sequin tank top (Figure D3)	5.333	1.822	5.067	1.929
Yellow tank top (Figure D4)	4.792	1.506	5.051	1.384

Procedure

Women were recruited to participate in the study via e-mail, flyers distributed at hospitals, in person, and by word-of-mouth in both the U.S. and Vietnam. The women were told that they would participate in a study on relationships, fashion, and health. Potential participants were initially screened via email or text, and only women who reported regular monthly menstrual cycles (e.g., cycles running 25–35 days) and who were not on any form of hormonal contraception were recruited for this study. After being asked a series of prescreening questions, each participant was scheduled to visit a designated office for two surveys; one on an expected high-fertility day and one on an expected low-fertility day. Whether a woman completed a high-fertility or a low-fertility session on her first visit was determined by where she was in her menstrual cycle at the time. The participants' ovulation status was based on the information provided by them during the screening session. In this case, the ovulatory status of a woman when taking the first test and survey was totally randomized.

First Round in the Test

To test for fertility, women were invited to complete the Luteinizing (LH) test using an over-the-counter urine applicator test, the Clearblue(r) Easy Ovulation Test Kit. The women were told that they needed to complete a urine test before being given a survey so that their ovulation status would be recorded accurately.

A surge in LH indicates that ovulation has occurred within 24–36 hours and therefore, the ovarian hormone estrogen should be at peak levels (Lipson & Ellison, 1996). The first urine test was scheduled one day before the expected day of ovulation. The ovulation date was estimated based on (1) the ovulation calculator from WebMD, (2) participants' period diary application if

applicable, and (3) the ovulation test kit's instructions. If an LH surge was not detected, the women were asked to return each day until it was or five tests were completed – whichever came first. If there was no indication of ovulation or an LH surge after the fifth test, participants were invited to return during their next expected ovulation period the following month. The survey was not given if ovulation was not detected on those occasions when participants were invited for the survey at peak fertility. After participants provided a urine sample, the researcher read and recorded the test results.

Once participants' fertility status was determined, they were given a survey designed to understand their opinions about how the clothing and accessories they were shown were more or less suitable for specific occasions. A scenario based on Durante et al. (2008; 2011) was employed. Participants were asked to imagine that they had been invited to a large, evening birthday party that would be attended by many single, attractive men and women. They were then asked first to visualize what the guests would likely be wearing, and then they were asked to evaluate an array of products and indicate what they would be most inclined to wear to the event.

Second Round in the Test

After the first survey, participants were invited again to the offices for a follow-up test and a second survey. If a high-fertility condition was detected first, a low-fertility session was scheduled seven days or more after the second ovulation since that day (approximately 57-77 days). If a low-fertility condition was detected first, a high-fertility session would be scheduled near the estimated peak fertility in the third month after the first survey (approximately 50 days or more). The time gap was intended to avoid enabling participants to learn about the fashion products between the first and second surveys. To further circumvent the potential testing effect

(which relates to the possibility that participants' responses to the pretest might affect their responses in the post-test), the arrangement of the eight revealing and sexy fashions in the two surveys was completely changed. To limit the testing effect, participants were not shown the pictures in the same order for the two surveys.

Measurements

Measurements were developed to study attitudes toward fashion products, purchase intention, self-control, fashion consciousness, and four demographic characteristics: age, income, education, and occupation.

Attitudes

Following the examples of Baker and Churchill (1977) and Miniard et al. (1991; 1992), attitudes were measured using nine items (e.g., "Would you say this product is appealing?" and "Would you say that your overall opinion of this product is...?"). These items helped assess how the participants perceived each of the eight revealing and sexy fashion products. A seven-point semantic differential scale was designed with choices ranging from 1 (extremely unappealing) to 7 (extremely appealing) or from 1 (negative) to 7 (positive). A complete list of attitudes is presented in Table 2.

Table 2

Attitudes Regarding Fashion Products

Items	Source
Attractive	Miniard et al. (1991; 1992)
Desirable	Miniard et al. (1991; 1992)
Like/ dislike	Miniard et al. (1991; 1992)
Awful/ nice	Miniard et al. (1991; 1992)
If you see your friends are wearing this product (see image), would you grade their fashion taste/choice/style as...	Miniard et al. (1991; 1992)
Would you say that your overall opinion of this product is	Miniard et al. (1991; 1992)
Eye-catching	Baker & Churchill (1977)
Unappealing/ appealing	Baker & Churchill (1977)

Purchase Intention

Purchase intention was rated on responses to eight items (e.g., “It is possible that I would buy this product” and “I would buy this product if I happened to see it in the store”). The responses were intended to assess how likely participants would be to purchase given clothing accessories. The eight items were selected from Baker & Churchill (1977) and Lu, Chang, & Chang (2014), and they were evaluated with a seven-point Likert scale anchored from 1 (strongly disagree) to 7 (strongly agree). A complete list of items for purchase intention is presented in Table 3.

Table 3

Purchase Intention

Items	Sources
Would try on this product	Churchill & Bake (1977)
Buy the products if seen in a store	Churchill & Baker (1977)
Actively seek out the items in a purchase them	Churchill & Baker (1977)
Would consider buying this product	Lu, Chang, & Chang (2014)
No intention to buy this product	Lu, Chang & Chang (2014)
Possible that I would buy this product	Lu, Chang & Chang (2014)
Will purchase this (product) the next time I need it	Lu, Chang & Chang (2014)
Would buy if in need	Lu, Chang & Chang (2014)

Attitudes Regarding Self-control

To evaluate participants' emotions, thoughts, and behavior in the face of temptations and impulses, measures for self-control were adapted from Tangney, Baumeister, & Boone (2004). The 13 items selected were evaluated using a five-point Likert scale ranging from 1 (not at all) to 5 (very much). A complete list of items related to self-control is presented in Table 4.

Table 4

Self-Control

Items	Sources
I am good at resisting temptation.	Tangney, Baumeister & Boone (2004)
I have a hard time breaking bad habits.	Tangner et al. (2004)
I am lazy.	Tangner et al. (2004)

I say inappropriate things.	Tangner et al. (2004)
I do certain things that are bad for me, if they are fun.	Tangner et al. (2004)
I refuse things that are bad for me.	Tangner et al. (2004)
I wish I had more self-discipline.	Tangner et al. (2004)
Sometimes I can't stop myself from doing something, even if I know it is wrong.	Tangner et al. (2004)
I often act without thinking through all the alternatives.	Tangner et al. (2004)

Attitudes Regarding Fashion Consciousness

Fashion consciousness was measured using three items from Parker, Hermans, & Schafer (2004). These items were employed to assess the extent to which participants were interested in fashion. Did they want to wear fashionable clothes, and were they likely to spend time, money, or effort in fashionable stores? This three-item construct was evaluated using a seven-point Likert scale anchored with 1 (strongly disagree) and 7 (strongly agree). The question, “Where do you go shopping for fashion products?” (Parker et. al., 2004) was given to participants in order to learn about the availability and accessibility of shopping locations for each woman. A complete list of items for fashion consciousness is presented in Table 5.

Table 5

Fashion Consciousness

Items	Sources
When I must choose between the two, I usually dress for style, not comfort.	Parker, Hermans & Schafer (2004)
An important part of my life and activities involves dressing stylishly.	Parker et al. (2004)
Fashionable, attractive styling is very important to me.	Parker et al. (2004)

Demographic Characteristics: Age, Income, Education, and Occupation

Participants were asked to supply demographic characteristics relevant to this study: age, income, education, and occupation. A complete list of items for these demographics is presented in Table 6.

Table 6

Demographic Characteristics: Pre-Test

Variables

Age: was recorded as an observed variable (actual numbers)

Income: was recorded as an observed variable (actual numbers/month)

Occupation was recorded as an observed variable (actual names of occupation).

Occupational formality was provided by participants.

Formal¹

Informal²

Education

High-school graduate or below

Bachelor/undergraduate

Master degree or above

Note. ⁽¹⁾ Uniform or dress code is required at workplace.

⁽²⁾ No uniform or dress code required

CHAPTER IV

PRE-TEST RESULTS

For the pre-test, female participants were recruited in-person at a large well-known women's hospital in Vietnam. The sample included both hospital staff and patients. This was a convenient sampling since the investigator was granted permission to conduct this study at the location. The reason for conducting research at a women's hospital was the higher proportion of females in such that environment, in terms of both patients and staff. All participants were pre-screened to determine if they had regular menstrual cycles (e.g., cycles running 25–35 days) and whether they were using any hormonal contraception. Only those who had regular cycles and were not using hormonal contraceptives were included in the sample and invited for ovulation tests and surveys. Sixty-six qualified females ($M_{age} = 32.090$, $SD = 9.045$, $min\text{-age} = 18$ and $max\text{-age} = 45$) were recruited. (See Table 7 for the demographic characteristics of the sample.) .

The women to be included in the sample did an ovulation test to determine where they were in their cycles. If they tested at low fertility, they were invited back for a second test when at peak fertility. If they tested at high fertility, they were invited for a second test when at low fertility, thus participants indicated their attitudes and purchase intentions toward sexy and revealing fashion products at two times (peak fertility and low fertility). On the first ovulation

test, 70.7%, of the women were at low fertility, primarily because women are naturally not fertile for most of the month.

Table 7
Demographic Characteristics: Vietnamese Women

Age	Frequency	Percentage
<20	2	3.1%
20 to <30	30	46.2%
30 to<40	13	20.0%
40 to <50	20	30.7%

Monthly income (VND/month)

Income was recorded as an observed variable (VND/month).

Occupational formality

Formal	37	56.9%
Informal	28	43.1%

Education

High-school or below	16	25.8%
Undergraduate	39	62.9%
Master or above	7	11.3%

Reliability and Validity

Reliability and Validity of Attitude Measures

To test the reliability of the measurements for attitudes, a reliability analysis test was run on SPSS software on the eight revealing and sexy fashion products. Five items (i.e., “like/dislike,” “unappealing/appealing,” “awful/nice,” “If you see your friends are wearing this product (see image), would you grade their fashion taste/choice/style as...,” and “Would you say that your overall opinion of this product is...”) were retained to assess the attitudes on each of the eight revealing and sexy fashion products. For each of these eight products, the five scale items were loaded onto the one component with most loading indices, these being more than 0.85. A factor analysis test was also performed on SPSS software for the eight products. Please refer to Table 8 for the results.

The Composite Reliability (CR) of each construct was .901 or above, and the Average Variance Extracted (AVE) of each construct was .647 or above.

According to Tabachnick and Fidell (2013), standardized factor loadings of >0.5 , Cronbach’s alpha values of >0.7 , AVE values of >0.5 , and CR values ranging from 0.81 to 0.97 reflect acceptable levels of reliability and convergent validity. (Please refer to Table 8 for the results.) Loading factors were more than 0.90 on all eight sexy products for both ovulating and non-ovulating subsamples. Please refer to Table 8.

Table 8
Reliability and Validity of the Measures for Attitudes

Red heels (Figure A3)		Loading
Items ($\alpha = 0.901$, CR = 0.911, AVE = 0.673)		
1	Like/ dislike	0.858
2	Unappealing/ appealing	0.914
3	Awful/ nice	0.883
4	If you see your friends are wearing this product (see image), would you grade their fashion taste/choice/style as...	0.801
5	Would you say that your overall opinion of this product is...	0.819
Golden heels (Figure A4)		Loading
Items ($\alpha = 0.920$, CR = 0.901, AVE = 0.647)		
1	Like/ dislike	0.912
2	Unappealing/ appealing	0.922
3	Awful/ nice	0.915
4	If you see your friends are wearing this product (see image), would you grade their fashion taste/choice/style as...	0.785
5	Would you say that your overall opinion of this product is...	0.840
Brown/black evening clutch (Figure B3)		Loading
Items ($\alpha = 0.965$, CR = 0.933, AVE = 0.737)		
1	Like/ dislike	0.956
2	Unappealing/ appealing	0.957
3	Awful/ nice	0.965
4	If you see your friends are wearing this product (see image), would you grade their fashion taste/choice/style as...	0.931
5	Would you say that your overall opinion of this product is...	0.884
Black leather evening clutch (Figure B4)		Loading
Items ($\alpha = 0.921$, CR = 0.918, AVE = 0.692)		
1	Like/ dislike	0.904
2	Unappealing/ appealing	0.920
3	Awful/ nice	0.899
4	If you see your friends are wearing this product (see image), would you grade their fashion taste/choice/style as...	0.883
5	Would you say that your overall opinion of this product is...	0.766
White miniskirt (Figure C3)		Loading
Items ($\alpha = 0.954$, CR = 0.942, AVE = 0.765)		
1	Like/ dislike	0.933
2	Unappealing/ appealing	0.924
3	Awful/ nice	0.930
4	If you see your friends are wearing this product (see image), would you grade their fashion taste/choice/style as...	0.924
Yellow short dress (Figure C4)		Loading
Items ($\alpha = 0.944$, CR = 0.933, AVE = 0.735)		

1	Like/ dislike	0.929
2	Unappealing/ appealing	0.953
3	Awful/ nice	0.912
4	If you see your friends are wearing this product (see image), would you grade their fashion taste/choice/style as...	0.903
5	Would you say that your overall opinion of this product is...	0.838
Black sequin tank top (Figure D3)		Loading
Items ($\alpha = 0.933$, CR = 0.916, AVE = 0.687)		
1	Like/ dislike	0.888
2	Unappealing/ appealing	0.907
3	Awful/ nice	0.919
4	If you see your friends are wearing this product (see image), would you grade their fashion taste/choice/style as...	0.875
5	Would you say that your overall opinion of this product is...	0.854
Yellow tank top (Figure D4)		Loading
Items ($\alpha = 0.960$, CR = 0.944, AVE = 0.772)		
1	Like/ dislike	0.942
2	Unappealing/ appealing	0.930
3	Awful/ nice	0.947
4	If you see your friends are wearing this product (see image), would you grade their fashion taste/choice/style as...	0.920
5	Would you say that your overall opinion of this product is...	0.909

Reliability and Validity of the Measures for Purchase Intention

To test the reliability of the measurements for attitudes, a reliability analysis test was run on SPSS software on the eight products considered revealing and sexy fashion products. Cronbach's Alpha values were .947 or more on all eight sexy products for both ovulating and non-ovulating subsamples. Please refer to Table 9.

Five items — “try on,” “buy the products if I see them in a store,” “possible that I would buy this product,” “will purchase this (product) the next time I need the product,” and “If I am in need, I would buy this product”— were reused to rate the attitudes toward each of the eight revealing and sexy fashion products. Each of five scale items for all eight products were loaded onto the one component with most loading indices, those being more than 0.886. A factor

analysis test was performed on the eight revealing and sexy fashions using SPSS software.

Please refer to Table 9 for the results.

The Composite Reliability (CR) of each construct was 0.928 or above, and the Average Variance Extracted (AVE) of each construct was 0.720 or above. According to Tabachnick and Fidell (2013), standardized factor loadings of >0.5, Cronbach's alpha values of >0.7, AVE values of >0.5, and CR values ranging from 0.81 to 0.97 reflect acceptable levels of reliability and convergent validity. Please refer to Table 9 for the results.

Table 9
Reliability and Validity of the Measures for Purchase Intention

Red heels (Figure A3)		Loading
Items ($\alpha = 0.947$, CR = 0.940, AVE = 0.758)		
1	possible that I would buy this product	0.876
2	will purchase this (product) the next time I need a (product)	0.922
3	If I am in need, I would buy this (product)	0.937
4	would try on this product	0.923
5	buy the products if they see them in a store	0.887
Golden heels (Figure A4)		Loading
Items ($\alpha = 0.955$, CR = 0.928, AVE = 0.720)		
1	possible that I would buy this product	0.934
2	will purchase this (product) the next time I need a (product)	0.947
3	If I am in need, I would buy this (product)	0.942
4	would try on this product	0.908
5	buy the products if they see them in a store	0.876
Brown/black evening clutch (Figure B3)		Loading
Items ($\alpha = 0.960$, CR = 0.930, AVE = 0.728)		
1	possible that I would buy this product	0.926
2	will purchase this (product) the next time I need a (product)	0.929
3	If I am in need, I would buy this (product)	0.956
4	would try on this product	0.896
5	buy the products if they see them in a store	0.935

Table 9
Continued

Black leather evening clutch (Figure B4)		Loading
Items ($\alpha = 0.952$, CR = 0.940, AVE = 0.758)		
1	possible that I would buy this product	0.911
2	will purchase this (product) the next time I need a (product)	0.929
3	If I am in need, I would buy this (product)	0.943
4	would try on this product	0.932
5	buy the products if they see them in a store	0.868
White miniskirt (Figure C3)		Loading
Items ($\alpha = 0.965$, CR = 0.949, AVE = 0.790)		
1	possible that I would buy this product	0.947
2	will purchase this (product) the next time I need a (product)	0.937
3	If I am in need, I would buy this (product)	0.931
4	would try on this product	0.954
5	buy the products if they see them in a store	0.912
Items ($\alpha = 0.952$, CR = 0.937, AVE = 0.750)		
1	possible that I would buy this product	0.897
2	will purchase this (product) the next time I need a (product)	0.886
3	If I am in need, I would buy this (product)	0.940
4	would try on this product	0.950
5	buy the products if they see them in a store	0.909
Black sequin tank top (Figure D3)		Loading
Items ($\alpha = 0.970$, CR = 0.948, AVE = 0.784)		
1	possible that I would buy this product	1
2	will purchase this (product) the next time I need a (product)	2
3	If I am in need, I would buy this (product)	3
4	would try on this product	4
Yellow tank top (Figure D4)		Loading
Items ($\alpha = 0.970$, CR = 0.938, AVE = 0.752)		
1	possible that I would buy this product	0.891
2	will purchase this (product) the next time I need a (product)	0.889
3	If I am in need, I would buy this (product)	0.953
4	would try on this product	0.944
5	buy the products if they see them in a store	0.920

Reliability and Validity of the Measures for Fashion Consciousness

To determine the reliability and validity of the items of this construct, a factor analysis was conducted. Factor loadings of the three retained items were 0.744 and above, and the Cronbach's Alpha of this construct was 0.725. (Please refer to Table 10 below). One item was eliminated due to its low loading (0.388) to the assigned component and its negative effect on the Cronbach's Alpha value. The three retained items are presented in Table 10 below.

The Composite Reliability (CR) of this construct was 0.851 and the Average Variance Extracted (AVE) of this construct was 0.656. According to Tabachnick and Fidell (2013), standardized factor loadings of >0.5, Cronbach's alpha values of >0.7, AVE values of >0.5, and CR values ranging from 0.81 to 0.97 reflect acceptable levels of reliability and convergent validity.

Table 10
Fashion Consciousness

Items ($\alpha = 0.725$, CR = 0.851, AVE = 0.656)	Loading
1 When I must choose between the two, I usually dress for style, not comfort.	0.744
2 An important part of my life and activities involves dressing stylishly.	0.858
3 Fashionable, attractive styling is very important to me.	0.824

Three paired-sample T tests were run on SPSS to compare the means on the three items when women were near ovulation vs. when they were not near ovulation. Since the differences were not significant (see Table 11), the average of all inputs was calculated as the general FC trait of the participants.

Table 11
Differences on Fashion Consciousness During Peak and Low Fertility

	Items	p-value
1	When I must choose between the two, I usually dress for style, not comfort.	<i>Ns</i>
2	An important part of my life and activities involves dressing stylishly.	<i>Ns</i>
3	Fashionable, attractive styling is very important to me.	<i>Ns</i>

Reliability and Validity of the Measures for Self-control

To determine the reliability and validity of the items of this construct, a factor analysis was conducted. Factor loadings of the three retained items were 0.588 and above, and the Cronbach’s Alpha of this construct was 0.750. (Please refer to Table 12 below.) . Nine items were eliminated due to their low loading to the assigned component and/or their negative impact on the Cronbach’s Alpha value. The four retained items are presented in Table 12 below.

The Composite Reliability (CR) of this construct was 0.844 and the Average Variance Extracted (AVE) of this construct was 0.581. According to Tabachnick and Fidell (2013), standardized factor loadings of >0.5, Cronbach’s alpha values of >0.7, AVE values of >0.5, and CR values ranging from 0.81 to 0.97 reflect acceptable levels of reliability and convergent validity.

Table 12
Self-Control

Items ($\alpha = 0.750$, CR = 0.844, AVE = 0.581)		Loading
1	I do certain things that are bad for me, if they are fun.	0.558

2	Pleasure and fun sometimes keep me from getting work done.	0.787
3	I have trouble concentrating.	0.877
4	Sometimes I can't stop myself from doing something, even if I know it is wrong.	0.790

The results from the paired sample T-test on self-control items indicated that there was no significant difference when women were not ovulating or when not near ovulation. (Please refer to table 13.) Thus, the average of all input was considered the general SC trait of the participants.

Table 13
Differences on Self-Control During Peak and Low Fertility

	Items	Loading
1	I do certain things that are bad for me, if they are fun.	<i>Ns</i>
2	Pleasure and fun sometimes keep me from getting work done.	<i>Ns</i>
3	I have trouble concentrating.	<i>Ns</i>
4	Sometimes I can't stop myself from doing something, even if I know it is wrong.	<i>ns</i>

Hypotheses Tests

Effect of Ovulation on Attitudes

The results from paired-sample T-tests showed that ovulation had a significant and substantial effect on attitudes toward sexy and revealing fashion products. Specifically, respondents showed more favorable attitudes toward these products when they were at peak fertility than they did when they were at low fertility. (See Table 14.) The effect sizes for these

differences ranged from 0.57 to 0.86, thus they were substantial (Cohen, 1988). Attitudes for red heels, for instance, were significantly more favorable at peak fertility (M=5.44, SD=1.09) than they were at low fertility (M=4.66, SD=1.32, $t=5.85$, $p<0.001$, $d=0.73$). Thus, H1 was supported for all eight products.

Table 14
Attitudes Toward sexy and Revealing Fashion Products During Peak and Low Fertility

Fashion Products	Peak fertility Mean (SD)	Low fertility Mean (SD)	t-value	p-value	Effect size (Cohen's d)
Red heels (Figure A1)	5.44 (1.09)	4.66 (1.32)	5.85	<0.001	0.73
Golden heels (Figure A2)	5.28 (1.34)	4.78 (1.39)	4.44	<0.001	0.86
Brown/black handbag (Figure A3)	5.08 (1.35)	4.49 (1.42)	4.64	<0.001	0.57
Black leather handbag (Figure A4)	5.37 (1.13)	4.77 (1.13)	4.70	<0.001	0.57
White miniskirt (Figure A5)	5.40 (1.11)	4.78 (1.29)	4.78	<0.001	0.59
Yellow short dress (Figure A6)	5.07 (1.20)	4.45 (1.29)	5.43	<0.001	0.68
Black sequin tank top (Figure A7)	4.55 (1.66)	3.70 (1.63)	4.92	<0.001	0.61
Yellow tank top (Figure A8)	5.30 (1.27)	4.52 (1.58)	5.89	<0.001	0.76

Effect of Ovulation on Purchase Intentions

Congruent with the attitude tests above, the results from paired-sample T-tests indicated that ovulation had a significant effect on purchase intentions for revealing and sexy fashion products. Women at peak fertility did not only show more favorable attitudes towards our target products, they also had higher intentions to actually purchase these items. (See Table 15.) For example, women had a significantly higher purchase intention for red heels at peak fertility (M=5.19, SD=1.31) than they did at low fertility (M=4.40, SD=1.51, $t=4.88$, $p<0.001$, $d=0.61$).

Table 15
Purchase Intention for Sexy and Revealing Fashion Products During Peak and Low Fertility

Fashion Products	Peak fertility Mean (SD)	Low fertility Mean (SD)	t-value	p-value	Effect size (Cohen's d)
Red heels (Figure A1)	5.19 (1.31)	4.40 (1.51)	4.88	<0.001	0.61
Golden heels (Figure A2)	5.17 (1.41)	4.31 (1.60)	5.55	<0.001	0.70
Brown/black handbag (Figure A3)	4.73 (1.46)	4.10 (1.58)	3.42	<0.01	0.42
Black leather handbag (Figure A4)	5.03 (1.31)	4.40 (1.38)	4.72	<0.001	0.58
White miniskirt (Figure A5)	4.94 (1.32)	4.37 (1.50)	4.03	<0.001	0.50
Yellow short dress (Figure A6)	4.81 (1.34)	4.28 (1.43)	4.50	<0.001	0.56
Black sequin tank top (Figure A7)	3.89 (1.57)	3.25 (1.51)	3.21	<0.01	0.40
Yellow tank top (Figure A8)	4.82 (1.31)	4.20 (1.47)	4.03	<0.001	0.51

Mediation of Attitudes

H1 predicted that ovulation would have a positive effect on attitudes toward sexy and revealing fashion products. The results of these tests support the Ovulatory Shift Hypothesis (OSH). However, the Theory of Reasoned Action (TRA) assumes that attitudes predict purchase intentions. To test the TRA in the context of women's ovulatory shifts, a formal mediation model that included attitudes towards sexy and revealing fashion products as a mediator for the relationship between ovulation and purchase intentions was run.

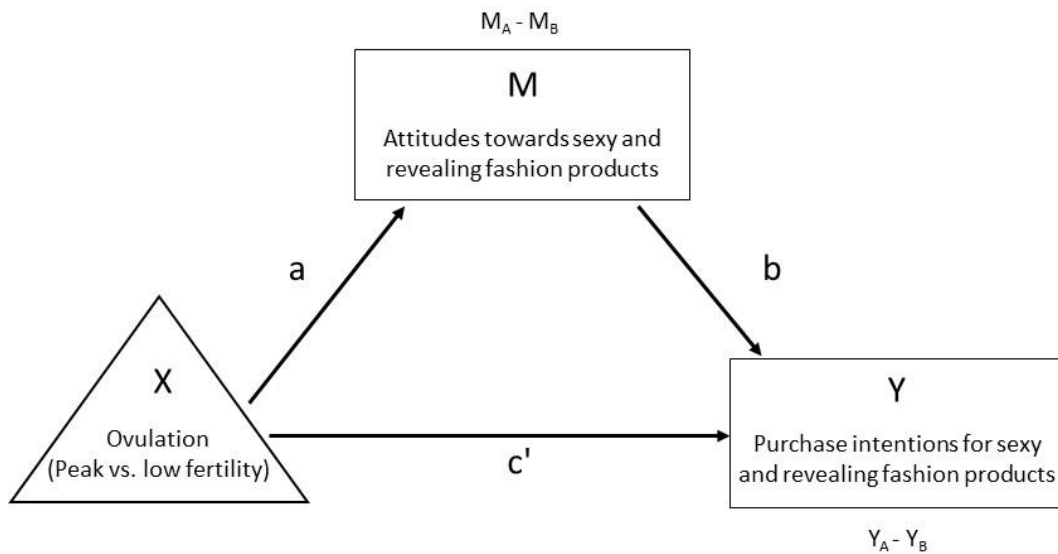
Testing mediation effects for within-subject designs (i.e., repeated measures) is challenging because contrary to between-subject designs, the assumption of independent observations is violated. Thus, running the increasingly popular Hayes (2013) process macro on

the data was not possible. However, recent advances in statistics have made a dedicated macro for mediation tests of within-subjects designs available (Montoya & Hayes, 2017).

Several mediation analyses using Montoya and Hayes's (2017) MEMORE (MEdiation and MOderation in REpeated-measures designs) were conducted. MEMORE is a macro for SPSS and SAS that estimates the total, direct, and indirect effects of X on Y through one or more mediators in the two-condition or two-occasion within-subjects/repeated measures design. Along with an estimate of the indirect effect(s), MEMORE generates confidence intervals for inference with the indirect effect(s) using bootstrapping, Monte Carlo, or normal theory approaches. Running this new macro helps formally test the mediating effect of attitudes, as shown in Figure 2.

FIGURE 2

Mediation Model for Within-Subject Design (Montoya & Hayes, 2017)



Mediation occurs when the indirect effect from the independent variable X on the dependent variable Y through the mediator M is statistically significant. The results of the mediation analyses showed a statistically significant indirect effect of attitudes towards sexy and revealing fashion products for all eight target products. (See Table 16.) Specifically, for all eight products, the 95% bias-corrected bootstrapping confidence interval for the indirect effect did not include zero, thus the percentage indicated statistical significance. For example, the indirect effect of attitudes for red heels was 0.261, with a 95% bias-corrected bootstrapping confidence interval ranging from 0.035 to 0.588. Consequently, these results support H2.

After inclusion of the mediator, as can be also seen from Table 16, the direct effect for the influence of ovulation on purchase intentions remained statistically significant in five cases and disappeared in three. Hence, for the brown and black handbags, the black sequin tank top, and the yellow tank top, full mediation was observed, whereas partial mediation occurred for the other five products.

Table 16
Mediation of Attitudes Towards Sexy and Revealing Fashion Products

Fashion Products	Indirect Effect			Direct Effect		
	b	LLCI	ULCI	b	t-value	p-value
Red heels (Figure A1)	0.261	0.035	0.588	0.523	2.675	<0.01
Golden heels (Figure A2)	0.241	0.015	0.558	0.611	3.667	<0.001
Brown/black handbag (Figure A3)	0.482	0.216	0.820	0.146	0.824	<i>ns</i>
Black leather handbag (Figure A4)	0.256	0.079	0.528	0.375	2.629	<0.05
White miniskirt (Figure A5)	0.221	0.007	0.461	0.349	2.212	<0.05
Yellow short dress (Figure A6)	0.179	0.054	0.353	0.349	2.525	<0.05

Black sequin tank top (Figure A7)	0.421	0.167	0.757	0.209	1.016	<i>ns</i>
Yellow tank top (Figure A8)	0.272	0.016	0.551	0.343	1.814	<i>ns</i>

Note: Confidence interval = 95%. Number of bootstrap samples = 5000. Indirect and direct effects are calculated based on Montoya and Hayes' (2017) MEMORE macro for within-subject designs.

Moderating Effects

The dependence of observations in within-subject designs raised similar problems for the moderation tests as in the testing of mediation. Unfortunately, Montoya and Hayes' (2017) current version of the MEMORE macro has implemented the testing of mediation, but algorithms for testing moderation were still under development at the time this article was written. As an alternative, this study followed recommendations by Judd, Kenny, & McClelland (2001) and regressed the difference of the Y variable (i.e., attitudes towards sexy and revealing fashion products) on the moderator (formula [6], p. 119).

Although for some of the eight target products, the sign of the effect pointed in the expected direction (positive for fashion consciousness and negative for self-control), very few of these effects were statistically significant. Accordingly, it was not possible to find evidence that supported H3 (moderating effect of fashion consciousness), H4 (moderating effect of self-control), and H5 (moderating effect of age), and so on. Future research may use an updated version of the MEMORE macro to test for the hypothesized moderation effects in a more advanced way.

The statistical results are displayed in the following tables. (Please see Tables 17-22).

Table 17

Fashion Consciousness as a Moderator on the Relationship Between Ovulation and Attitude Toward Sexy Fashion Products

Products	p-value
1Red heels (Figure A3)	<i>ns</i>
2Golden heels (Figure A4)	<i>ns</i>
3Brown/black evening clutch (Figure B3)	<i>ns</i>
4Black leather evening clutch (Figure B4)	<i>ns</i>
5White miniskirt (Figure C3)	<i>ns</i>
6Yellow short dress (Figure C4)	<i>ns</i>
7Black sequin tank top (Figure D3)	<i>ns</i>
8Yellow tank top (Figure D4)	<i>ns</i>

Note. Confidence interval =95%

Table 18

Self-Control as a Moderator on the Relationship Between Ovulation and Attitude Toward Sexy Fashion Products

Products	p-value
1Red heels (Figure A3)	<i>ns</i>
2Golden heels (Figure A4)	<i>Ns</i>
3Brown/black evening clutch (Figure B3)	<i>ns</i>
4Black leather evening clutch (Figure B4)	<i>Ns</i>
5White miniskirt (Figure C3)	<i>Ns</i>
6Yellow short dress (Figure C4)	<i>Ns</i>
7Black sequin tank top (Figure D3)	<i>Ns</i>
8Yellow tank top (Figure D4)	<i>ns</i>

Note. Confidence interval =95%

Table 19

Age as a Moderator on the Relationship Between Ovulation and Attitude Toward Sexy Fashion Products

Products	p-value
1Red heels (Figure A3)	<i>Ns</i>
2Golden heels (Figure A4)	<i>ns</i>
3Brown/black evening clutch (Figure B3)	<i>ns</i>
4Black leather evening clutch (Figure B4)	<i>Ns</i>
5White miniskirt (Figure C3)	<i>Ns</i>
6Yellow short dress (Figure C4)	<i>Ns</i>
7Black sequin tank top (Figure D3)	<i>Ns</i>
8Yellow tank top (Figure D4)	<i>ns</i>

Note. Confidence interval =95%

Table 20

Education as a Moderator on the Relationship Between Ovulation and Attitude Toward Sexy Fashion Products

Products	p-value
1Red heels (Figure A3)	<i>ns</i>
2Golden heels (Figure A4)	<i>ns</i>
3Brown/black evening clutch (Figure B3)	<i>ns</i>
4Black leather evening clutch (Figure B4)	<i>ns</i>
5White miniskirt (Figure C3)	<i>ns</i>
6Yellow short dress (Figure C4)	<i>ns</i>
7Black sequin tank top (Figure D3)	<i>ns</i>
8Yellow tank top (Figure D4)	<i>ns</i>

Note. Confidence interval =95%

Table 21

Occupation/ Occupational Formality as Moderator on the Relationship Between Ovulation and Attitude Toward Sexy Fashion Products

Products	p-value
1Red heels (Figure A3)	<i>ns</i>
2Golden heels (Figure A4)	<i>ns</i>
3Brown/black evening clutch (Figure B3)	<i>ns</i>
4Black leather evening clutch (Figure B4)	<i>ns</i>
5White miniskirt (Figure C3)	<i>ns</i>
6Yellow short dress (Figure C4)	<i>ns</i>
7Black sequin tank top (Figure D3)	<i>ns</i>
8Yellow tank top (Figure D4)	<i>ns</i>

Note. Confidence interval =95%

Table 22

Income as Moderator on the Relationship Between Ovulation and Attitude Toward Sexy Fashion Products

Products	p-value
1Red heels (Figure A3)	<i>ns</i>
2Golden heels (Figure A4)	<i>ns</i>
3Brown/black evening clutch (Figure B3)	<i>ns</i>
4Black leather evening clutch (Figure B4)	<i>ns</i>
5White miniskirt (Figure C3)	<i>ns</i>
6Yellow short dress (Figure C4)	<i>ns</i>
7Black sequin tank top (Figure D3)	<i>ns</i>
8Yellow tank top (Figure D4)	<i>ns</i>

Note. Confidence interval =95%

Discussion

The pre-test findings described above enhance current understanding of women's attitudes and purchase intentions toward revealing and sexy fashion products when they are near ovulation. Women's attitudes and purchase intentions toward sexy and revealing fashion products are more favorable when they are near peak fertility, and, when they near ovulation they show more interest in and a stronger preference for provocative fashion items.

For all eight target products, an indirect relationship between ovulation and purchase intention toward such products was observed. These findings shed light on how, when at peak fertility, female sex hormones indirectly impact purchase intention toward revealing and sexy products, with attitude change as mediator. This result strongly suggests that ovulation, attitude, and purchase intention toward these fashions form a sequential relationship.

CHAPTER V

RESULTS OF MAIN STUDY

The research design utilized in the pre-test was employed in the main study.

One hundred qualified females ($M_{age} = 31.66$, $SD = 8.03$, min-age= 19, and max-age = 50) were recruited at three large hospitals in the Texas Medical Center (TMC), Houston, USA. The reasons for choosing women's hospitals for the main study are similar to the ones for the pre-test: (1) the investigator was granted permission to conduct this study in these hospitals, and the (2) higher proportion of female patients and staff than can be found in other locations such as universities or corporations. After the initial contact with the participants, during which prescreening questions were asked, each participant was scheduled to come to a designated office for two surveys. 81.03% of the women completed the low-fertility test first and 18.97 % completed the high-fertility test first. The demographic characteristics of the American women sample are shown in Table 23.

Table 23
Demographic Characteristic: American Women Sample

Age	Frequency	Percentage
<20	4	4%
20 to <30	41	41%
30 to<40	39	39%
40 to 50	16	19%

Monthly income

Income was recorded as an observed variable (USD/year).

Occupational formality

Formal	46	46%
Informal	54	54%

Education

High-school or below	29	29%
Undergraduate	45	45%
Master or above	26	26%

Reliability and Validity Tests

Reliability and Validity of the Measures for Attitudes

To test the reliability of the measurements for attitudes, a reliability analysis test was run on SPSS software on the eight revealing and sexy fashion products. Cronbach's Alpha values were more than 0.867 on all eight sexy products for both ovulating and non-ovulating subsamples (please refer to Tables 24A-B).

In addition, on each of these eight products, these five scale items were loaded into one component with most loading indexes, these being more than 0.75. A factor analysis test was performed on SPSS for the eight relatively more revealing/sexy fashion products. Please refer to Tables 24A-B for the results.

The Composite Reliability (CR) of each construct was .903 or above and the Average Variance Extracted (AVE) of each construct was .735 or above.

According to Tabachnick and Fidell (2013), standardized factor loadings of >0.5, Cronbach's alpha values of >0.7, AVE values of >0.5, and CR values ranging from 0.81 to 0.97 reflects acceptable levels of reliability and convergent validity. Please refer to Tables 24A-B for the results.

Table 24A
Reliability and Validity of the Measures for Attitudes

1Red heels (Figure A3)		Loading
Items ($\alpha = 0.896$, CR = 0.923, AVE = 0.707)		
1	Like/ dislike	0.874
2	Unappealing/ appealing	0.868
3	Awful/ nice	0.872
4	If you see your friends are wearing this product (see image), would you grade their fashion taste/choice/style as	0.789
5	Would you say that your overall opinion of this product is	0.797
2Golden heels (Figure A4)		Loading
Items ($\alpha = 0.909$, CR = 0.933, AVE = 0.735)		
1	Like/ dislike	0.840
2	Unappealing/ appealing	0.854
3	Awful/ nice	0.891
4	If you see your friends are wearing this product (see image), would you grade their fashion taste/choice/style as	0.863
5	Would you say that your overall opinion of this product is	0.838
3Brown/black evening clutch (Figure B3)		Loading
Items ($\alpha = 0.909$, CR = 0.933, AVE = 0.736)		
1	Like/ dislike	0.812
2	Unappealing/ appealing	0.909
3	Awful/ nice	0.880
4	If you see your friends are wearing this product (see image), would you grade their fashion taste/choice/style as	0.853
5	Would you say that your overall opinion of this product is	0.832
4Black leather evening clutch (Figure B4)		Loading
Items ($\alpha = 0.867$, CR = 0.905, AVE = 0.656)		
1	Like/ dislike	0.737
2	Unappealing/ appealing	0.831

Table 24A
Continued

3	Awful/ nice	0.866
4	If you see your friends are wearing this product (see image), would you grade their fashion taste/choice/style as	0.791
5	Would you say that your overall opinion of this product is	0.820
5 White miniskirt (Figure C3)		Loading
Items ($\alpha = 0.906$, CR = 0.930, AVE = 0.728)		
1	Like/ dislike	0.844
2	Unappealing/ appealing	0.841
3	Awful/ nice	0.884
4	If you see your friends are wearing this product (see image), would you grade their fashion taste/choice/style as	0.900
5	Would you say that your overall opinion of this product is	0.793
6 Yellow short dress (Figure C4)		Loading
Items ($\alpha = 0.896$, CR = 0.924, AVE = 0.710)		
1	Like/ dislike	0.832
2	Unappealing/ appealing	0.913
3	Awful/ nice	0.900
4	If you see your friends are wearing this product (see image), would you grade their fashion taste/choice/style as	0.754
5	Would you say that your overall opinion of this product is	0.804
7 Black sequin tank top (Figure D3)		Loading
Items ($\alpha = 0.947$, CR = 0.960, AVE = 0.827)		
1	Like/ dislike	0.858
2	Unappealing/ appealing	0.922
3	Awful/ nice	0.930
4	If you see your friends are wearing this product (see image), would you grade their fashion taste/choice/style as	0.927
5	Would you say that your overall opinion of this product is	0.908
8 Yellow tank top (Figure D4)		Loading
Items ($\alpha = 0.905$, CR = 0.933, AVE = 0.736)		
1	Like/ dislike	0.746
2	Unappealing/ appealing	0.823
3	Awful/ nice	0.917
4	If you see your friends are wearing this product (see image), would you grade their fashion taste/choice/style as	0.884
5	Would you say that your overall opinion of this product is	0.909

Table 24B
Summary of the Reliability and Validity of the Measures for Attitudes

Fashion Products	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Red heels (Figure A3)	0.896	0.923	0.707
Golden heels (Figure A4)	0.909	0.933	0.735
Brown/black evening clutch (Figure B3)	0.909	0.933	0.736
Black leather evening clutch (Figure B4)	0.867	0.905	0.656
White miniskirt (Figure C3)	0.906	0.930	0.728
Yellow short dress (Figure C4)	0.896	0.924	0.710
Black sequin tank top (Figure D3)	0.947	0.960	0.827
Yellow tank top (Figure D4)	0.905	0.933	0.736

Reliability and Validity of the Measures for Purchase Intention

To test the reliability of the measurements for purchase intention, a reliability analysis test was run on SPSS software on the eight products considered revealing or sexy fashion-related products. Cronbach's Alpha values were .888 or more on all eight sexy products, for both ovulating and non-ovulating subsamples (Please refer to Tables 25A-B)

Each of five scale items for all eight products were loaded onto the one component with most loading indexes, those being more than 0.7. A factor analysis test was performed on the eight revealing and sexy fashions using SPSS software. Please refer to Tables 25A-B for the results.

The Composite Reliability (CR) of each construct was 0.918 or above, and the Average Variance Extracted (AVE) of each construct was 0.7 or above, and therefore reflect acceptable levels of reliability and convergent validity. Please refer to Tables 25-26 for the results.

Table 25A
Reliability and Validity of the Measures for Purchase Intention

1Red heels (Figure A3)		Loading
Items ($\alpha = 0.888$, CR = 0.918, AVE = 0.692)		
1	possible that I would buy this product	0.870
2	will purchase this (product) the next time I need a (product)	0.836
3	If I am in need, I would buy this (product)	0.802
4	would try on this product	0.812
5	buy the products if they see them in a store	0.839
Golden heels (Figure A4)		Loading
Items ($\alpha = 0.922$, CR = 0.942, AVE = 0.764)		
1	possible that I would buy this product	0.854
2	will purchase this (product) the next time I need a (product)	0.901
3	If I am in need, I would buy this (product)	0.899
4	would try on this product	0.901
5	buy the products if they see them in a store	0.812
3Brown/black evening clutch (Figure B3)		Loading
Items ($\alpha = 0.925$, CR = 0.944, AVE = 0.770)		
1	possible that I would buy this product	0.857
2	will purchase this (product) the next time I need a (product)	0.888
3	If I am in need, I would buy this (product)	0.908
4	would try on this product	0.866
5	buy the products if they see them in a store	0.868
4Black leather evening clutch (Figure B4)		Loading
Items ($\alpha = 0.896$, CR = 0.923, AVE = 0.706)		
1	possible that I would buy this product	0.802
2	will purchase this (product) the next time I need a (product)	0.814
3	If I am in need, I would buy this (product)	0.886
4	would try on this product	0.877
5	buy the products if they see them in a store	0.820
5White miniskirt (Figure C3)		Loading
Items ($\alpha = 0.936$, CR = 0.951, AVE = 0.795)		
1	possible that I would buy this product	0.872
2	will purchase this (product) the next time I need a (product)	0.894
3	If I am in need, I would buy this (product)	0.912
4	would try on this product	0.897
5	buy the products if they see them in a store	0.884

Table 25A
Continued

6Yellow short dress (Figure C4)		Loading
Items ($\alpha = 0.935$, CR = 0.951, AVE = 0.795)		
1	possible that I would buy this product	0.876
2	will purchase this (product) the next time I need a (product)	0.878
3	If I am in need, I would buy this (product)	0.905
4	would try on this product	0.915
5	buy the products if they see them in a store	0.883
7Black sequin tank top (Figure D3)		Loading
Items ($\alpha = 0.919$, CR = 0.940, AVE = 0.757)		
1	possible that I would buy this product	0.876
2	will purchase this (product) the next time I need a (product)	0.899
3	If I am in need, I would buy this (product)	0.891
4	would try on this product	0.850
5	buy the products if they see them in a store	0.832
8Yellow tank top (Figure D4)		Loading
Items ($\alpha = 0.904$, CR = 0.929, AVE = 0.724)		
1	possible that I would buy this product	0.840
2	will purchase this (product) the next time I need a (product)	0.863
3	If I am in need, I would buy this (product)	0.900
4	would try on this product	0.867
5	buy the products if they see them in a store	0.780

Table 25B
Summary of the Reliability and Validity of the Measures for Purchase Intention

Fashion Products	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Red heels (Figure A3)	0.888	0.918	0.692
Golden heels (Figure A4)	0.922	0.942	0.764
Brown/black evening clutch (Figure B3)	0.925	0.944	0.770
Black leather evening clutch (Figure B4)	0.896	0.923	0.706
White miniskirt (Figure C3)	0.936	0.951	0.795
Yellow short dress (Figure C4)	0.935	0.951	0.795

Table 25B Continued			
Black sequin tank top (Figure D3)	0.919	0.940	0.757
Yellow tank top (Figure D4)	0.904	0.929	0.724

Reliability and Validity of the Measures for Fashion Consciousness

To determine the reliability and validity of the items of this construct, a factor analysis was conducted. Factor loadings of the three retained items here are 0.778 and above, and the Cronbach's Alpha of this construct was 0.755. (Please refer to Table 26 below).

The Composite Reliability (CR) of this construct is 0.851 and the Average Variance Extracted (AVE) of this construct is 0.656: Acceptable levels of reliability and convergent validity were reflected.

Table 26
Fashion Consciousness

Items ($\alpha = 0.755$, CR = 0.861, AVE = 0.674)		Loading
1	When I must choose between the two, I usually dress for style, not comfort.	0.778
2	An important part of my life and activities involves dressing stylishly.	0.881
3	Fashionable, attractive styling is very important to me.	0.801

Thereon, three Paired-Sample T-Test tests were run on the three items within the Fashion Consciousness construct to compare the means when women were near ovulation and when they were not near ovulation. The results showed there was no significant difference between the two values (please refer to Table 27 below). Thus, the average of all the values was calculated as the general self-control trait.

Table 27
Differences on Fashion Consciousness During Peak and Low Fertility

	Items	p-value
1	When I must choose between the two, I usually dress for style, not comfort.	0.318(<i>ns</i>)
2	An important part of my life and activities involves dressing stylishly.	0.565(<i>ns</i>)
3	Fashionable, attractive styling is very important to me.	0.730(<i>ns</i>)

Reliability and Validity of the Measures for Self-Control

To determine the reliability and validity of the items of this construct, a factor analysis was conducted. Factor loadings of the four items here are 0.588 and above, and the Cronbach's Alpha of this construct was 0.750. (Please refer to Table 28 below).

The Composite Reliability (CR) of this construct is 0.835 and the Average Variance Extracted (AVE) of this construct is 0.560, which help indicate the acceptable levels of reliability and convergent validity.

Table 28
Self-Control

	Items ($\alpha = 0.734$, CR = 0.835, AVE = 0.560)	Loading
1	I do certain things that are bad for me, if they are fun.	0.678
2	Pleasure and fun sometimes keep me from getting work done.	0.758
3	I have trouble concentrating.	0.794

Similar to the case of Fashion Consciousness, four Paired-Sample T-Tests were used on SPSS to compare the means of self-control when women were near ovulation and when they were not near ovulation. The results showed there was no significant difference between the values at

the two different points in time (please refer to Table 29). Thus, the average of all the values was considered as the general self-control trait.

Table 29
Differences on Self-Control During Peak and Low Fertility

	Items	Loading
1	I do certain things that are bad for me, if they are fun.	0.176(<i>ns</i>)
2	Pleasure and fun sometimes keep me from getting work done.	0.733(<i>ns</i>)
3	I have trouble concentrating.	0.292(<i>ns</i>)
4	Sometimes I can't stop myself from doing something, even if I know it is wrong.	0.165(<i>ns</i>)

Hypotheses Tests

Effect of Ovulation on Attitudes

To investigate the effect of ovulation on women's attitudes towards sexy and revealing fashion products, (i.e. whether women's attitudes toward revealing and sexy fashion products differ when they are ovulating from when they are not ovulating), a paired-sample T-test was employed. The results show that there are significant differences ($p < 0.001$). (Please refer to Table 30).

In other words, the results indicate that the women's attitudes toward more revealing and sexy fashion products changed over their ovulatory cycle. When near ovulation, subjects showed stronger positive attitudes toward sexy products. The shift in participants' attitudes toward all eight revealing and sexy fashion products from when they are non-ovulating to when they are ovulating is significant. This finding is consistent with those of Durante et al. (2008).

Moreover, the effect sizes for these differences ranged from 0.53 to 0.89 and were thus substantial (Cohen, 1988). For example, attitudes for “white miniskirt” were significantly more favorable at peak fertility (M=5.35, SD=1.15) than at low fertility (M=4.23, SD=1.45, $t=5.85$, $p<0.001$, $d=0.86$). As a result, H1 was supported for all eight products.

Table 30
Attitudes Towards Sexy and Revealing Fashion Products During Peak and Low Fertility

Fashion Products	Peak fertility Mean (SD)	Low fertility Mean (SD)	t-value	p-value	Effect size (Cohen’s d)
1Red heels (Figure A1)	5.36 (1.25)	4.37 (1.27)	10.27	<0.001	0.78
2Golden heels (Figure A2)	4.93 (1.35)	3.91 (1.42)	11.21	<0.001	0.74
3Brown/black handbag (Figure A3)	5.11 (1.25)	4.18 (1.38)	9.96	<0.001	0.71
4Black leather handbag (Figure A4)	5.35 (1.12)	4.71 (1.31)	6.50	<0.001	0.53
5White miniskirt (Figure A5)	5.35 (1.15)	4.23 (1.45)	9.54	<0.001	0.86
6Yellow short dress (Figure A6)	4.76 (1.28)	3.58 (1.38)	11.85	<0.001	0.89
7Black sequin tank top (Figure A7)	4.46 (1.53)	3.34 (1.58)	10.51	<0.001	0.72
8Yellow tank top (Figure A8)	4.68 (1.43)	3.62 (1.30)	9.66	<0.001	0.77

Effect of Ovulation on Purchase Intentions

Similar to the attitude tests above, the findings of this pilot test strongly indicate that women’s purchase intention toward revealing and sexy fashion products varies during their ovulatory cycle (See Table 31). When near ovulation, women show a stronger positive purchase intention toward such products. On all eight relatively revealing and sexy given fashions, the shift in participants’ purchase intention from when they are not ovulating to when they are ovulating is

significant ($p < 0.001$). This finding is consistent with the findings of such studies as Durante et al. (2008).

Table 31
Purchase Intention for Sexy and Revealing Fashion Products During Peak and Low Fertility

Fashion Products	Peak fertility Mean (SD)	Low fertility Mean (SD)	t-value	p-value	Effect size (Cohen's d)
1Red heels (Figure A1)	5.14 (1.31)	4.09 (1.37)	13.11	<0.001	0.78
2Golden heels (Figure A2)	4.44 (1.60)	3.85 (1.59)	6.78	<0.001	0.40
3Brown/black handbag (Figure A3)	5.05 (1.28)	4.17 (1.46)	8.44	<0.01	0.64
4Black leather handbag (Figure A4)	5.31 (1.18)	4.42 (1.40)	8.83	<0.001	0.69
5White miniskirt (Figure A5)	5.19 (1.22)	3.87 (1.52)	10.92	<0.001	0.95
6Yellow short dress (Figure A6)	4.61 (1.51)	3.40 (1.46)	9.98	<0.001	0.81
7Black sequin tank top (Figure A7)	4.31 (1.56)	3.20 (1.44)	11.18	<0.01	0.74
8Yellow tank top (Figure A8)	4.49 (1.42)	3.42 (1.29)	8.91	<0.001	0.79

Mediation of Attitudes

To examine if women's ovulation has an indirect effect on purchase intention toward relatively more revealing/sexy fashion-related products with attitudes as mediator, eight mediation analyses were run on MEMORE accordingly to eight fashion products.

Specifically, for all eight products, the 95% bias-corrected bootstrapping confidence interval for the indirect effect did not include zero (and thus indicated statistical significance). For example, the indirect effect of attitudes for "white miniskirt" was 0.544, with a 95% bias-

corrected bootstrapping confidence interval ranging from 0.164 to 0.884. Thus, these results provide evidence in support of H2.

Furthermore, as can be also seen from Table 32, attitude has a partial mediation role on the relationship between ovulation and purchase intention toward all eight products.

Table 32
Mediation of Attitudes Toward Sexy and Revealing Fashion Products

Fashion Products	Indirect Effect			Direct Effect		
	b	LLCI	ULCI	B	t-value	p-value
1Red heels (Figure A1)	0.416	0.218	0.635	0.632	6.315	<0.001
2Golden heels (Figure A2)	0.303	0.046	0.570	0.283	2.264	<0.05
3Brown/black handbag (Figure A3)	0.520	0.179	0.857	0.358	2.767	<0.01
4Black leather handbag (Figure A4)	0.315	0.117	0.529	0.577	2.5.41	<0.001
5White miniskirt (Figure A5)	0.544	0.164	0.884	0.763	2.5.149	<0.001
6Yellow short dress (Figure A6)	0.797	0.459	1.170	0.413	2.588	<0.05
7Black sequin tank top (Figure A7)	0.388	0.170	0.653	5.354	1.016	<0.001
8Yellow tank top (Figure A8)	0.667	0.373	1.022	0.387	2.856	<0.01

Note: Confidence interval = 95%. Number of bootstrap samples = 5000. Indirect and direct effects are calculated based on Montoya and Hayes' (2017) MEMORE macro for within-subject designs.

Moderating Effects of Fashion Consciousness and Self-Control

Again, as recommended by Judd, Kenny, & McClelland (2001) the difference of the Y variable (i.e., attitudes towards sexy apparel) on the moderator (formula [6], p. 119) was regressed. Although for some of these eight target products, the sign of the effect pointed in the expected direction (positive for fashion consciousness and negative for self-control), very few of

these effects were statistically significant. Thus, there was a lack of evidence in support of H3 (moderating effect of fashion consciousness) and H4 (moderating effect of self-control). Future research may use an updated version of the MEMORE macro to test for the hypothesized moderation effects. The detail of each moderation analysis is provided below:

Fashion Consciousness as a Moderator. The Confidence Interval Level chosen was 95%. Moderating effect of fashion consciousness on the relationship between Ovulation and Attitude towards sexy and revealing fashion products was observed in the case of Brown/black evening clutch (Figure B3), White miniskirt (Figure C3) and Black sequin tank top (Figure D3). On the other hand, moderating effect of consciousness was not observed in the rest of the cases such as Red heels (Figure A3). Please see Table 33. Hypothesis 3, therefore, was not supported.

Table 33
Fashion Consciousness as a Moderator on the Relationship Between Ovulation and Attitude Toward Sexy Fashion Products

Products	Pearson Correlation	p-value
1Red heels (Figure A3)	0.081	0.427
2Golden heels (Figure A4)	0.132	0.194
3Brown/black evening clutch (Figure B3)	0.223*	0.027
4Black leather evening clutch (Figure B4)	0.088	0.384
5White miniskirt (Figure C3)	0.339**	0.001
6Yellow short dress (Figure C4)	0.167	0.099
7Black sequin tank top (Figure D3)	0.252*	0.012
8Yellow tank top (Figure D4)	0.162	0.109

Note. Confidence interval =95%

**. Correlation is significant at the 0.05 level (2-tailed).*

*** . Correlation is significant at the 0.01 level (2-tailed).*

Self-Control as a Moderator. No moderating effect of Self-Control was observed in any of the eight cases below (please refer to Table 34 for more details). Thus, Self-Control does not play a mediator role on the relationship between Ovulation and Attitude towards these products. Consequently, H4 was not supported.

Table 34
Self-Control as a Moderator on the Relationship Between Ovulation and Attitude Toward Sexy Fashion Products

Products	Pearson Correlation	p-value
1Red heels (Figure A3)	0.010	0.925
2Golden heels (Figure A4)	-0.065	0.537
3Brown/black evening clutch (Figure B3)	0.062	0.554
4Black leather evening clutch (Figure B4)	0.072	0.491
5White miniskirt (Figure C3)	0.175	0.094
6Yellow short dress (Figure C4)	0.001	0.992
7Black sequin tank top (Figure D3)	0.122	0.244
8Yellow tank top (Figure D4)	0.000	0.999

Note. Confidence interval =95%

Moderating Effects of Demographic Traits

Age as a Moderator. On one out of the eight products, the statistic indicated Age as a moderator on the relationship between Ovulation and Attitude. Thus, H5 was not supported except in the case of “Golden Heels” (see Table 35).

Table 35

Age as a Moderator on the Relationship Between Ovulation and Attitude Toward Sexy Fashion Products

Products	Pearson Correlation	p-value
1Red heels (Figure A3)	-0.023	0.820
2Golden heels (Figure A4)	-0.206*	0.042
3Brown/black evening clutch (Figure B3)	-0.183	0.071
4Black leather evening clutch (Figure B4)	-0.024	0.814
5White miniskirt (Figure C3)	-0.085	0.405
6Yellow short dress (Figure C4)	-0.086	0.399
7Black sequin tank top (Figure D3)	0.022	0.828
8Yellow tank top (Figure D4)	-0.184	0.070

Note. Confidence interval =95%

*. Correlation is significant at the 0.05 level (2-tailed).

Education as a Moderator. There was no evidence of Education being a moderator on the relationship between Ovulation and Attitude or Ovulation and Purchase Intention (please refer to Tables 36). H6 was not supported.

Table 36

Education as a Moderator on the Relationship Between Ovulation and Attitude Toward Sexy Fashion Products

Products	Pearson Correlation	p-value
1Red heels (Figure A3)	- 0.018	0.855
2Golden heels (Figure A4)	-0.165	0.102
3Brown/black evening clutch (Figure B3)	0.031	0.761
4Black leather evening clutch (Figure B4)	0.031	0.340

5White miniskirt (Figure C3)	-0.097	0.340
6Yellow short dress (Figure C4)	-0.167	0.096
7Black sequin tank top (Figure D3)	0.007	0.946
8Yellow tank top (Figure D4)	-0.140	0.166

Note. Confidence interval =95%

Occupation/Occupational Formality as a Moderator. The statistics pointed out the significant moderating effects of Occupational Formality on the relationship between Ovulation and Attitudes on the products of “Golden heels” and “Yellow tank top” (please refer to Table 37). Thus, H7 was not supported in general.

Table 37
Occupational Formality as a Moderator on the Relationship Between Ovulation and Attitude Toward Sexy Fashion Products

Products	Pearson Correlation	p-value
1Red heels (Figure A3)	0.106	0.294
2Golden heels (Figure A4)	-0.224*	0.025
3Brown/black evening clutch (Figure B3)	-0.119	0.239
4Black leather evening clutch (Figure B4)	-0.170	0.091
5White miniskirt (Figure C3)	-0.118	0.224
6Yellow short dress (Figure C4)	-0.160	0.111
7Black sequin tank top (Figure D3)	0.058	0.565
8Yellow tank top (Figure D4)	-0.280**	0.002

Note. Confidence interval =95%

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Income as a moderator. No moderating effect of income was observed (see Tables 38).

Therefore, H8 was not supported.

Table 38

Income as a Moderator on the Relationship Between Ovulation and Attitude Toward Sexy Fashion Products

Products	Pearson Correlation	p-value
1Red heels (Figure A3)	0.017	0.875
2Golden heels (Figure A4)	-0.030	0.777
3Brown/black evening clutch (Figure B3)	-0.154	0.143
4Black leather evening clutch (Figure B4)	0.015	0.886
5White miniskirt (Figure C3)	-0.179	0.090
6Yellow short dress (Figure C4)	-0.031	0.770
7Black sequin tank top (Figure D3)	0.059	0.578
8Yellow tank top (Figure D4)	0.051	0.629

Note. Confidence interval =95%

CHAPTER VI

DISCUSSION, CONCLUSION, AND FUTURE RESEARCH

Discussion

The findings described above enhance our understanding of American women's attitudes and purchase intention toward revealing and sexy fashion products when they are near ovulation. The main study on American women demonstrates that their attitudes and purchase intentions toward sexy and revealing fashion products are more favorable when they are near peak fertility. In other words, American women near ovulation show more interest in and a stronger preference for provocative, sexy fashion products.

For all eight targeted products, an indirect relationship between ovulation and purchase intention toward such products was observed. These findings shed light on how female sex hormones, when at peak fertility, indirectly impact purchase intention toward revealing and sexy products, with attitude change as mediator. This result strongly suggests that ovulation, attitude, and purchase intention toward these fashions form a sequential relationship. That is, the result supports hypothesis H2 – that women's ovulation has a significant indirect effect on their purchase intention toward revealing and sexy fashion products through the effect on attitude toward such products.

Moreover, psychological traits including fashion consciousness and self-control play the role of moderator in the relationship between ovulation and attitude. Similarly, demographic characteristics such as education and occupational formality moderate such relationships in some

circumstances. These results point out that the moderating impact of these factors is context-dependent, thus they require in-depth investigation in future studies.

However, there is no evidence that age and income are moderators on the relationship between ovulation and attitude toward the eight sexy and revealing fashion products shown to participants in the study. The evident conclusion is that age and income do not have any moderating influence on American women's attitude and purchase intention toward sexy fashion products. Overall, there is not enough evidence to support H3-8.

Conclusions

Even though the Vietnamese women in the preliminary studies and the American women in the main study were recruited from two very different geographic locations (i.e., Ho Chi Minh city, Vietnam, and Houston, TX, U.S.), psychological traits (i.e. fashion consciousness and self-control) were not significantly different (FFC-value=0.927, p-value=0.562; FSC-value=1.091, p-value=0.401). Moreover, both attitude and purchase intention of the women in the two groups when in luteal phase toward the eight products were also not significantly different. Please refer to Tables 39-40.

Table 39

American Women vs. Vietnamese Women: Difference on Means of Attitude Toward Sexy and Revealing Fashion Products – When Not Near Ovulation

Products	F-value	p-value
1 Red heels (Figure A3)	1.257	0.259
2 Golden heels (Figure A4)	1.013	0.470
3 Brown/black evening clutch (Figure B3)	1.025	0.459
4 Black leather evening clutch (Figure B4)	1.214	0.288
5 White miniskirt (Figure C3)	0.570	0.897
6 Yellow short dress (Figure C4)	0.853	0.645
7 Black sequin tank top (Figure D3)	1.043	0.441
8 Yellow tank top (Figure D4)	0.713	0.781

Note. Confidence interval =95%

Table 40

American Women vs. Vietnamese Women: Difference on Means of Purchase Intention Toward Sexy and Revealing Fashion Products – When Near Ovulation

Products	F-value	p-value
2 Golden heels (Figure A4)	1.568	0.104
3 Brown/black evening clutch (Figure B3)	0.688	0.830
4 Black leather evening clutch (Figure B4)	0.632	0.834
5 White miniskirt (Figure C3)	0.863	0.637
6 Yellow short dress (Figure C4)	1.436	0.155
7 Black sequin tank top (Figure D3)	1.259	0.253
8 Yellow tank top (Figure D4)	0.933	0.558

Note. Confidence interval =95%

Overall, the results of statistic tests on the eight products are presented in Table 41 below:

Table 41

Summary of Statistic Results

Hypotheses	Study 1	Study 2
H1	Supported	Supported
H2	Supported	Supported
H3	Not Supported	Not Supported
H4	Not Supported	Not Supported
H5	Not Supported	Not Supported
H6	Not Supported	Not Supported
H7	Not Supported	Not Supported

Theoretical Contributions

This study offers several contributions to theory. First, it adds to related streams of research that suggest hormonal fluctuations influence humans’ social behaviors. For example, previous studies discovered that cortisol and the male sex hormone testosterone play a significant role in initial financial investment decisions (e.g., Cuddy, 2012; Patterson, 2014) and female sex hormones such as estrogen also influence women’s attitudes and purchase intention (e.g., Durante et al., 2011; Saad & Stenstrom, 2012). As predicted by the ovulatory shift hypothesis (Gangestad et al., 2005), the results here show that women at peak fertility develop more favorable attitudes and stronger purchase intentions towards sexy and revealing fashion products than do women at low fertility. Second, because this research uses a within-subject design that has women indicating their attitudes and purchase intentions both at peak and at low fertility, the

results here are more robust than they would have been had a between-subject design been utilized because self-selection bias would have been a problem. Third, MEMORE- the new statistical tool was employed in this study as compared to the classic regression statistical instruments in similar previous studies. That is the studied relationships were tested using a relatively recent advancement in statistical analysis for within-subject mediation models, the MEMORE macro (Montoya & Hayes, 2017). Fourth, this study not only involved samples comprised of young, educated Western women, it also extended to non-Western women and those with different demographic backgrounds in terms of education, age, and income. Fifth, it was as predicted by the theory of reasoned action (Ajzen, 1985; 2002), a mediating effect of attitude on the relationship between ovulation and purchase intention toward sexy and revealing fashion products was observed. Finally, the call for more theory-driven research in emerging economies (Burgess and Steenkamp, 2013) was answered by including the Vietnam context in this study.

Managerial Implications

This research helps marketing practitioners understand how women's fashion choices are influenced by underlying biological factors. This understanding can help companies marketing fashion brands – particularly luxury brands – and craft a marketing strategy which targets women when they are at peak fertility and accordingly, more susceptible to make appearance related-product purchases. Companies that market apparel can collect information and data related to the menstrual cycles of their customers. This can be achieved through sponsorship and support of free menstrual, ovulation and fertility tracking apps in which women willingly disclose this information and give permission for such data to be used when agreeing to the Terms and

Conditions. This information will enable them to accurately estimate the peak fertility time of female customers and suitably promote personalized advertisements to these women via direct mail, email, text, phone, and social media accounts.

Advertising appearance-related products on dating websites is also a suggestion for marketers. Data to be collected may include monitoring activity to predict women's days of high rates of potential partners' profile viewership and message reply rates; indicators of ovulation and peak fertility. Such a carefully timed marketing campaign is likely to get their attention and increase the likelihood of their purchasing the advertised products.

In other words, companies could gather and use this information to advertise sexy and revealing fashion items specifically to women they know are near ovulation. One application of these research findings is to advertise sexy and revealing fashion products on dating websites, which are high-mating environments and where intra-sexual competition among the women visiting these sites is intense.

Some argue, however, that companies may not be able to obtain information about customers' menstrual cycles since this information is considered intimate. To address this question, a side survey was conducted at the end of the study. It aimed to see if Vietnamese women would be willing to share such personal information.

Data from a different group of 100 Vietnamese women (mean age = 28.45 years, range from 21 to 37 years) not involved with the previous studies was obtained. To learn whether women would be willing to provide information on their ovulation cycle to marketers if there was compensation, women were asked, "How much would you expect or ask for to provide your menstrual/ovulation information to marketers/companies?" All participating women indicated that they would be willing to provide such information if they were compensated. Then the

participants were asked to write down the exact amount they would like to be paid for this information. On average, the women in this study expected to be paid about \$4.50 US, with a maximum of \$25 US. Thus, the initial evidence from this final survey suggests that companies in Vietnam would be able to obtain individual-level ovulation data to target consumers more effectively.

Limitations and Avenues for Future Research

This study provides important insights into the relationship between women's hormonal functions and specific attitudes and purchase intention toward sexy and revealing fashion products. Future research may try to investigate in greater depth the effects described in this research.

For example, this research does not include possibly relevant theories of sexual selection (Darwin, 1871), parental investment (Trivers, 1972), and strategic pluralism (Gangestad & Simpson, 2000), all of which can help explain this phenomenon. Sexual selection was suggested by Darwin (1871) to address an apparent puzzle in the animal kingdom: given that natural selection generally favors traits that aid survival, it was initially unclear why some animal traits passed on appear to confer no functional advantages and may even impede survival. Parental investment (Trivers, 1972) is the contribution that each parent makes to the production of viable offspring. Strategic pluralism theory (Gangestad & Simpson, 2000) demonstrates how factors such as desirability to the opposite sex (i.e., mate value), current economic and environmental conditions, and local sex ratios influence the choice of a partner in a long-term, high-investing strategy (i.e., a restricted strategy) versus a short-term, non-investing strategy (i.e., an unrestricted strategy). Future researchers might investigate the relevance of any of these theories

to the motivations behind women's proclivity to choose revealing and sexy outfits when at peak fertility.

Second, this study did not investigate competition, either intra-sexual (competing with same-sex rivals) or intersexual (competing for the attention of a potential mate). In other words, the deep motivation behind mating purposes (i.e., mate retention vs. mate acquisition) for women preferring more revealing and sexy fashion products and the selection of such products was not examined in this study. Future research could delve into nature of these competitions to see what role women's sex hormones play.

A third avenue for future research might be to investigate the deep motivation behind mating purposes (i.e., mate retention vs. mate acquisition) of women who prefer sexy and revealing products at peak ovulation.

Fourth, future researchers could investigate the role of fashion consciousness, self-control, and other personality-related factors that potentially moderate the relationships discussed in this study.

Finally, further expansion of this study may see a stricter definition between appearance-related product and a fashion product. A follow-up survey could be conducted to gather participants' opinions on whether the 16 selected products are fashionable. This can help understand whether the choices of women nearing ovulation are driven by the sexy traits of the apparel rather than the fashionable and/or popular characteristics of such products.

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APPENDIX A

APPENDIX A

SHOES



Figure A1: Brown flat



Figure A2: Black flat shoes



Figure A3: Red heels



Figure A4: Golden heels

APPENDIX B

APPENDIX B

HANDBAGS



Figure B1: White handbag



Figure B2: Brown handbag



Figure B3: Brown/black evening clutch



Figure B4: Black leather evening clutch

APPENDIX C

APPENDIX C

DRESSES



Figure C1: Long black silk dress



Figure C2: Long black winkle dress



Figure C3: White miniskirt



Figure C4: Yellow short dress

APPENDIX D

APPENDIX D

TOPS



Figure D1: Black long-sleeve blouse



Figure D2: White plain long-sleeve shirt



Figure D3: Black sequin tank top



Figure D4: Yellow tank top

BIOGRAPHICAL SKETCH

Ngoc B. Pham earned a doctoral degree in Business Administration with a concentration in Marketing from the university of Texas Rio Grande Valley (UTRGV) at Edinburg, Texas in December 2017. She earned a master's degree in Business Administration with concentrations in Accounting and Marketing from the University of Houston in 2013 and a bachelor's degree in Accounting from Nha Trang University in 2008. Her research interests are in consumer behavior, international and fashion marketing, and business ethics.

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