Fertile women are more demanding: Ovulatory increases in minimum mate preference criteria across a wide range of characteristics and relationship contexts

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A B S T R A C T

The ovulatory shift hypothesis (Gangestad, Thornhill, & Garver-Apgar, 2005) makes three predictions. First, it posits that during peak fertility, women are more attracted to males who display characteristics of good genes. Secondly, it predicts that women predominantly experience ovulatory shifts when evaluating males as short-term sexual partners. Lastly, it predicts that ovulatory shifts should be non-existent when measuring mate preferences associated with long-term partner quality. However given that female preferences are formulated as a means to offset costs associated with reproduction (Buss, 1994) and such costs are more likely to be incurred during peak fertility, the current study (via the ovulatory reproductive safeguards hypothesis) posits that women during peak fertility should show a general increase in their mate preference criteria across a variety of characteristics and relationships. Using a within-subjects design and hormonal markers of fertility status, the present study investigates the degree to which ovulatory shifts in preferences are limited to short-term sexual liaisons and the degree to which such shifts are associated with characteristics related to long-term partner quality. Contrary to the ovulatory shift hypothesis (and in support of the ovulatory reproductive safeguards hypothesis), ovulatory shifts were found across a wide range of relationship contexts and preference characteristics.

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1. Introduction

Over the last two decades, there has been a growing interest in ovulatory shifts in mate preferences; this interest has recently culminated in a meta-analysis (Gildersleeve, Haselton, & Fales, 2014). Within this analysis, Gildersleeve and colleagues concluded that ovulatory shifts in mate preferences represent strategic shifts in preferring ancestral markers of high genetic quality (i.e., good genes) during peak fertility. Past research has documented such ovulatory shifts in mate choice on a variety of characteristics thought to be associated with ancestral good genes including symmetry (e.g., Gangestad & Thornhill, 1998; Little, Jones, Burt, & Perrett, 2007), dominance (e.g., Gangestad, Garver-Apgar, Simpson, & Cousins, 2007; Lukaszewski & Roney, 2009) and masculinity (e.g., Little, Jones, Penton-Voak, Burt, & Perrett, 2002; Penton-Voak et al., 1999; Puts, 2005). The predominant explanation for these changes in mate preferences has been outlined within the ovulatory shift hypothesis.

1.1. The ovulatory shift hypothesis

The ovulatory shift hypothesis (Gangestad, Thornhill, & Garver-Apgar, 2005) makes three predictions. First, it posits that during peak fertility, women are more attracted to males who display characteristics of high genetic quality. Secondly, it predicts that women predominantly experience cycle shifts when evaluating males as short-term sexual partners. Thus, during peak fertility, ovulatory shifts are either nonexistent or occur to a lesser extent when evaluating males as long-term mates. Lastly, it predicts that ovulatory shifts should be non-existent when measuring mate preferences related to long-term partner quality (e.g., kindness, faithfulness, good financial prospects, etc.).

The strongest support for the ovulatory shift hypothesis centers on its first prediction concerning preferences for ancestral good genes. Specifically, past research reinforces the notion that ovulatory shifts occur for characteristics that were potentially associated with high genetic quality within our evolutionary past (i.e., symmetry, dominance, and masculinity; as summarized above). The remaining two predictions made by the ovulatory shift hypothesis have generally garnered less attention from researchers.

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1.1.1. Short-term versus long-term mating

The second prediction of the ovulatory shift hypothesis asserts that menstrual cycle effects should be limited to the evaluation of short-term mates. Even though Gildersleeve et al. (2014) posit in their meta-analysis that current menstrual cycle research supports this prediction, it should be noted that of the 38 published studies included in their meta-analysis, nine studies (23.68%) provided appropriate data to specifically evaluate the influence of fertility status on long-term mating. Furthermore, these studies provide mixed support for the notion that ovulatory shifts are solely limited to the short-term mating context. These nine studies investigated the influence of fertility status on mate preferences associated with symmetry (Little et al., 2007), dominance (Gangestad, Simpson, Cousins, Garver-Apgar, & Christensen, 2004; Gangestad et al., 2007; Lukaszewski & Roney, 2009), creative intelligence (Haselton & Miller, 2006), and masculinity (Little et al., 2002; Pawlowski & Jasienska, 2008; Penton-Voak et al., 1999; Puts, 2005).

Consistent with prediction two of the ovulatory shift hypothesis, Little and colleagues (Little et al., 2007) found a greater preference for symmetry during peak fertility when women evaluated short-term mates but not long-term ones. Likewise, Gangestad's research group across two studies (Gangestad et al., 2004, 2007) demonstrated ovulatory shifts towards greater preferences for visual displays of dominance when evaluating short-term mates only. However, Lukaszewski and Roney (2009) found preference for dominance was not limited to the short-term mating context. When fertility status was defined continuously (see Gildersleeve et al., 2014), Lukaszewski and Roney's data demonstrated ovulatory shifts in preferring dominance for both long-term and short-term mates.

The influence of fertility status has also been investigated in reference to preferences associated with creative intelligence (Haselton & Miller, 2006). Specifically, Haselton and Miller (2006) found an ovulatory shift in preferring greater creative intelligence when evaluating short-term but not long-term mates. However, a subsequent study by Prokosch et a1. (2009) failed to find an ovulatory shift in preferring intelligence. Instead, they found that women generally desire intelligent partners and conception risk did not influence this preference.

In reference to masculinity, Penton-Voak et al. (1999) and Little et al. (2002) demonstrated that fertile women prefer relatively more masculinized faces when evaluating short-term rather than long-term mates. However, research concerning masculine voices is less straightforward. When using unmanipulated vocal stimuli, Puts (2005) failed to find a menstrual cycle effect in preferring masculine voices. After artificially manipulating natural male voices (by digitally increasing or decreasing pitch) an ovulatory shift in preferring digitally masculinized voices was found for short-term mates only. Thus, normal variation in male voices failed to find an ovulatory shift and it was only after digitally manipulating voices that an effect was found, which raises questions concerning the ecological validity of this finding. Another potential marker of masculinity concerns sexual dimorphism in height (i.e., men are taller than women). In measuring preferences for taller men, Pawlowski and Jasienska (2008) found that fertile women reported taller men to be more desirable as both short-term and long-term mates (see Gildersleeve et al., 2014). In sum, the notion that ovulatory shifts are solely limited to the short-term mating context has received mixed results.

1.1.2. Long-term partner quality

The third prediction of the ovulatory shift hypothesis states that conception risk effects should be limited to characteristics related to ancestral good genes and be non-existent among characteristics associated with long-term partner quality (e.g., kindness, faithfulness, good financial prospects, etc.). The vast majority of research conducted on the menstrual cycle has limited their focus to characteristics potentially associated with ancestral good genes. Indeed, only three (i.e., Caryl et al., 2009; Gangestad et al., 2007; Lukaszewski & Roney, 2009) of the 38 published studies included in Gildersleeve et al. (2014) meta-analysis provided data concerning preferences for characteristics associated with long-term partner quality. While these three studies appear to support the prediction that cycle shifts are non-existent for characteristics associated with long-term mating, only one of these studies used traditional measures of mate preferences (i.e., Lukaszewski & Roney, 2009).

In 1939, early mate preference research asked participants to rate how important 18 factors were in evaluating potential mates using a 4 point scale (0 = unimportant, 1 = not very important, 2 = important but not indispensible, and 3 = indispensible; Hill, 1945). This tradition of asking participants to rate the importance of characteristics in the evaluation of potential mates continues today (e.g., Zhang, Teng, Chan, & Zhang, 2014), but is relatively non-existent within the menstrual cycle research (Gildersleeve et al., 2014). A rare exception to this can be found in Lukaszewski and Roney's (2009) study.

In their investigation, Lukaszewski and Roney (2009) asked women to rate how important it was for potential mates (short-term and long-term) to show evidence of kindness and trustworthiness. Composites were created using mate preference characteristics and importance ratings were made using the following scale: 1 (not important) to 7 (very important). While this method represents a traditional mate preference measure, using importance ratings for highly valued positive traits (i.e., kindness and trustworthiness) can create potential ceiling effects. One way to avoid ceiling effects consists of asking individuals to rate their minimum acceptable criteria (e.g., Kenrick, Groth, Trost, & Sadalla, 1993). To our knowledge, there has not yet been a menstrual cycle study using such a methodology and we hope to correct this in our current study.

1.2. Ovulatory reproductive safeguards

Evolutionary predictions concerning human mating behavior take into consideration the greater costs women endure as a result of reproduction. These greater reproductive costs include the metabolic expenditures associated with internal fertilization, gestation, and lactation. The likelihood of incurring these costs varies depending on a woman's fertility status. Specifically, women are mostly likely to incur such costs during peak fertility. Thus, women may have evolved ovulatory reproductive safeguards that more readily activate during the fertile window.

Past research supports the notion that such ovulatory reproductive safeguards exist. For instance, during peak fertility women are more likely to behave in ways that reduce their chances of sexual assault (e.g., they are less likely to park in a dark corner of an underground garage, less likely to walk alone, and are unlikely to let a stranger in their home, Bröder & Hohmann, 2003). Likewise, Petrailia & Gallup (2002) found that during peak fertility women appear to be more physiologically prepared to defend themselves against possible sexual attack. After reading a story that implies potential sexual assault (i.e., being followed by a stranger at night), women during high conception risk are more likely than those during low conception risk to respond with a greater physiological reaction (i.e., a stronger grip strength). In addition, women within the fertile window report greater disgust for sexual acts that would have led to "suboptimal sexual unions" (e.g., incest and bestiality, Fessler & Navarrete, 2003).

Evidence for an ovulatory reproductive safeguard specifically related to mate preferences was provided by Beaulieu (2007). The assessment of one's mate value (i.e., how desirable one is to