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Original Article

Condition-dependent calibration of men's uncommitted mating orientation: evidence from multiple samples

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ABSTRACT

Physical strength and physical attractiveness are both hypothesized as indicators of overall phenotypic condition in humans. Strategic Pluralism Theory (Gangestad & Simpson, 2000) predicts that men's orientation toward uncommitted mating is facultatively calibrated (i.e. contingently adjusted over ontogeny) in response to condition-dependent physical features, such as strength and attractiveness. Herein, we suggest that previous research bearing on this hypothesis has been limited because (a) researchers have often neglected to distinguish between mating orientations and past sexual behavior and (b) sample sizes have not always been large enough to reliably detect correlations of moderate magnitude. To address these issues and extend previous findings, we present aggregated data from three independent samples of young adults that permit us to examine multiple measures of physical strength and attractiveness in relation to uncommitted mating orientation, committed mating orientation, and past sexual behavior. As predicted, meta-analyses across samples demonstrated that strength and attractiveness were positively correlated with men's (but not women's) uncommitted mating orientation (but not committed mating orientation). In addition, strength (in men only) and attractiveness (in both sexes) positively predicted participants' number of past sex partners. Moreover, path analyses demonstrated that the association of men's physical features with their number of sex partners was mediated via uncommitted mating orientation. These results (a) provide the most extensive support to date for the hypothesis that men's uncommitted mating orientation is calibrated to condition-dependent features and (b) clarify the sex-specific functional links among physical features, mating orientations and sexual behavior.

1. Introduction

Human mating systems include multiple types of relationships, from monogamous pair bonds to brief sexual affairs and extra-pair copulations (Gurven, Winking, Kaplan, von Rueden, & McAllister, 2009; Kelly, 1995; Pillsworth & Haselton, 2006; Winking, Kaplan, Gurven, & Rucas, 2007). This manifest variation, in turn, reflects a diverse range of *mating orientations* (Buss & Schmitt, 1993; Gangestad & Simpson, 2000). For example, because the maximum potential reproductive rate is higher among men than women, men are also higher than women on average in the motivation to pursue sex in the absence of long-term commitment (Buss & Schmitt, 1993; Jackson & Kirkpatrick, 2007). However, there is also massive variation in mating orientations *within* each sex, such that an individual, whether male or female, may primarily seek uncommitted affairs, exclusively seek monogamous pair bonds, or pursue some combination of these types of relationships (Buss & Schmitt, 1993; Gangestad & Simpson, 2000; Jackson & Kirkpatrick, 2007; Larson, Pillsworth, & Haselton, 2012; Pillsworth & Haselton, 2006). Thus, a foundational question in the study of human mating concerns the origins of individual differences in mating orientations: What explains within-sex variation in the pursuit of committed pair bonds and uncommitted sex?

Strategic Pluralism Theory (Gangestad & Simpson, 2000) posits that individual differences in mating orientations are *facultatively calibrated* (i.e. contingently adjusted over ontogeny) in response to cues that have predicted the fitness costs and benefits of alternative behavioral phenotypes over human evolutionary history. One of this theory's key postulates, for example, is that (a) ancestral men in better *phenotypic condition* (i.e. who could more efficiently convert energy into fitness) were more likely to succeed in acquiring sexual partners outside of committed relationships, and therefore (b) men's uncommitted mating orientation will be calibrated to variations in their condition-dependent phenotypic features (e.g., physical

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attractiveness). As we review below, extant research has often supported this condition-dependent calibration hypothesis by demonstrating positive associations of condition-dependent physical features with men's orientation toward uncommitted mating. However, certain methodological limitations have also led to some contradictory findings, and important theoretical distinctions implied by this hypothesis remain untested.

In this paper, we provide the most extensive and multi-faceted test to date of the hypothesis that men's (but not women's) orientation toward uncommitted (but not committed) mating is calibrated to variations in condition-dependent features—in this case, physical strength and physical attractiveness. To this end, we examine multiple measures of strength and attractiveness in relation to context-specific mating orientations and past sexual behavior in three independent samples of young adults.

1.1. The condition-dependent calibration hypothesis of men's uncommitted mating orientation

In the tradition of strategic pluralism theory (Gangestad & Simpson, 2000), a number of theorists have discussed the hypothesis that men's uncommitted mating orientation is facultatively calibrated in response to phenotypic features dependent on overall phenotypic condition (Buss, 2009; Frederick & Haselton, 2007; Gangestad, Bennett, & Thornhill, 2001; Rhodes, Simmons, & Peters, 2005). Broadly speaking, "phenotypic condition" refers to an individual's ability to efficiently convert energy into fitness-enhancing traits and outcomes (Tomkins, Radwan, Kotiaho, & Tregenza, 2004). This ability is determined by a variety of factors, including genome-wide mutation load, possession of genotypes that are well adapted to local pathogens, and exposure to developmental insults (Gangestad, Merriman, & Thompson, 2010; Gangestad et al., 2001; Penke, Denissen, & Miller, 2007; Tomkins et al., 2004). Importantly, phenotypic condition alters the trade-offs inherent in investing energy into traits that promote intrasexual competition and mate attraction. For instance, all else equal, an individual in better phenotypic condition will need to allocate less energy toward somatic maintenance and pathogen defense, and will therefore be able to invest more heavily in developing energetically expensive musculature for competing with rivals (Frederick & Haselton, 2007; Gallup, White, & Gallup, 2007; Gangestad, Garver-Apgar, Simpson, & Cousins, 2007; Lassek & Gaulin, 2009; Lukaszewski & Roney, 2011). Thus, although low physical strength alone does not necessarily indicate poor overall condition (because energy is finite and can be allocated in multiple ways), high physical strength is a positive indicator of being in good enough condition to invest heavily in muscle growth and maintenance (Frederick & Haselton, 2007; Lassek & Gaulin, 2009). Similarly, physical attributes that are judged as sexually attractive (e.g., symmetry; cues to sex hormone levels) theoretically indicate the relative absence of harmful mutations that disrupt optimal development and/or immune function (Gangestad et al., 2001; Little, Jones, & Debruine, 2011; Roney, 2009). It is for reasons such as these that physical strength and physical attractiveness are hypothesized to be condition-dependent features in humans.

There are at least two routes through which higher physical strength and attractiveness theoretically enabled ancestral men to engage in uncommitted mating. First, because much of the heritable variance in condition-dependent features is maintained over evolutionary time through stochastic processes such as mutation-selection balance (Penke et al., 2007; Tomkins et al., 2004), both strength and attractiveness functioned as indicators of men's genetic quality ancestrally (Frederick & Haselton, 2007; Gangestad & Simpson, 2000). Therefore, ancestral women likely found these features sexually attractive and preferred them in partners for uncommitted affairs. Consistent with this, modern women prefer these features in mates—and more so in uncommitted relative to committed mating contexts (Frederick & Haselton, 2007; Gangestad et al., 2007; Li & Kenrick, 2006). Second, because sex without commitment is a valuable reproductive resource for men, pursuing uncommitted matings would have often elicited direct intrasexual aggression from rivals (Daly & Wilson, 2005; Puts, 2010; Simpson, Gangestad, Christensen, & Leck, 1999). Ancestrally, physically stronger men would have been more likely to prevail in intrasexual contests and/or sustain lower levels of conflict-related injury than physically weaker men (see Hill et al., 2013; Puts, 2010; Sell, Hone, & Pound, 2012; Simpson et al., 1999).

Taken together, these arguments suggest that ancestral men who were physically stronger or more attractive would have been relatively likely to secure net reproductive benefits by pursuing sex without commitment. If so, it follows than men's uncommitted mating orientation may be facultatively calibrated over ontogeny via evolved conditional rules of the form: "*To the extent that I am [(physically stronger) (more attractive)] than other men, invest in the pursuit of uncommitted mating opportunities.*"

Importantly, this condition-dependent calibration hypothesis applies only to men. Given differences between the sexes in their levels of obligatory parental investment, ancestral men could theoretically accrue dramatic increases in fitness through short-term sexual affairs, whereas women faced a much lower ceiling on the number of offspring they could produce via sex with multiple partners (Buss & Schmitt, 1993). Moreover, to the extent that uncommitted sex partners were likely to provide less paternal investment in offspring than committed partners, ancestral women engaging in purely sexual affairs would have been left with a disproportionate share of the childrearing responsibility (Gangestad & Simpson, 2000). It would not have been adaptive on average, therefore, for more attractive women to be differentially motivated to engage in uncommitted mating—especially because women in better phenotypic condition were in the best position to elicit monogamous investment from high-quality men (Buss & Schmitt, 1993; Buss & Shackelford, 2008; Larson et al., 2012).

Additionally, the logic of strategic pluralism predicts that the orientation toward committed mating will not be calibrated to condition-dependent features in either sex. Theories of human reproduction generally posit that long-term bonds took hold as a common pillar of human mating systems, because of the massive fitness benefits they generate for both sexes via cooperative investment in offspring and the sexual division of labor (Buss & Schmitt, 1993; Gangestad & Simpson, 2000; Gurven et al., 2009). For this reason, what distinguishes men in better phenotypic condition from those in poorer condition should not likely be that they are inclined to forego the benefits of committed relationships, but that they can more often afford to pursue uncommitted mating opportunities as a supplemental tactic (Buss & Schmitt, 1993; Gangestad & Simpson, 2000).

1.2. Previous research bearing on the condition-dependent calibration hypothesis

A number of extant studies have tested associations of physical strength and physical attractiveness with the orientation toward uncommitted mating. Most of these have operationalized the latter in one of two ways. First, many studies have employed the Sociosexual Orientation Inventory (SOI; Simpson & Gangestad, 1991) or Revised SOI (SOI-R; Penke & Asendorpf, 2008)—both of which index one's willingness to engage in sex without commitment. Second, some studies have used peoples' number of past sex partners as a proxy for their uncommitted mating orientation.

Research using these methods has produced mixed support for the condition-dependent calibration hypothesis as defined above—which, to reiterate, predicts that men's (but not women's) uncommitted mating orientation is calibrated to condition-dependent features. For example, among both men and women, SOI (or SOI-R) scores have been found to correlate positively with self-rated physical attractiveness (Clark, 2004; Penke & Asendorpf, 2008; Perilloux, Cloud, & Buss, 2013) as well as third-party ratings of attractiveness (Honekopp,