



The Openness-calibration hypothesis [☆]

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ABSTRACT

The current study tested the hypotheses that (1) psychological adaptations calibrate Openness to Experience to facilitate or deter pursuit of short-term mating, and (2) this calibration varies as a function of mating strategy, physical attractiveness, and sex—individual differences that shift the costs and benefits of alternative personality strategies. Participants completed a personality inventory before and after reading vignettes describing mating opportunities of different durations (short- and long-term) with individuals of differing levels of attractiveness. Among study findings, participants presented with short-term mating opportunities with individuals of average attractiveness exhibited down-regulated Openness relative to those presented with highly attractive mates. Moreover, these effects varied as a function of the interaction between participants' sex, mating strategy, and attractiveness. These findings are consistent with the hypothesis that evolved psychological mechanisms adaptively calibrate Openness levels in response to short-term mating opportunities. More broadly, they highlight the heuristic value of an evolutionary framework for the study of personality and individual differences.

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1. Introduction

Personality psychology provides a rich body of empirical research and a well-established descriptive taxonomy, but does not offer a generative framework for predicting the conditions that evoke the development of personality traits. An evolutionary psychological approach, which posits that many cognitions, emotions, and behaviors are produced by psychological adaptations designed to solve survival- and reproduction-related challenges (Buss, 1995), may provide a predictive theoretical framework for identifying the processes responsible for individual differences in personality and the contexts in which they emerge.

1.1. Personality: cost-benefit tradeoffs

Within an adaptationist perspective, personality traits can be conceptualized as functional strategies to solve survival- and reproduction-related challenges recurrent during our species' evolution (Buss, 2009). This framework can be applied through a theory-driven, “top-down” approach (Buss, 1995): a researcher (1) identifies a distinct adaptive challenge, (2) articulates the behaviors that could have helped solve the challenge and the psy-

chological processes that would have motivated these behaviors, and (3) conducts empirical tests of these hypothesized design features. Personality psychology has historically operated outside of such a predictive theoretical framework, focusing more on the statistical structure of personality differences than on the origins of personality variation (Buss, 1987).

An exploration of the Five-Factor Model (FFM, Costa & McCrae, 1992) provides an illustration of how an evolutionary perspective may be fruitfully applied to personality psychology. High levels of extraversion describe a suite of cognitions, emotions, and behaviors hypothesized to promote mating (MacDonald, 2006) both directly (e.g., by engaging potential mates) and indirectly by facilitating the formation of friendships and alliances that enable upward social mobility (Denissen, 2008; Nettle, 2006). High levels of agreeableness may promote successful group coordination and the cultivation of interpersonal bonds by motivating individuals to prize cooperation and group goals (Denissen, 2008). High levels of conscientiousness are hypothesized to promote good health and longevity through self-discipline and determination (Denissen, 2008; Nettle, 2006). Neuroticism is hypothesized to serve protective functions; worry and anxiety motivate behaviors that protect limited social opportunities and avoid ecological dangers (Denissen, 2008; Lewis, 2014; Nettle, 2006). High levels of Openness may also facilitate short-term mating success (Haselton & Miller, 2006) by means of a proclivity for adventurousness and a desire for variety, exploration, and new experiences (Goldberg & et al., 2006).

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These personality strategies can also carry costs. The sensation-seeking associated with extraversion can lead to traumatic injury (Field & O'Keefe, 2004), and high agreeableness may lead to social exploitation (Judge, Livingston, & Hurst, 2012). High levels of neuroticism can place unnecessary strain on social relationships (Buss, 1991) and are associated with impaired physical and psychological health (Neeleman, Sytema, & Wadsworth, 2002). In the currency of survival and reproduction, each point on a personality dimension carries both costs and benefits (DeKay & Buss, 1992).

An evolutionary condition-dependent model of individual differences posits that species-typical psychological mechanisms process, as input, cues ancestrally predictive of the costs and benefits of alternative personality strategies, and produce, as output, the strategy of greater probabilistic net benefit for the individual (Lewis, 2014; Wolf, van Doorn, Leimar, & Weissing, 2007).

1.2. Adaptive individual differences in Openness

Ancestrally, successful short-term mating could have yielded valuable reproductive benefits (Schmitt, 2004) for both men and women (see Greiling & Buss, 2000). A task analysis (Marr, 1982) of the psychological features that facilitate short-term mating points to a suite of attributes are associated with high levels of Openness.

High Openness is characterized by a desire for newness, a preference for variety, and adventurousness (Goldberg et al., 2006). These psychological characteristics bear a striking resemblance to the output of short-term mating mechanisms (Buss, 2012). This parallel between hallmarks of Openness and design features of short-term mating points toward the possibility that evolved psychological mechanisms functionally calibrate levels of Openness to regulate short-term mating. If this is true, a key design feature of these psychological mechanisms should be sensitivity to situation- and person-based inputs that shift the costs and benefits of pursuing a particular mating opportunity.

1.2.1. The situation

1.2.1.1. Mating context. Although the psychological characteristics associated with high levels of Openness may facilitate short-term mating, they do not necessarily promote long-term, committed mating. On this basis, we hypothesized that mating context should be a key input into the proposed Openness-regulating mechanism.

1.2.1.2. The mate's attractiveness. Because physical attractiveness is a putative indicator of genetic quality, the fitness benefits of mating with an attractive individual are typically greater than those of mating with an unattractive individual (Gangestad & Simpson, 2000). We therefore hypothesized that a mate's attractiveness would be a key input into the proposed mechanism.

1.2.2. The individual

1.2.2.1. The individual's attractiveness, mating strategy, and sex. Because an individual's attractiveness enhances his or her mate value (Buss, 2003), unattractive individuals experience a more adverse mating environment, whereas attractive individuals secure partners with greater ease (Buss & Barnes, 1986). Less attractive individuals thus may stand to gain comparatively more from new mating opportunities.

Moreover, because physical attractiveness is an important component of mate value, attractive individuals may be better able to implement their preferred mating strategy. Relative to women, men are more inclined, on average, toward short-term mating (Buss, 2012; Buss & Schmitt, 1993), and men who possess attributes associated with increased attractiveness (e.g., symmetry) have more affair and lifetime sex partners (Gangestad & Simpson, 2000) and allocate fewer resources to parenting than do their less attractive counterparts (Buss, 2012). Similarly, the mate

preferences of attractive women suggest that they are better able to implement a long-term mating strategy: whereas less attractive women may make trade-offs for qualities desired in mates, more attractive women seek morphological indicators of genetic quality in addition to commitment, financial provisioning, and parental investment (Buss & Shackelford, 2008).

1.2.3. The (input) power of the situation \times person interaction

Our reasoning about the hypothesized Openness-calibrating mechanism suggested five inputs: mating context (short-term vs. long-term) and the mate's attractiveness, as well as the individual's own attractiveness, mating strategy, and sex. However, this analysis did not simply generate main effects hypotheses. The proposed function of the hypothesized mechanism is to calibrate Openness to facilitate the pursuit of valuable short-term mating opportunities and deter costly mating decisions. Because it is the interaction between these situation- and person-based differences that influences the net costs and benefits of Openness, a key design feature of the mechanism should be its calibration of Openness as a function of the interactions between these cues.

This overarching proposal generated a suite of hypotheses. First, we hypothesized that the effect of mating opportunities on individuals' Openness depends on the interaction between mating context (short-term vs. long-term) and the mate's attractiveness (Hypothesis 1). Because high Openness would not necessarily facilitate the pursuit of committed relationships, we would not expect long-term mating opportunities to affect Openness levels (Hypothesis 2). On the other hand, because Openness may influence pursuit or avoidance of short-term mating, we hypothesized that individuals' Openness would shift in response to short-term mating opportunities. Because short-term mating generally would have been more beneficial with attractive rather than unattractive mates, we hypothesized that individuals would exhibit more positive shifts in Openness in response to short-term mating opportunities with more attractive individuals (Hypothesis 3).

Short-term mating would have represented a valuable opportunity in some contexts, but under other circumstances, it would have been injudicious. Short-term mating may have been less valuable (1) for individuals readily able to secure mating opportunities (e.g., by virtue of their attractiveness), (2) for women compared to men, and (3) for individuals less oriented toward short-term mating (e.g., more oriented toward long-term mating; see Jackson & Kirkpatrick, 2007).

Short-term mating with someone of average attractiveness would generally have been less valuable for individuals of high attractiveness, who can more readily secure mating opportunities with high mate-value partners (Buss & Barnes, 1986). Short-term mating also would have been less beneficial, on average, for women than for men—in particular for attractive women who are well positioned to implement a preferred long-term mating strategy. Casual mating with a partner of low mate value would have been especially costly for these women, who unlike their male counterparts, could have been impregnated, incurred reputational damage, and thereby impaired their ability to successfully pursue a long-term mating strategy (see Buss & Schmitt, 1993). On this basis, we hypothesized that in response to the opportunity to short-term mate with a partner of average attractiveness, individuals' Openness will be calibrated as a function of the interaction between their attractiveness, mating strategy, and sex (Hypothesis 4).

1.2.3.1. Men. Highly attractive men are more desirable as short-term mates (e.g., Pillsworth & Haselton, 2006). As a consequence, they have a larger pool of potential short-term mates, and can afford to be more discriminating about their short-term mates. We therefore hypothesized that, relative to less attractive men, more attractive men would exhibit a less positive shift in Openness

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