



## Original Article

# Physical attractiveness as a phenotypic marker of health: an assessment using a nationally representative sample of American adults

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## ABSTRACT

Evolutionary explanations regarding the differential preference for particular traits hold that preferences arose due to traits' association with increased potential for reproductive fitness. Assessments of physical attractiveness have been shown to be related to perceived and measured levels of health, an important fitness-related trait. Despite the robust association between physical attractiveness and health observed in the extant literature, a number of theoretical and methodological concerns remain. Specifically, the research in this area possesses a lack of specificity in terms of measures of health, a reliance on artificial social interactions in assessing physical attractiveness, and a relatively infrequent use of non-student samples and leaves unaddressed the confounding effects of raters of attractiveness. Using these concerns as a springboard, the current study employed data from the National Longitudinal Study for Adolescent Health ( $N \approx 15,000$ ; aged 25 to 34 years) to assess the relationship between physical attractiveness and various specific and overall measures of health. Logistic and OLS regression models illustrated a robust association between physical attractiveness and various measures of health, controlling for a variety of confounding factors. In sum, the more attractive a respondent was rated, the less likely he or she was to report being diagnosed with a wide range of chronic diseases and neuropsychological disorders. Importantly, this finding was observed for both sexes. These analyses provide further support for physical attractiveness as a phenotypic marker of health. The findings are discussed in reference to evolutionary theory, and the limitations of the study and future research suggestions are also addressed.

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## 1. Introduction

One of the key theoretical foundations of an adaptationist approach to the study of mating behaviors is that traits found to be attractive by members of a species are indicative of evolutionarily important phenotypes (Sugiyama, 2005). In short, the perspective holds that sexual selection processes produced an evolved suite of mechanisms related to mate choice in order to maximize reproductive success and the fitness of offspring (Buss & Schmitt, 1993; Grammer, Fink, Møller, & Thornhill, 2003). Indeed, the adaptive problem of mate selection is one of the most fundamental factors related to reproductive success (Tovée, Edmonds, & Vuong, 2012). A significant component within the adaptive problem of mate selection is maximizing the likelihood of obtaining a healthy mate (Buss & Schmitt, 1993; Symons, 1995). Ensuring that a mating partner is healthy aids reproductive success in a number of ways; for example, it

can help decrease the likelihood of infection from a partner (for oneself and one's offspring), it can reduce the risk of losing potential shared investment in offspring due to an unhealthy partner's illness or death, and it can increase the chance that offspring will inherit the genetic material that provides resistance to parasitic infection and other pathogens (de Barra, DeBruine, Jones, Mahmud, & Curtis, 2013; Grammer et al., 2003). Given the weight ascribed to health in maximizing reproductive success, an adaptationist approach would predict preferential attraction towards phenotypic markers of good health (Rhodes, Simmons, & Peters, 2005; Sugiyama, 2005). Consequently, the connection between physical attractiveness and health-related outcomes has received considerable assessment from a variety of researchers using both human and non-human samples (Kalick, Zebrowitz, Langlois, & Johnson, 1998). The current study seeks to add to this literature by empirically examining whether physical attractiveness represents a phenotypic marker for specific health-related outcomes in a nationally representative sample of American adults.

There is a growing body of literature indicating a connection between various indices of physical attractiveness and health in humans. For example, a line of research employing judgmental

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assessments of health has shown that respondents who rate targets as more physically attractive also rate the same targets as healthier than those judged to be less physically attractive (Cunningham, 1986; Grammer & Thornhill, 1994; Singh, 1995). The bulk of studies assessing the link between attractiveness and health in humans, however, are derived from research using facial characteristics. The focus of these studies has generally been on three facial properties: averageness, masculinity/femininity, and symmetry (Grammer et al., 2003; Weeden & Sabini, 2005; see also Stephen, Coetzee, & Perrett, 2011 for an assessment of facial pigment, attractiveness, and perceived health). Overall, the results of these studies have shown that average faces, relative to distinctive faces, are rated as appearing healthier (Rhodes et al., 2001); male faces with more masculine features and female faces with more feminine features are associated with increased perceptions and indications of health (Johnston, Hagel, Franklin, Fink, & Grammer, 2001; Rhodes, Chan, Zebrowitz, & Simmons, 2003; Scott, Swami, Josephson, & Penton-Voak, 2008; Thornhill & Gangestad, 2006; but see Boothroyd et al., 2005; Boothroyd, Jones, Burt, & Perrett, 2007; Shackelford & Larsen, 2003); and those faces rated/measured as asymmetrical have been rated as less healthy than faces approaching symmetry (Fink, Manning, Neave, & Grammer, 2004; Gangestad & Thornhill, 2003; Jones et al., 2001; Rhodes et al., 2001; Thornhill & Gangestad, 2006; Zaidel, Aarde, & Baig, 2005). Research employing non-facial indices of physical attractiveness has also shown a link to health-related outcomes. For example, Manning, Scutt, Whitehouse, and Leinster (1997) illustrated that asymmetry in women's breasts (a health-related correlate) was negatively associated with marriage and number of offspring (correlates of attractiveness). Other bodily indices of health (e.g., BMI) have also been shown to be related to ratings of attractiveness (Hume & Montgomerie, 2001; Perilloux, Cloud, & Buss, 2013). Overall, the literature indicates that those facial and bodily traits found to be attractive are also perceived to indicate some information about the health of the individual.

Although the current literature tends to support a link between physical attractiveness and health, a number of methodological concerns remain relatively unaddressed. For example, while some studies have employed specific health-related variables as outcomes (cf., de Barra et al., 2013; Kalick et al., 1998; Shackelford & Larsen, 1999; Thornhill & Gangestad, 2006), the vast majority of the studies reviewed above employ a generalized operationalization for health. Left relatively unaddressed is the question of whether physical attractiveness is related to specific indices of health or if the association is only evident with global measures of health. Consequently, there is a need for greater specificity in terms of how studies measure health-related outcomes. Indeed, Grammer et al. (2003) highlight this gap in the literature noting, “[w]e still need to know which kinds of diseases are reflected by signals of beauty [and] [h]ow well . . . different signals predict risks of disease and parasitism” (p. 402). Additionally, with the exception of a handful of studies (e.g., de Barra et al., 2013; Fink et al., 2004; Kalick et al., 1998; Scott et al., 2008), the majority of empirical analyses of the association between physical attractiveness and health have been conducted using college and university samples. Therefore, there is a need to assess the relationships beyond samples derived from college and universities. Moreover, a number of the studies in the extant literature employ assessments of physical attractiveness using pictures, drawings, or videos of human faces and bodies. However, there is reason to suspect that limiting raters' assessment of physical attractiveness in this way may generate an unrealistic evaluation as it focuses the raters' attention to a limited number of traits (Grammer, Fink, Møller, & Manning, 2005; Grammer et al., 2003). As a result, studies which employ live interaction between rater and target may help illuminate if past research is off base. Finally, past research has shown that raters' characteristics can have a systematic impact on the assessments of physical attractiveness (Marcus & Miller, 2003; Nedelec & Beaver,

2011), yet the studies which have assessed the link between physical attractiveness and health-related outcomes generally do not control for the influence of rater characteristics. Therefore, to the extent that rater characteristics affect the relationship between attractiveness and health the association may be biased to an unknown degree.

With these methodological and theoretically relevant concerns in mind, the current study adds to the current literature in at least four ways. First, the study employs a wide range of specific health-related outcomes as well as aggregated indexes of health to provide a robust assessment of the association between physical attractiveness and health. Second, the current study is unique in that it examines the relationship between attractiveness and health using a large nationally representative sample of adults. Third, the current study incorporates a measure of physical attractiveness that is based on interviewer assessment after an approximately 90-minute in-person interview. Therefore, this measure improves on past operationalizations of attractiveness based solely on pictures, drawings, or videos. Fourth, the current study employs an analytical strategy wherein rater characteristics are controlled thus eliminating the potential confounding effects of nonrandom differences between raters of physical attractiveness. Overall, the current study provides a rigorous assessment of the relationship between physical attractiveness and health hitherto absent from the extant literature.

## 2. Methods

### 2.1. Data

The current study employs data from the National Longitudinal Study for Adolescent Health (Add Health; Harris et al., 2009). Detailed information about the data and the sampling procedure are described elsewhere (Harris, Halpern, Smolen, & Haberstick, 2006; Harris et al., 2009). Briefly, the Add Health is a nationally representative prospective study of American youth who were assessed at four different time points. The first wave of data was collected during the 1994–1995 school year and included approximately 90,000 students in over 80 different high schools. A subsample of 20,745 respondents aged 12 to 21, were administered follow-up questionnaires during a 90-minute in-home survey to collect more detailed information on a wide range of topics including sexual behaviors, drug and alcohol use, physical activities, and antisocial conduct. During the in-home interviews at wave 1 the respondent's parent (typically the mother) or primary care-giver also completed a questionnaire covering topics such as academic achievement, living arrangements, employment, and income. After about one-and-a-half years, the second wave of questionnaires was administered to 14,738 youths who ranged in age from 13 to 22 years old. The third wave of data was collected in 2001–2002 when the respondents reached young adulthood (aged 18 to 28) and included 15,197 participants. The final wave of data collection occurred in 2007–2008 when the 15,701 respondents were between ages 24 and 32 years old. Of the original wave 1 respondents, approximately 80% were eligible for inclusion at wave 4 and were successfully re-interviewed (Harris et al., 2009). The data employed in the current study are derived from the wave 4 interviews (two demographic variables, race and parents' income, are from wave 1). The analytical sample in the current study ranges in size from 14,923 to 15,700 for the full sample, 6,997 to 7,349 for males, and 6,243 to 8,352 for females.

### 2.2. Measures

#### 2.2.1. Physical attractiveness

At the conclusion of the wave 4 interview session and after interviewers were separated from the respondents, interviewers completed a number of questions about individual respondent characteristics. Included within these items was the following

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