ELSEVIER

Evolution and Human Behavior 32 (2011) 70–75

Evolution and Human Behavior

Original Article

Like father, like self: emotional closeness to father predicts women's preferences for self-resemblance in opposite-sex faces

Christopher D. Watkins, Lisa M. DeBruine*, Finlay G. Smith, Benedict C. Jones, Jovana Vukovic, Paul Fraccaro

School of Psychology, University of Aberdeen, Aberdeen, Scotland, UK

Initial receipt 17 March 2010; final revision received 1 September 2010

Abstract

Kin recognition is an essential component of kin-directed adaptive behavior. Consequently, potential mechanisms of kin recognition, such as learning a kin phenotype from family members (familial imprinting) or self (self-referential phenotype matching), have been the focus of much research. Studies using computer-manipulated self-resemblance show effects for both same-sex and opposite-sex faces and have been interpreted as evidence for self-referential phenotype matching. However, more recent research on sex-contingent face processing suggests that visual experience with faces of one sex has little influence on perceptions of faces of the other sex, calling into question how self-referential phenotype matching can influence perceptions of opposite-sex faces. Because children resemble their parents, familial imprinting could influence preferences for self-resemblance, reconciling these seemingly incompatible results for sex-contingent face processing and effects of self-resemblance on perceptions of opposite-sex faces. Here we show that women's reported emotional closeness to their father, but not mother, is positively correlated with their preferences for self-resemblance in opposite-sex, but not same-sex, individuals. These findings implicate familial imprinting in preferences for self-resemblance in opposite-sex individuals and raise the possibility that familial imprinting and self-referential phenotype matching have context-specific effects on attitudes to self-resembling individuals.

Keywords: Kin recognition; Self-resemblance; Faces; Familial imprinting; Phenotype matching; Sex-contingent face processing; Inclusive fitness; Optimal outbreeding

1. Introduction

Kin recognition is essential to gain the fitness benefits of directing investment and altruistic behaviour towards close genetic relatives (i.e., inclusive fitness theory; Hamilton, 1964) and to balance the costs of inbreeding on offspring health against the potential costs of mating with someone who is too distantly related (i.e., optimal outbreeding theory; Bateson, 1982). Phenotype matching refers to the use of the sensory modalities (e.g., vision, audition, and olfaction) to recognize kin via a mental "kin" template against which individuals are compared (e.g., Mateo, 2004). Such a kin template may be learned from observing one's own phenotype (self-referential phenotype matching, e.g., Mateo & Johnston, 2003) or the phenotype of others who are likely to be closely related (familial imprinting, e.g., Kendrick, Hinton, & Atkins, 1998). Self-referential phenotype matching is thought to be the least corruptible method because only self-referential phenotype matching can, for example, distinguish full siblings from maternal half siblings (Hauber & Sherman, 2001). However, familial imprinting may be easier and the opportunity to do so may be very reliable (Hauber & Sherman, 2001). Consequently, there is debate about the extent to which familial imprinting and self-referential phenotype matching contribute to kin recognition in a given species (Hauber & Sherman, 2001; Mateo & Johnston, 2003).

Evidence for self-referential phenotype matching in humans comes from studies of preferences for computer-generated self-resembling faces (Bressan & Zucchi, 2009; see also DeBruine, Jones, Little, & Perrett, 2008 for a review). Self-resemblance enhances perceptions of attractiveness in opposite-sex faces (Saxton, Little, Rowland,

---

* Corresponding author. University of Aberdeen, Scotland, UK. Tel.: +44 0 1224 273933; fax: +44 0 1224 273426.

E-mail address: l.debruine@abdn.ac.uk (L.M. DeBruine).

1090-5138/$ – see front matter © 2011 Elsevier Inc. All rights reserved.
doi:10.1016/j.evolhumbehav.2010.09.001

Gao, & Roberts, 2009), although to a much smaller degree than in same-sex faces (DeBruine, 2004). Self-resemblance in same-sex faces enhances co-operation in economic games (DeBruine, 2002; Krupp, DeBruine, & Barclay, 2008) and has a smaller effect on perceptions of attractiveness than on perceptions of trustworthiness in opposite-sex faces (DeBruine, 2005). These findings demonstrate that self-resemblance has effects on perceptions of faces that are consistent with predictions from both inclusive fitness theory (Hamilton, 1964) and optimal outbreeding theory (Bateson, 1982).

Evidence for familial imprinting in humans comes from studies of preferences for parental traits. For example, romantic partners and opposite-sex parents tend to be similar in measured facial proportions (Bereczkei, Hegedus, & Hajnal, 2009), eye colour (Little, Penton-Voak, Burt, & Perrett, 2003), ethnicity (Jedlicka, 1980), age (Perrett et al., 2002) and general facial appearance (Bereczkei, Gyuris, & Weisfeld, 2004). Additionally, the extent to which romantic partners or preferred faces resemble opposite-sex parents is positively correlated with their reported emotional closeness to the opposite-sex parent (Bereczkei, Gyuris, Koves, & Bernáth, 2002, 2004; Wiszewska, Pawlowski, & Boothroyd, 2007). These findings are consistent with a large body of literature on non-human animal imprinting (see Mateo, 2004 for a review) and implicate familial imprinting in human mate preferences.

As noted above, previous research on self-resemblance has tended to emphasize the possible effects of self-referential phenotype matching (Bressan & Zucchi, 2009; DeBruine et al., 2008). However, research on sex-contingent face processing has demonstrated that visual experience with faces of one sex increases preferences for same-sex faces with similar features, but has reduced or no effect on preferences for opposite-sex faces (Bestelmeyer et al., 2008; Bestelmeyer, Jones, DeBruine, Little, & Welling, 2010; Jaquet & Rhodes, 2008; Little, DeBruine, & Jones, 2005). Such research raises the question of how self-referential phenotype matching could influence the perception of opposite-sex faces. If visual experience with self can only influence perceptions of same-sex faces, a mechanism other than self-referential phenotype matching may influence preferences for self-resemblance in opposite-sex faces. Reconciling these seemingly incompatible findings for sex-contingent face processing and effects of self-resemblance on perceptions of opposite-sex faces is essential for a full understanding of the proximate mechanisms that support kin-directed adaptive behavior.

Because parents and offspring resemble each other (Brédart & French 1999; Bressan & Dal Martello, 2002; Bressan & Grassi, 2004; Nesse, Silverman, & Bortz, 1990; Oda, Matsumoto-Oda, & Kurashima, 2005), effects of self-resemblance may actually reflect attitudes towards parental traits. Because the effects of familial imprinting are modulated by women's emotional closeness to their father (Bereczkei et al., 2004; Wiszewska et al., 2007), a relationship between emotional closeness to father and women's preferences for *self*-resembling faces would implicate familial imprinting as a mechanism for the effects of self-resemblance in opposite-sex faces.

In light of the above, we investigated the relationship between women's reported emotional closeness to their fathers or mothers and their preferences for self-resembling male and female faces. Since previous research has shown that effects of parental resemblance in a mate-choice context are specific to the opposite-sex parent (e.g., Jedlicka, 1980; Little et al., 2003), we predicted that women's emotional closeness to father, but not mother, would be positively correlated with preferences for self-resemblance. Because research on face perception suggests that visual experience with faces of one sex influences perceptions of other faces of that same sex more than faces of the opposite sex (Bestelmeyer et al., 2008, 2010; Jaquet & Rhodes, 2008; Little et al., 2005), one would expect women's emotional closeness to their fathers to predict their preferences for self-resemblance in male faces, but not necessarily in female faces. While other research has demonstrated a positive relationship between women's closeness to their father during childhood and the extent to which women demonstrate a preference for male faces that resemble their *father* (Bereczkei et al., 2004; Wiszewska et al., 2007), here we aim to investigate the extent to which a similar relationship occurs for preferences for faces that resemble *self*.

2. Methods

2.1. Participants

Participants were 108 heterosexual female undergraduates at the University of Aberdeen (*Mean age* = 20.0 years, *SD* = 2.8 years). Each participant was paired with a control participant from the same sample who was matched for phenotypic category (African, European or West Asian) and age (mean absolute age difference between controls and participants = 0.35 years, *SD* = 0.58 years).

2.2. Transformed facial stimuli

Facial resemblance was manipulated following methods used in previous studies (DeBruine, 2004, 2005). Briefly, participants' photographs were taken two weeks before the experiment as part of a series of unrelated tests into face and voice preferences (to minimize the chance that participants would guess the nature of the experiment). Each participant's image (Fig. 1A) was used to transform a composite female (Fig. 1B) and a composite male face (Fig. 1D). Transforms were made by calculating the shape difference between the participant's face and a composite face of the same sex and ethnic category (Fig. 1B). To make same-sex transforms (Fig. 1C), 50% of this difference was applied to the same-sex composite face. For opposite-sex transforms (Fig. 1E) 50% of this difference was applied to the opposite-sex composite