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Sexual Selection and the Evolution of Altruism: Males Are More Altruistic and Cooperative Towards Attractive Females

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Explaining altruism through an evolutionary lens has been a challenge for evolutionary theorists. Where altruism towards kin is well understood through kin selection, altruism towards non-kin is an evolutionary puzzle. Contemporary research has found that, through a game-theoretic framework, sexual selection could be an explanation for the evolution of altruism. Research suggests that males are more altruistic towards females they are interested in engaging with, sexually or romantically when distributing stakes in economic games. This study, adopting a between-groups design, tested the sexual selection explanation for altruism by asking participants to self-report altruistic and cooperative intention when reading moral scenarios accompanied by attractive or unattractive images. We find that participants, particularly males, report being more altruistic and cooperative when viewing an attractive image of a female. This study replicates the sexual selection hypothesis in explaining altruism through an alternative experimental framework to game theory.

Keywords

altruism, cooperation, sexual selection, sexual intention

Introduction

Altruism and cooperation have been troubling concepts for evolutionary theorists. Altruism refers to an act which is beneficial to the receiver and costly for the altruist (Trivers, 1971). Niwa, Hiraishi, and Oda (2011) argue that we display altruism towards those we have no relationship with, which is an evolutionary puzzle. It is a well-known fact that generosity leads to rewards (Oda, Niwa, Honma, & Hiraishi, 2011), with recent research suggesting that generosity can lead to rewards in the mating market

(Barclay, 2013). As a result, contemporary explanations for the evolution of altruism derive from sexual selection which suggests that altruism may act as a mating signal (particularly for males, see Iredale, Van Vugt, & Dunbar, 2008), increasing one's reproductive fitness, mate value, thus increasing one's chances of being selected as a mate (Barclay, 2010).

Key research has found that altruism can be explained through sexual selection theory. For example, Farrelly, Lazarus, and Roberts (2007) found that people are more altruistic towards those they are attracted to when playing online economic games such as the mutualisation game and prisoners dilemma. In addition, the sexual selection hypothesis has also been tested by Barclay (2010) who found that altruists are perceived as more attractive than non-altruists, suggesting that sexual selection plays a role in explaining why we are altruistic towards non-kin and those we have had no prior communication with.

Where traditional research has focused on testing the sexual selection hypothesis using online simulations grounded in game theory (see Wischniewski, Windmann, Juckel, & Brüne, 2009), this study adopted an alternative framework. Miller (2007) argues that morality traits such as cooperation and altruism have evolved via sexual selection. However, no study to date has tested the sexual selection hypothesis as an explanation for the evolution of altruism where participants self-report altruistic and cooperative intentions when reading moral scenarios accompanied by attractive and unattractive images. In addition, previous research has not tested why people are more generous towards attractive than unattractive people. As a result, this study aimed to investigate whether sexual intention (whether participants are altruistic in order to get closer to the person in the image, sexually) and how frequently they are altruistic in order to attract the opposite sex.

We know that attractive people are treated more favorably than unattractive people in a number of domains, commonly known as the attractiveness halo effect (see Dion, Berscheid, & Walster, 1972). We aimed to investigate the role of sex in differential altruism, especially as males value physical attractiveness far more than females when selecting a mate (Buss, 1989). As a result, we hypothesized that there would be a significant interaction between attractiveness (high and low attractive people) and sex of the participant in both altruism and cooperation. We suggested that this effect would be stronger for males than females, in that males would be more altruistic and cooperative when viewing an attractive image compared to an unattractive image.

Method

Participants

One hundred and eighty-seven (75 males, 112 females, mean age 20, $SD = 2.6$) psychology undergraduate stu-

dents from Coventry University took part. Sixty percent of the sample were single, 33% were dating, 4% were engaged, and 3% did not disclose their relationship status. Due to the theoretical foundation of the study, as part of the screening process, only heterosexual participants were eligible to take part.

Design

A between groups 2 x 2 MANCOVA design was adopted in which the independent variables were attractiveness (high and low) and sex (male and female). The dependent variables were altruism and cooperation. The covariates were dating intention (how likely participants would date the person in the image), sexual intention (how likely they would like to have sexual contact with the person in the image) and how frequent participants reported being altruistic and cooperative towards those they find attractive.

Materials and Procedure

Participants in each condition read 2 scenarios, one measuring cooperation and one measuring generosity (created by the researcher) accompanied by 2 female and 2 male images. Participants in the unattractive condition viewed unattractive images and those in the attractive condition viewed attractive images. Images were taken from google with reuse rights (un-copyrighted) and grey scaled to control for ethnicity. Scenarios were the same for each sex, but differed in masculine and feminine words (he/she), and the image. Male participants viewed female images and females viewed male images.

Twenty male and 20 undergraduate female students (mean age 19, $SD = 0.49$) rated 10 opposite-sex images on attractiveness (1 = very unattractive to 5 = very attractive Likert scale). The 2 images with the highest means were used in the attractive condition (male image 1, mean 4.32, $SD = 0.67$; male image 2, mean 3.53, $SD = 0.61$; female image 1, mean 4.29, $SD = 1.19$; female image 2, mean 4.05, $SD = 1.02$). The 2 images with the lowest means were used in the unattractive condition (male image 1, mean 1.00, $SD = 0.0$; male image 2, mean 1.1, $SD = 0.23$; female image 1, mean 1.14, $SD = 0.36$; female image 2, mean 1.33, $SD = 0.48$).

A paired samples t-test was conducted to measure differences between the highest and least attractive male images; $t(18) = 19.39, p < .001, \eta^2 = 4.45$. A paired samples t-test was also conducted to measure differences between the highest and least attractive female images; $t(20) = 14.11, p < .001, \eta^2 = 3.08$.

Participants then answered some questions based

on each scenario relating to dating intention, sexual intention and how altruistic or cooperative they would be in that situation on a 1 (very unlikely) to 5 (very likely) Likert scale. Ethical approval was sought from Coventry University research ethics committee.

Results

A 2 x 2 between groups MANCOVA was conducted to measure the impact of attractiveness (low and high) and sex (male and female) on altruism and cooperation. A MANCOVA was performed in order to reduce the risk of a type 1 error, as both dependent variables were related to each other. Preliminary checks were conducted to ensure there were no violation of the assumptions of normality, linearity, homogeneity of variances and homogeneity of regression slopes. Linearity was checked for each group (attractiveness and sex), and each covariate. Multivariate results are presented within the text, whereas between-group effects (by each DV) are presented in table 1.

Each main effect was statistically significant; sex, $F(2, 179) = 15.41, p < .001, \eta_p^2 = 0.15$ and attractiveness, $F(2, 179) = 20.81, p < .001, \eta_p^2 = 0.19$. MANCOVA revealed a significant interaction between attractiveness and sex, $F(2, 179) = 7.33, p < .01, \eta_p^2 = 0.08$ supporting our hypothesis that males, more than females report being more altruistic and cooperative when reading scenarios accompanied with attractive female images compared to unattractive images.

Lastly, sexual intention, $F(2, 179) = 3.11, p < .05, \eta_p^2 = 0.03$, and dating intention, $F(2, 179) = 4.03, p < .05, \eta_p^2 = 0.04$ were significant covariates, suggesting participants were more altruistic and cooperative if they had a high intention to date the person in the image as well as wanting to get closer to the person sexually. These results suggest that males and females display varied levels of altruism and cooperative behavior depending on whether they view an attractive or unattractive image. Descriptive statistics suggest that males showed a higher intention to be altruistic towards attractive images compared to unattractive images (see tables 1 and 2).

Discussion

The study aimed at exploring whether males and females were more altruistic or cooperative towards attractive images, compared to unattractive images. There was a significant interaction between sex and attractiveness, males and females were altruistic depending on attractiveness. However, there was a non-significant interaction for females in cooperative behavior. Males were

Table 1. Results of the 2 x 2 MANCOVA values (between groups-effects, by DV)

	Factor	DV	<i>F</i>	<i>df</i>	<i>p</i>	η_p^2
Main effects	Sex	Cooperation	26.11	1	<.001	0.13
		Altruism	8.13	1	<.01	0.04
	Attractiveness	Cooperation	9.45	1	<.001	0.0
		Altruism	36.50	1	<.001	0.0
Interaction	Sex × attractiveness	Cooperation	9.63	1	<.001	0.0
		Altruism	6.99	1	<.01	0.01

Table 2. Descriptive statistics displaying mean values of altruism, by sex and attractiveness.

Sex	Attractiveness	Mean	SD	N
Male	Low	2.3	0.8	38
	High	3.9	0.6	37
Female	Low	2.0	0.8	56
	High	2.7	1.0	56

Table 3. Descriptive statistics displaying mean values of cooperation by sex, and attractiveness.

Sex	Attractiveness	Mean	SD	N
Male	Low	2.3	0.8	38
	High	3.6	0.7	37
Female	Low	1.7	0.8	56
	High	1.8	0.9	56

more altruistic and cooperative when viewing an image of an attractive female. Although non-significant, females did show a preference for being altruistic towards attractive males. The covariates sexual and dating intention were significant in explaining the variance in both cooperation and altruism. This suggests that altruism and cooperation were influenced by sexual intention and dating intention, an area which has been neglected by previous research. This supports the sexual selection hypothesis in explaining altruism; people are altruistic and cooperative towards attractive people because it assists in mating success.

Although participants were not playing an economic game, the above findings are partially consistent with previous research (Barclay, 2010; Farrelly et al., 2007). Participants were altruistic and cooperative towards attractive people. The present study provides some support for the sexual selection hypothesis that altruism and cooperation may serve as sexually selectable traits as participants behaved favorably towards the person in the attractive image, particularly among males. The reason why this effect was stronger for males is because males have been found to engage in courtship displays more than females, especially towards females they find attractive (Van Vugt & Iredale, 2013).

The sexual selection hypothesis in relation to altruism suggests that altruism and cooperation may have evolved in males as a mate-signaling tactic. Being altruistic towards attractive females, one signals resources and has a higher chance of engaging with the female sexually or romantically. After all, females have been found to value males who display moral traits whereas males place a higher importance on physical attractiveness (Buss, 1989; Farrelly, 2011; Oda, Okuda, Takeda, & Hiraishi, 2014).

A limitation of the present study relates to individual differences. Attractiveness preferences vary across cultures, which was not addressed in the present study. Furthermore, participants were only required to read scenarios with limited information available. If this study were to be replicated, a more varied range of moral dilemmas could be used. Order effects may have also influenced the findings as participants answered the same set of questions for each scenario. The findings from this study could lead researchers to investigate the role of physical attractiveness in altruism and cooperative in lab settings where participants are engaging with

real participants. Furthermore, this study relies on self-report data, which is an obvious limitation, as self-report data elicits ideal feelings, not actual feelings or behavior (Baldwin, 1992). Responses to hypothetical scenarios could be seen as weak evidence as we did not assess whether there was an actual cost to being altruistic or cooperative.

In conclusion, our findings support an attractiveness halo effect when making decisions about whether one should cooperative or be altruistic towards the opposite sex. This paper supports the sexual selection hypothesis in explaining altruism towards non-kin. It informs us that physical stimuli influence everyday behavior. For example, altruistic and cooperative behavior were easily influenced by attractiveness, especially for males, which has implications for online dating, economic bargaining and self-representation on social media and the digital world. Finally, this paper provides support that sexual and dating intention could be drivers behind altruism and cooperation, providing support for the sexual selection hypothesis in explaining the evolution of altruism and cooperation.

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