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Facial Resemblance as a Kinship Cue: An Evolutionary Approach to Friendship and Trust

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Abstract. This study examines the role of facial similarity in establishing cooperation and trust, grounded in evolutionary psychology and kin recognition theory. The hypothesis posits that humans may rely on facial similarity to foster cooperation and trust. The research comprises two experiments: the first investigates whether individuals are more inclined to form friendships and trust those who resemble their same-sex parents. The second experiment explores whether trust levels correlate more strongly with same-sex parental resemblance. Participants were asked to provide photographs of their parents and friends. Artificial intelligence facial recognition technology was used to calculate facial similarity scores, which were then comprehensively evaluated. This research contributes to understanding the mechanisms underlying the formation of social and romantic friendships in humans.

Keywords: facial resemblance, kin selection theory, cooperation, trust

1. Introduction

People are more inclined to make friendships with those who resemble them facially. Even in brief, one-time interactions, individuals are more likely to cooperate with facially similar others [1]. Also in economic games, participants allocate more resources to those who share their physical appearance [2]. This is similar to an example of this similarity effect: [3] found men were more inclined to invest in children whose faces were digitally altered to resemble their own, indicating facial resemblance promotes interpersonal engagement. Furthermore, resemblance enhances the enforcement of social norms, such as altruistic punishment mechanisms [4]. These studies and conclusions indicate that facial similarity promotes cooperation and trust in contemporary society. We hypothesize this may be rooted in an evolutionarily shaped kin selection.

Facial resemblance serves as a genetic cue. Kinship selection theory predicts that organisms favor helping genetically related individuals [5], suggesting that facial similarity can be distinguished between organisms. We possess mechanisms to recognize faces resembling our own within our species. Facial similarity may enable identification of kinship, particularly when explicit genealogical information is absent. Similar recognition systems exist across species [6], demonstrating that we engage in social interactions based on facial similarity in the absence of explicit information. Humans are equally sensitive to similarities among strangers [7]. People tend

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to form connections with those who resemble them physically [8], and similarity enhances cooperative rather than retaliatory tendencies [9]. suggesting similarity fosters cooperative trust over competition. We hypothesize this stems from kin-related decision-making.

However, most studies to date have focused on self-resemblance. From an evolutionary perspective, this merits reconsideration. In primitive environments, mirrors were absent, and water reflections were blurred and unreliable. Without stable self-face recognition mechanisms, self-similarity could not have served as a primary cue. Therefore, we hypothesize that kinship identification based on parental resemblance is more plausible. Humans are continuously exposed to parental faces from infancy. In mirrorless primal societies, humans likely developed greater familiarity with parental features. From infancy, humans exhibit heightened sensitivity to parental faces, suggesting that parental resemblance may carry stronger emotional bonds [10]. Parental resemblance may activate attachment signals linked to security and caregiving behaviors. Similarity assessments must also account for demographic variables like age and gender [11], further supporting the methodological advantages of same-sex comparisons.

Based on this inference, we propose that same-sex parental similarity may trigger trust and guide friendship formation by activating early caregiving relationships. We specifically focus on same-sex parents because structural differences in male and female faces—such as jawline, brow ridge, and facial width—can introduce interference. Same-sex parents reduce such confounding factors, yielding clearer and more interpretable resemblance scores.

In this study, we test whether resemblance to a same-gender parent better predicts friendship choice and trust than resemblance to the self. Specifically, we ask:

1. Are people more likely to form friendships with individuals who resemble their same-gender parent?

2. Are friends who more closely resemble the participant's same-gender parent perceived as more trustworthy?

Based on kin-detection theory, we predict that resemblance to the same-gender parent will be a stronger predictor of trust than self-resemblance. We expect that people will be more likely to befriend individuals who resemble their same-gender parent, and that the friend who resembles a participant's same-gender parent more will be perceived as more trustworthy. If facial resemblance operates as a kinship signal, then even among strangers, parent-like features could guide who we befriend—and how much we choose to trust them.

2. Methodology

2.1. Research focus

This study will attempt to examine whether kin-based similarity, especially similarity to the same-gender parent, will gain greater relevance than self-similarity when it comes to the formation of friendships and interpersonal trust. There will be two experiments.

Experiment 1: It will test whether individuals will be more likely to choose friends who are like their same-gender parent compared to themselves.

Experiment 2: It will test if similarity to one's same-gender parent will better explain levels of trust in friendships than similarity to oneself.

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2.2. Participants and procedure

General Criteria for Participants: In a bid to ensure facial features are not threatened by growth factors, participants (N = 200) will be aged 20–30 and will have no history of cosmetic surgery or gender transition.

Experiment 1: The experiment will require four photographs in total. Each participant will provide three: one of themselves, one of the parents, and one of the friends. The fourth photo will be a randomly picked photograph of a stranger in an already prepared gallery that meets the control demands. Finally, the researcher will blur out the facial outline but maintain the facial features.

Experiment 2: The researcher will measure participants' trust in their friends using an adjusted 4-item Interpersonal Trust Scale scored on a 1–4 scale, followed by a trust scenario task. Lower trust will be denoted with the score 1, and greater trust with the score 4. Higher trust will be denoted with a higher score. Each of the participants will provide four pictures: one of themselves, one of their parents, one of a trusted friend, and one of an untrusted friend. Finally, the researcher will blur the outline of the face but keep the facial features.

2.3. Control variables

Photo Conditions: The same conditions (neutral face, no makeup, no facial mask, same lighting, and same background, same photograph) will be used in both experiments to capture all the photos to be able to assess similarity in a proper manner.

Matching Criteria:

Experiment 1: The same gender as the participant will be the parent and the participant. The friend and stranger will be matched on gender, age, and ancestry. Age will not differ by more than three years. "Ancestry" will be defined as the participant's self-reported race category based on general physical characteristics and ancestral origin (e.g., Asian, White, Black, Hispanic, Middle Eastern, Native American, or Other).

Experiment 2: The two friends will be matched for gender, age, social background, ancestry, and length of acquaintance (with the same age and ancestry limits as in Experiment 1).

We will use the same-gender parent because male and female faces are structurally different. Cross-gender comparisons would introduce confusion and bias similarity scores. Despite the fact that similarity will be decided by AI, gender will still have an impact on the experiment since algorithms trained on large data rely on gender-specific traits as primary differentiating factors. The similarity score of two faces will be artificially lowered regardless of actual closeness if they are of opposite genders. Gender control will remove this systemic bias so that AI will be able to calculate real facial similarity and not gender-specific traits.

Measurement Tool: Both investigations will utilize an established AI facial similarity program (rated 0–1, then converted to percent). The program has been shown to have adequate convergent validity with human judgments of similarity and high test-retest internal consistency.

2.4. Measurement and data analysis

The following comparisons will be calculated:

Experiment 1:

1. Difference in similarity to the parent between the friend and the stranger.
2. Difference in similarity to the participant between the friend and the stranger.
3. Difference between the friend–parent similarity and the friend–participant similarity.

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Experiment 2:

1. Difference in similarity to the parent between the more trusted and less trusted friend.
2. Difference in similarity to the participant between the more trusted and less trusted friend.
3. Difference between the more trusted friend–parent similarity and the more trusted friend–participant similarity.

2.5. Experiment simplification

To make comparison of the indicators easier and to clearly distinguish similarity scores, the researcher will use shapes to represent each role.

Experiment 1:

1. Participant: Circle
2. Father or Mother: Triangle
3. Friend: Square
4. Stranger: Star

Experiment 2:

1. Participant: Circle
2. Father or Mother: Triangle
3. More Trusted Friend: Square
4. Less Trusted Friend: Diamond

3. Discussion

In experiment 1, we test whether people tend to befriend others who look like their same-gender parent, and whether that resemblance matters more than how much the friend looks like themselves.

3.1. Kin similarity is dominant in friendship and trust

In experiment1, when we have the results of (1) The friend looks more like the same-gender parent than a matched stranger does. (2) The friend looks more like the participant than the stranger does. (3) The friend looks more like the parent than they look like the participant. These results align with our expected outcomes, which means participants' facial similarity to their parents is more pronounced. This suggests the evolutionary psychological hypothesis of the "kinship recognition mechanism." Humans possess the ability to recognize the facial features of relatives and tend to form cooperative relationships with and trust those whose faces resemble their own relatives [10]. Additionally, friends' faces are more similar to participants' faces, consistent with [12] findings: in trust games, people are more willing to cooperate with those who "look like themselves." This suggests that self-similarity and kin similarity jointly influence friendship formation, but kin cues may dominate the psychological mechanism.

In experiment 2, we test whether trust is shaped more by how much a friend looks like the participant or how much they look like their same-gender parent. Each participant gives us photos of themselves, their same-gender parent, their most-trusted same-gender friend, and a less-trusted one. When we have the result of (1) The trusted friend looks more like the parent than the less-trusted one does. (2) The trusted friend looks more like the participant than the less-trusted one does. (3) The trusted friend's resemblance to the parent is stronger than the less-trusted friend's resemblance to the participant. These results are true: our results align with our expected outcomes, which means participants' facial similarity to their parents is more pronounced.

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3.2. Self-resemblance is dominant in friendship and trust

In experiment 1, if we have the results of (1) The friend looks more like the same-gender parent than a matched stranger does. (2) The friend looks more like the participant than the stranger does. However, (3) the friend does not look more like the parent than they look like the participant. This indicates that self-similarity plays a key role in friendship formation, while kin-type similarity is not the primary driver. This preference may stem from the "mere exposure effect" and "self-reference bias," whereby individuals are more likely to trust or prefer faces that share their characteristics [13]. This aligns with [12] study, which showed that self-resemblance of faces activates a sense of closeness and willingness to cooperate, even in the absence of actual familial relationships.

However, in experiment 2, if (1) a trusted friend is not more like a parent than an untrusted friend. (2) The trusted friend looks more like the participant than the less-trusted one does. (3) The trusted friend's resemblance to the parent is stronger than the less-trusted friend's resemblance to the participant.

If a trusted friend is not more like a parent than an untrusted friend (only prediction one does not hold), this indicates that when participants were judging which friend was more trustworthy, they did not refer so much to those who looked like their parents but relied more on features similar to their own faces. From the perspective of evolutionary psychology, humans are based on a self-referent phenotype matching [12]. This mechanism suggests that an increase in facial similarity can enhance the credibility and cooperative tendency of evaluators. In this case, the similarity between parents does not seem to make a meaningful contribution to the formation of trust, and participants may rely more on their familiarity with their own facial features.

3.3. Emotion connections and personal value priority

In experiment 1, if all three predictions do not support, which is (1) The friend does not look more like the same-gender parent than a matched stranger does. (2) The friend does not look more like the participant than the stranger does. (3) The friend does not look more like the parent than they look like the participant. In this scenario, strangers resemble the participant more than friends and also resemble the participant's parents. This suggests that facial similarity does not significantly influence friendship formation. People may prefer friends with similar experiences, relying on emotional interaction between individuals for friendship formation, rather than appearance being a primary factor [14].

In experiment 2, if (1) the trusted friend looks more like the parent than the less trusted one does. (2) The trusted friend looks more like the participant than the less-trusted one does. (3) The trusted friend's resemblance to the parent is not stronger than the less-trusted friend's resemblance to the participant.

In this assumption, prediction three did not hold true. This result indicates that although the most trusted friends of the participants are indeed similar to their parents, the formation mechanism of this trust still leans towards a self-centered psychological process. That is the self-verification theory [15]. Humans are more inclined to work with those who share the same values and characteristics as themselves. That is, under this assumption, trust between people may be more based on the psychological projection that I feel you are like me, rather than a response to kinship clues.

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3.4. Kin plays a role in making friends, but self-resemblance dominates

In experiment 1, if (1) the friend t looks more like the same-gender parent than a matched stranger does. (2) The friend looks more like the participant than the stranger does. But (3) the friend does not look more like the parent than they look like the participant. In this case, according to the theoretical explanation by [2]. Their research indicates that human perception of facial similarity is ambiguous, and there is no clear psychological boundary between "resembling oneself" and "resembling a relative" [2]. In their study, participants often mistook "resembling relatives" for variants of "resembling selves", reflecting a high degree of overlap in their psychological processing. Thus, even if friends share certain family characteristics in their appearance, these characteristics may be categorized as "self-resemblance." This finding suggests that people may prefer those who are similar to themselves.

4. Conclusion

This study examines whether facial similarity with same-sex parents promotes bonding and relationship formation. It hypothesizes that parental facial features—particularly those of same-sex parents—may foster human connection and cooperation in contemporary society by generating familiarity when sufficient information is lacking.

The study has the following limitations:

1. Static photographs under controlled conditions cannot fully simulate real-world social environments.

2. The sample's age range and cultural background are limited. Different cultures exhibit variations in their interpretation of kinship cues, and cultural context also influences interpersonal communication choices.

3. To maintain conceptual clarity, the study focuses solely on same-sex parents, neglecting the facial similarity of opposite-sex parents. Facial similarity among opposite-sex parents similarly influences our communication choices.

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