

THE GAME OF EXPOSURE: AN EXPERIMENTAL STUDY ON THE CONTRAST EFFECT, THE PERCEPTION AT SECOND SIGHT

Original Article

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Conflict of Interest: None

Grant Support & Financial Support: None

Acknowledgment: The researchers express sincere gratitude to all participants and contributors for their valuable support in this study.

ABSTRACT

Background: Facial attractiveness significantly influences social interactions, decision-making, and personal judgments. The contrast effect, a cognitive bias where exposure to highly attractive stimuli alters the perception of subsequent stimuli, has been extensively studied in Western cultures but remains underexplored in collectivistic societies. Understanding this bias in such cultural contexts is crucial, as beauty standards and social influences may shape facial evaluations differently. This study examines the presence of the contrast effect in a collectivistic culture, focusing on the impact of attractiveness exposure on subsequent facial judgments while accounting for gender and relationship status differences.

Objective: To investigate whether exposure to highly attractive images reduces the perceived attractiveness ratings of neutral images, thereby confirming the existence of the contrast effect in a collectivistic cultural setting. Additionally, the study examines gender and relationship status differences in facial attractiveness evaluations.

Methods: A true experimental, repeated measures design (ABBA) was employed. A sample of 70 adults (47.1% male, 52.9% female) was selected using non-probability purposive sampling. Participants, aged 19–25 years, with similar educational backgrounds and active engagement in social media, were exposed to eight sets of facial images. Attractive images were sourced based on social media engagement, while neutral images were pre-rated by an independent sample. Ratings were collected using a 10-point attractiveness scale across control and experimental phases. Data were analyzed using SPSS, employing paired t-tests, repeated measures ANOVA, and Wilcoxon signed-rank tests, with results visualized through Excel.

Results: A significant contrast effect was observed, with mean attractiveness ratings for neutral images decreasing from $M = 29.90$, $SD = 3.98$ in the control phase to $M = 17.82$, $SD = 6.01$ in the experimental phase ($t(69) = -3.33$, $p = .002$, $d = 0.07$). Attractive images also saw a decline from $M = 31.33$, $SD = 3.30$ in the control phase to $M = 25.64$, $SD = 5.66$ in the experimental phase ($t(69) = 12.79$, $p < .001$, $d = 0.08$). A repeated measures ANOVA confirmed a significant main effect of phase on attractiveness ratings ($F(2.43, 167.76) = 252.98$, $p < .001$, $\eta^2 = 0.03$). Gender differences were significant, with females rating both neutral ($M = 50.14$, $SD = 3.45$) and attractive ($M = 59.15$, $SD = 2.95$) images higher than males (neutral: $M = 45.00$, $SD = 11.74$; attractive: $M = 53.93$, $SD = 2.93$). However, relationship status had no significant influence on contrast effects ($t(69) = -1.87$, $p = .07$ for neutral images, $t(69) = -.73$, $p = .51$ for attractive images).

Conclusion: This study provides empirical evidence of the contrast effect in a collectivistic culture, demonstrating that exposure to attractive images significantly lowers the perceived attractiveness of neutral images. Gender differences were evident, but relationship status did not influence contrast effects. These findings offer valuable insights for social psychology, marketing, industrial psychology, and community psychology, emphasizing the role of perceptual biases in shaping aesthetic judgments and social interactions.

Keywords: Aesthetic perception, Beauty standards, Cognitive bias, Contrast effect, Facial attractiveness, Gender differences, Social psychology.

INTRODUCTION

Physical appearance plays a fundamental role in shaping social perceptions and interactions, influencing various aspects of personal and professional life. Prior research has consistently demonstrated that individuals with physical attractiveness are perceived as possessing more socially desirable personality traits, greater social power, and enhanced opportunities in social interactions (1). Moreover, there exists a strong preference for associating with attractive individuals, given that perceived beauty often serves as a determinant of social desirability and professional success (2). The notion that individuals gain social advantages based on their physical appeal has been well-documented, highlighting that those who appear alongside an attractive partner are often evaluated more favorably than when paired with a less attractive counterpart (3). This phenomenon suggests a deeper cognitive bias, wherein individuals subconsciously compare and contrast visual stimuli to inform their judgments. One such bias, the contrast effect, dictates that an individual's perception of a stimulus is influenced by previously encountered stimuli, altering evaluative judgments across various domains, including physical appearance, intelligence, and competence (4).

The contrast effect, a well-established cognitive bias, operates by altering an individual's perception of a stimulus based on its juxtaposition with another stimulus of varying intensity. Empirical research illustrates how the contrast effect influences social judgments, as evidenced by individuals who, after exposure to images of highly attractive individuals, subsequently rate ordinary-looking individuals as less attractive than they would have otherwise (5). This bias extends beyond visual assessment; for instance, individuals primed with exceptionally positive or negative information adjust their subsequent evaluations accordingly (6). The contrast effect is deeply rooted in cognitive processing, often functioning unconsciously, leading to biased decision-making and social evaluations. The psychological principle of juxtaposition serves as an illustrative example, wherein two contrasting elements—whether ideas, individuals, or objects—are placed side by side, amplifying their differences (7). This principle underscores the importance of context in shaping perception, revealing how cognitive biases can influence the way individuals assess beauty and attractiveness in real-world scenarios.

Contrast effects manifest in two primary forms: positive contrast effects and negative contrast effects. A positive contrast effect occurs when a stimulus is perceived as more favorable than it would typically be, due to comparison with an inferior stimulus. Conversely, a negative contrast effect emerges when an average stimulus appears worse due to prior exposure to a superior stimulus (8). These biases have been extensively studied within the realm of social and cognitive psychology, demonstrating how individuals unconsciously adjust their judgments based on contextual influences. The inclusion/exclusion model, a theoretical framework proposed to explain assimilation and contrast effects in evaluative judgment, posits that mental representations of the target stimulus and its comparative standard dictate judgment outcomes (9). When evaluative information is used to construct a representation of the target, assimilation occurs, whereas contrast effects emerge when the comparative standard influences evaluation. The manner in which information is processed is contingent upon individual cognitive biases, social norms, and the perceived relevance of the comparative standard (10). This model provides valuable insight into the underlying cognitive mechanisms that dictate facial attractiveness judgments and social evaluations. Empirical evidence supports the influence of contrast effects on attractiveness judgments. Experimental studies reveal that when an individual is assessed within a group containing extreme exemplars—either highly attractive or unattractive—judgments become more polarized. For instance, subjects rate an attractive face as more appealing and an unattractive face as less appealing when viewed alongside an extreme comparison, as opposed to independent evaluation (11). Neuroscientific investigations using event-related potential (ERP) techniques further validate these findings, demonstrating that facial attractiveness judgments are modulated by contextual comparison. Specifically, exposure to an attractive face enhances the perceived attractiveness of a neutral face, a phenomenon attributed to the heightened activation of brain regions associated with emotional processing, such as the superior and middle frontal gyrus (12). These findings suggest that facial attractiveness judgments are not solely influenced by inherent facial features but are significantly modulated by comparative cognitive processing.

Beyond attractiveness ratings, facial perception biases extend to social decision-making and interpersonal interactions. Previous research demonstrates that exposure to physically attractive individuals can impact relationship satisfaction and social preferences (13). For example, male participants exposed to images of exceptionally attractive women reported decreased satisfaction with their real-life partners, whereas women exhibited diminished relationship contentment following exposure to socially dominant men (14). Additionally, contrast effects play a crucial role in legal and criminal decision-making, where perceived trustworthiness of an accused individual is often weighted more heavily than attractiveness when forming guilt judgments (15). This highlights the far-reaching implications of contrast effects, extending beyond aesthetic judgments to influence cognitive, emotional, and social domains.

Despite the substantial body of literature on contrast effects, significant gaps remain, particularly concerning methodological rigor and cultural considerations. Previous studies have largely focused on Western populations, leaving an empirical void in non-Western contexts

such as Pakistan. Additionally, prior research has primarily utilized linear experimental designs, often neglecting the potential effects of reversed order evaluations. Incorporating a balanced experimental design, such as the ABBA methodology, could provide a more robust examination of contrast effects, minimizing confounding factors such as preexisting beauty standards and response biases. By addressing these methodological limitations, the present research aims to contribute to the understanding of contrast effects on facial attractiveness judgments, particularly in a Pakistani cultural context, where empirical investigations remain scarce. This study seeks to explore the extent to which exposure to highly attractive images influences subsequent ratings of neutral images, while also examining gender and relationship status as moderating factors in these judgments. Understanding the cognitive and social underpinnings of contrast effects will provide valuable insights into the mechanisms that shape human perception, bias, and decision-making across diverse social and cultural landscapes.

METHOD

The study employed a true experimental design utilizing an incomplete repeated measures approach to examine the contrast effect in facial attractiveness ratings. A complete repeated measures design (ABBA) was implemented to mitigate practice effects and establish causation. Participants were sequentially exposed to pairs of conditions, ensuring that each individual underwent both the experimental and control phases in a counterbalanced sequence to control for order effects. The methodology was rigorously designed to maintain internal validity and ensure that observed effects were attributable to the contrast effect rather than extraneous variables.

A total of seventy adults participated in the study, selected through non-probability convenience sampling. Participants belonged to the young adult age group (19–25 years) and shared a similar educational background. They were actively engaged in social media and networking platforms, ensuring familiarity with contemporary beauty standards. All participants completed both the experimental and control phases of the study, allowing for direct comparisons of their responses under different conditions. Demographic data revealed a balanced distribution in terms of gender (47.1% male, 52.9% female) and relationship status (41.4% non-committed, 58.6% committed), ensuring that variations in attractiveness ratings could be analyzed across these variables.

The selection of images was methodically curated to align with contemporary beauty trends. Attractive pictures were sourced based on objective social media metrics, including a minimum follower count of 2–3.8 million and a high number of likes on recent posts (uploaded within the past month). This ensured that selected images reflected contemporary standards of attractiveness, reducing subjective variability. In contrast, neutral images were chosen from publicly available sources on Google, ensuring compliance with privacy rights. These images underwent preliminary subjective ratings by independent evaluators who were not part of the experiment, and the top eight neutral images were selected based on consistent ratings. The inclusion of pre-rated neutral images minimized potential biases related to the subjective perception of attractiveness.

Participants were exposed to eight sets of images, with ratings collected through a paper-pencil modality. Each set included an attractive and a neutral image, systematically paired to assess contrast effects. The study incorporated male and female images across varied conditions, including bearded males, clean-shaven males, and females with uncovered heads. Each participant viewed and rated images using a 10-point attractiveness scale. The order of image presentation was carefully structured to control for order effects, with images presented in alternating sequences of male and female faces.

The experiment was conducted in two phases, with a two-day gap between them to mitigate memory effects. Participants provided informed consent and were made aware of their rights; however, the true aim of the study was withheld to prevent respondent bias. In the experimental phase, an attractive image was presented first, followed by a neutral image, while in the control phase, the order was reversed. This approach allowed for the isolation of the contrast effect by examining whether exposure to an attractive image led to lower ratings for the subsequently viewed neutral image. Ratings were collected in a controlled manner, with participants whispering their responses to the experimenter to prevent peer influence.

Potential confounds were identified and addressed using rigorous methodological controls. Counterbalancing was employed to mitigate practice and order effects. A stringent selection criterion for attractive and neutral images ensured consistency in facial dimensions, addressing a common limitation in previous research. Response time, which was overlooked in prior studies (16), was measured to minimize biased responses. Participants' pre-existing beauty standards were assessed through a brief pre-experiment interview to control for subjective variability in attractiveness perception. To prevent external influences, the study was conducted in an isolated setting, with each participant undergoing the experiment individually.

Despite these controls, certain environmental factors posed limitations. Background noise and environmental distractions were noted during the experiment, potentially influencing participants' focus. Additionally, some participants in the first phase reported fatigue due

to prior academic commitments, which may have affected their engagement with the task. These factors were acknowledged as limitations and considered in the interpretation of results.

A pilot study was conducted before the main experiment to evaluate the feasibility and validity of the methodology. Ten female participants, meeting the same demographic criteria as the main study sample, were recruited using purposive sampling. They were randomly assigned to experimental and control conditions, and data were collected and analyzed to confirm the presence of the contrast effect. This preliminary study provided insights into the efficacy of methodological controls and confirmed the anticipated effect, supporting the feasibility of the main study design.

Data analysis was conducted using non-parametric statistical methods, as the relatively small sample size violated the assumption of normality. A Wilcoxon signed-rank test was employed using SPSS to assess differences between the control and experimental phases. The results revealed a statistically significant presence of the contrast effect, with ratings of neutral pictures decreasing significantly after exposure to attractive images ($Z = -2.30, p = 0.02$). The findings were further illustrated through graphical representation in Microsoft Excel.

RESULTS

The results revealed significant differences in attractiveness ratings across the control and experimental phases. In the control phase, the mean rating for neutral images was $M = 29.90, SD = 3.98$ (range = 20–35), while attractive images were rated higher with $M = 31.33, SD = 3.30$ (range = 25–37). However, in the experimental phase, a noticeable decrease in ratings for neutral images was observed, with a mean of $M = 17.82, SD = 6.01$ (range = 4–26), whereas attractive images received a mean rating of $M = 25.64, SD = 5.66$ (range = 10–30). A paired t-test indicated a statistically significant difference in the control phase, $t(69) = -3.33, p = .002, d = 0.07$, and an even stronger effect in the experimental phase, $t(69) = 12.79, p < .001, d = 0.08$, confirming the presence of a contrast effect. A repeated measures ANOVA further supported this finding, revealing a significant main effect of phase on attractiveness ratings, $F(2.43, 167.76) = 252.98, p < .001, \eta^2 = 0.03$. The highest ratings were observed in the attractive control phase, followed by neutral control, while ratings dropped significantly in the experimental phases, with the most pronounced decrease in neutral experimental conditions. These results confirm that prior exposure to highly attractive images significantly reduces the perceived attractiveness of neutral images, reinforcing the cognitive bias in facial evaluations.

Further analysis explored gender and relationship status differences in attractiveness ratings. Females rated both neutral ($M = 50.14, SD = 3.45$) and attractive ($M = 59.15, SD = 2.95$) images significantly higher than males (neutral: $M = 45.00, SD = 11.74$; attractive: $M = 53.93, SD = 2.93$), with t-tests indicating statistical significance for both neutral, $t(69) = -2.42, p = .02, d = 0.05$, and attractive images, $t(69) = -3.57, p < .001, d = 0.03$. In contrast, differences based on relationship status were not statistically significant. Although committed participants tended to rate neutral ($M = 49.45, SD = 6.87$) and attractive ($M = 57.55, SD = 5.93$) faces slightly higher than non-committed individuals (neutral: $M = 45.27, SD = 10.58$; attractive: $M = 49.45, SD = 10.24$), the differences were not statistically meaningful, neutral: $t(69) = -1.87, p = .07, d = 0.05$; attractive: $t(69) = -.73, p = .51, d = 0.03$. These findings suggest that gender plays a more significant role in attractiveness ratings than relationship status, further emphasizing the influence of perceptual biases in evaluating facial attractiveness.

Table 1 Mean and standard deviation (N = 70)

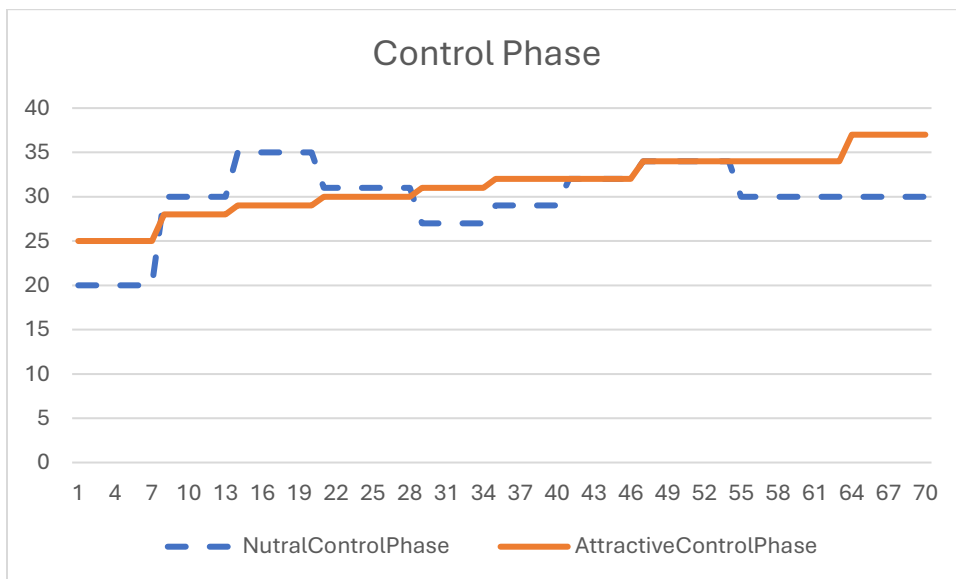
Phase	M	SD	Range
Neutral Control Phase	29.90	3.98	20 – 35
Attractive Control Phase	31.33	3.30	25 – 37
Attractive Experimental Phase	25.64	5.66	10 – 30
Neutral Experimental Phase	17.82	6.01	4 – 26

The descriptive statistics for the study ($N = 70$) indicate notable differences in mean attractiveness ratings across the control and experimental phases. In the control phase, neutral images had a mean rating of $M = 29.90$ ($SD = 3.98$, range = 20–35), while attractive images received a higher mean rating of $M = 31.33$ ($SD = 3.30$, range = 25–37). However, in the experimental phase, where participants were first exposed to attractive images, the mean rating for neutral images significantly decreased to $M = 17.82$ ($SD = 6.01$, range = 4–26), while the mean rating for attractive images was also lower at $M = 25.64$ ($SD = 5.66$, range = 10–30). These results further support the contrast effect, demonstrating that prior exposure to attractive images reduces the perceived attractiveness of neutral images.

Table 2 t-test for both designs (N = 70)

t-test for AB design (N = 70)									
Variable	Neutral Control phase		Attractive Control phase		t (69)	p	Cohen's d		
	M	SD	M	SD					
Neutral - Attractive Control phase	29.90	3.98	31.33	3.30	-3.33	.002	0.07		
t-test for BA design (N = 70)									
Variable	Neutral Experimental phase		Attractive Experimental phase		t (69)	p	Cohen's d		
	M	SD	M	SD					
Attractive - Neutral Experimental phase	17.82	6.01	25.64	5.66	12.79	.00	0.08		

The statistical analysis using paired t-tests for both the AB and BA designs (N = 70) demonstrated significant contrast effects in attractiveness ratings. In the control phase, the mean rating for neutral images (M = 29.90, SD = 3.98) was significantly lower than that of attractive images (M = 31.33, SD = 3.30), with a t-value of -3.33 and a p-value of .002, indicating a small effect size (Cohen's d = 0.07). Similarly, in the experimental phase, neutral images were rated significantly lower (M = 17.82, SD = 6.01) than attractive images (M = 25.64, SD = 5.66), with a highly significant t-value of 12.79 and p < .001, also reflecting a small effect size (Cohen's d = 0.08). These findings align with the hypothesis that exposure to highly attractive images decreases the ratings of neutral images, reinforcing the presence of the contrast effect in facial attractiveness judgments. The graphical representation further illustrates the observed differences between conditions, with clear deviations in ratings between control and experimental phases.



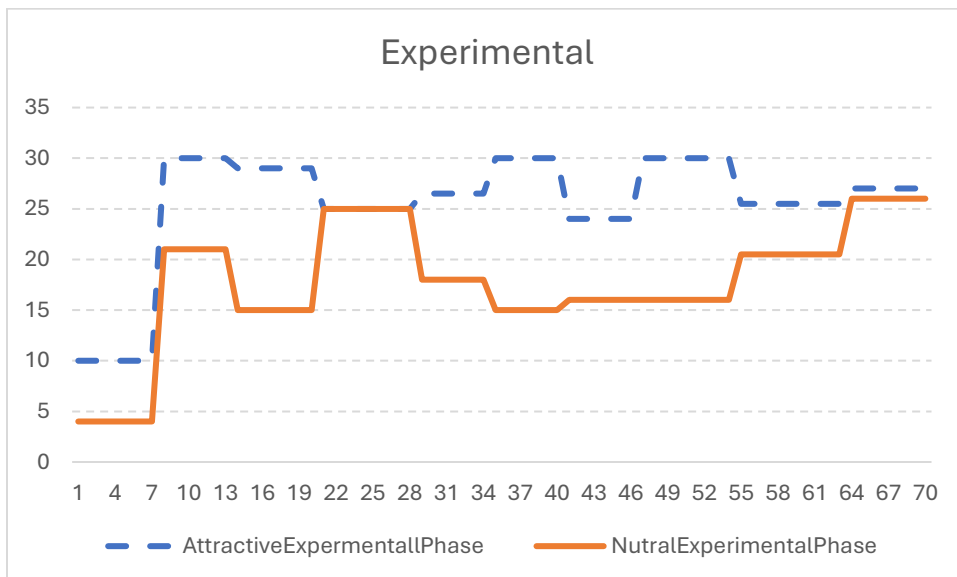
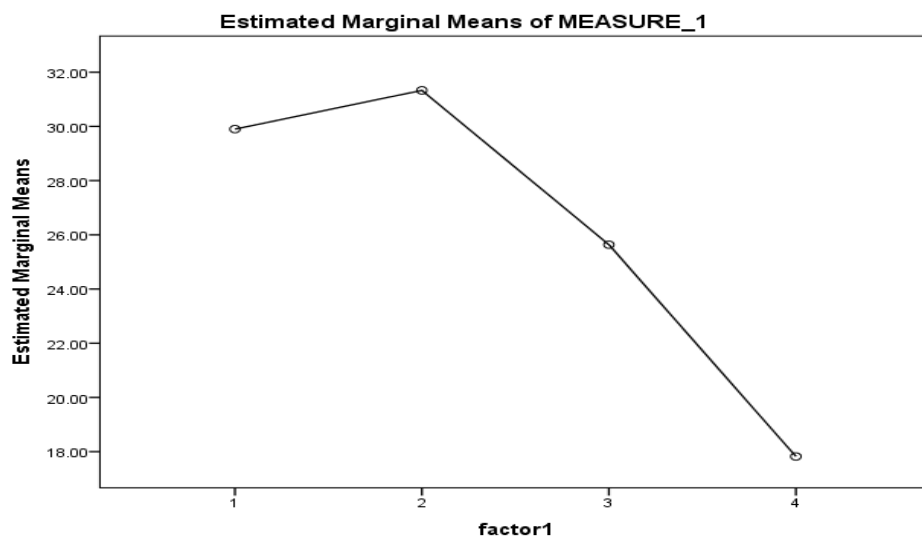


Table 3. Repeated measures ANOVA for attractiveness ratings (N = 70)

	Neutral Control Phase (I)		Attractive Control Phase (II)		Attractive Experimental Phase (III)		Neutral Experimental Phase (IV)			
Repeated measures ANOVA (N = 70)										
	Neutral Control		Attractive Control		Attractive Experimental		Neutral Experimental		F (2.43,167.76)	η^2
	M	SD	M	SD	M	SD	M	SD		
Factors	29.90	3.98	31.33	3.30	25.64	5.66	17.82	6.01	252.98	0.03

The repeated measures ANOVA conducted on the four conditions (N = 70) revealed a significant main effect of phase on attractiveness ratings, $F(2.43,167.76) = 252.98, p < .001, \eta^2 = 0.03$, indicating a small effect size. Mean ratings were highest in the Attractive Control Phase (M = 31.33, SD = 3.30), followed by the Neutral Control Phase (M = 29.90, SD = 3.98). However, in the experimental phase, ratings significantly dropped, with Attractive Experimental Phase (M = 25.64, SD = 5.66) receiving lower scores and the Neutral Experimental Phase (M = 17.82, SD = 6.01) experiencing the most pronounced decrease. These findings confirm the presence of a contrast effect, where prior exposure to highly attractive images led to significantly lower ratings for neutral images, reinforcing the cognitive bias in facial attractiveness judgments.



Overall, the first rating of neutral pictures was low where as attractive picture rating was high moreover, the second phase of attractive pictures were high as compare to neutral pictures however, the rating of neutral picture decrease effectively after exposure to attractive pictures.

Table 4 t-test for difference across the level of gender & relationship (N = 70)

t-test for difference across the level of gender							
Variable	Male		Female		t (69)	p	Cohen's d
	M	SD	M	SD			
Neutral	45.00	11.74	50.14	3.45	-2.42	.02	0.05
Attractive	53.93	2.93	59.15	2.95	-3.57	.00	0.03
t-test for difference across the level of relationship							
Variable	Non-committed		Committed		t (69)	p	Cohen's d
	M	SD	M	SD			
Neutral	45.27	10.58	49.45	6.87	-1.87	.07	0.05
Attractive	49.45	10.24	57.55	5.93	-.73	.51	0.03

The independent samples t-test examined differences in attractiveness ratings across gender and relationship status. A significant gender difference was observed, with females rating both neutral (M = 50.14, SD = 3.45) and attractive (M = 59.15, SD = 2.95) faces higher than males (neutral: M = 45.00, SD = 11.74; attractive: M = 53.93, SD = 2.93). The differences were statistically significant for both neutral ($t(69) = -2.42, p = .02, d = 0.05$) and attractive images ($t(69) = -3.57, p < .001, d = 0.03$), indicating small effect sizes.

For relationship status, although committed participants tended to rate neutral (M = 49.45, SD = 6.87) and attractive faces (M = 57.55, SD = 5.93) slightly higher than non-committed individuals (neutral: M = 45.27, SD = 10.58; attractive: M = 49.45, SD = 10.24), the differences were not statistically significant (neutral: $t(69) = -1.87, p = .07, d = 0.05$; attractive: $t(69) = -.73, p = .51, d = 0.03$). These findings suggest that gender plays a more substantial role than relationship status in attractiveness ratings.

DISCUSSION

The findings of this study provide compelling evidence for the contrast effect in facial attractiveness judgments, demonstrating that exposure to highly attractive images significantly reduces the perceived attractiveness of neutral images. These results align with previous literature, reinforcing that social cues and environmental context influence facial perception and evaluative judgments (14,15). The presence of a contrast effect was evident, as participants who initially rated attractive images subsequently assigned lower ratings to neutral images compared to when neutral images were evaluated independently. This pattern suggests that the initial exposure to highly attractive stimuli establishes a perceptual standard, causing subsequent stimuli to appear less appealing in relative comparison (16). Cognitive biases, such as perceptual adaptation and shifts in evaluative thresholds, have been implicated in this phenomenon, where exposure to extreme exemplars alters sensitivity to subsequent stimuli (17). Additionally, the observed decrease in neutral image ratings may be attributed to the psychological mechanisms of contrast effects, where heightened standards induced by attractive stimuli create a perceptual disparity that diminishes the appeal of less striking images (18). Exposure to aesthetically appealing faces has been shown to influence cognitive and affective responses, leading to spillover effects in evaluative judgments. Prior studies suggest that prolonged exposure to attractive stimuli can recalibrate perceptual and cognitive processing, reinforcing beauty ideals and altering subjective ratings of subsequent stimuli (19). These findings contribute to a broader understanding of the role of perceptual biases in shaping human aesthetic evaluations and social decision-making.

The study further examined gender differences in attractiveness ratings, revealing that both male and female participants assigned higher ratings to attractive faces compared to neutral faces, confirming the robustness of the contrast effect across genders (20). Female participants consistently provided higher ratings for both attractive and neutral images compared to male participants, which is consistent with existing research suggesting that women generally exhibit heightened sensitivity to facial aesthetics and social evaluative cues (21). Despite gender differences in absolute ratings, the contrast effect remained consistent across both groups, reinforcing its universal cognitive nature. Relationship status, however, did not significantly influence contrast effects in facial attractiveness judgments. Unlike prior research that suggested relationship status may modulate evaluative biases in attractiveness perception, the current findings indicate that the contrast effect operates independently of an individual's romantic involvement (22). This suggests that perceptual biases in facial attractiveness are primarily driven by immediate cognitive comparisons rather than broader social influences, such as relationship commitment. The absence of a relationship status effect challenges assumptions that partnered individuals may exhibit differential evaluative tendencies based on relational satisfaction or mate selection mechanisms (23). Instead, the results support the notion that contrast effects emerge from fundamental perceptual processes that remain stable across demographic factors.

The study offers valuable insights into the mechanisms underlying facial attractiveness perception, with implications spanning social psychology, marketing, and interpersonal relationships. Understanding how exposure to beauty ideals alters aesthetic judgments has critical applications in media representation and body image research (24). The pervasive presence of highly curated, digitally enhanced imagery in modern media may contribute to unrealistic beauty standards, reinforcing contrast effects that influence self-perception and social comparison processes. The findings also have practical significance in advertising and marketing, where strategic stimulus presentation can be leveraged to enhance consumer perceptions of attractiveness and desirability. Additionally, recognizing gender variations in facial attractiveness judgments may inform targeted interventions aimed at reducing biases in social and professional evaluations. However, the study has certain limitations that warrant consideration. While methodological controls were implemented to minimize confounds, factors such as environmental distractions, participant fatigue, and memory effects may have influenced responses. Future research should incorporate more rigorous experimental designs with extended time intervals between exposures to further isolate contrast effects. Additionally, investigating contrast effects in non-human stimuli, such as objects or abstract patterns, could provide deeper insights into the generalizability of perceptual biases beyond facial attractiveness (25). Despite these limitations, the study advances the understanding of contrast effects in social perception, reinforcing the intricate interplay between cognitive biases and aesthetic evaluations.

A recent comparative study on contrast effects in facial attractiveness judgments further supports the findings of the present research. Lei et al. (2020) conducted a series of experiments to examine the impact of contextual information on attractiveness ratings, specifically focusing on the role of "special faces" within a group. A special face was defined as one that significantly deviates from the attractiveness norms of the group. The results indicated that when a special face was included within a group, participants made more extreme judgments, rating the most attractive face as even more attractive and the least attractive face as less attractive than when evaluated in isolation. Additionally, the spatial position of the target face within the group influenced attractiveness judgments, with central placement amplifying contrast effects. These findings align with the present study's conclusions that exposure to highly attractive stimuli skews the evaluation of subsequent faces. However, Lei et al. (2020) extended the understanding of the contrast effect by demonstrating that group dynamics and spatial positioning also modulate attractiveness ratings. This suggests that not only does prior exposure to highly attractive individuals influence perception, but the relative positioning and presence of comparison standards further exaggerate contrast effects. These insights contribute to the growing body of research emphasizing the importance of cognitive biases in attractiveness judgments, reinforcing that facial evaluations are not absolute but highly dependent on contextual and comparative references (26).

CONCLUSION

The findings of this study provide strong evidence for the contrast effect in facial attractiveness judgments, demonstrating that exposure to highly attractive images significantly lowers the perceived attractiveness of neutral images. This effect persisted across genders, indicating that perceptual biases influence facial evaluations universally, though females exhibited slightly higher overall ratings. Interestingly, relationship status did not impact contrast effects, suggesting that this cognitive bias operates independently of broader social influences. The study highlights how immediate visual comparisons shape attractiveness perceptions, reinforcing the notion that facial evaluations are not absolute but context-dependent. These results contribute to a deeper understanding of the psychological mechanisms underlying aesthetic judgments, emphasizing the role of exposure, cognitive adaptation, and comparative perception in shaping beauty standards. By shedding light on the intricacies of facial attractiveness assessments, this research underscores the significance of perceptual biases in social interactions and decision-making.

Author Contribution

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Kainaaf Yousaf*	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Iram Fatima	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published
Fozia Malik	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
Razia	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Sara Asif	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Maheen Fatima	Substantial Contribution to study design and Data Analysis Has given Final Approval of the version to be published

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