Illogical Categorization and Positive Associations in Product and Company Impressions: Experimental Studies from China

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Abstract

The concept of Illogical Classification-Based Thinking (ICBT): the tendency to group traits based on impressions rather than logical connections, is related to consumer behavior. This study explores how ICBT and Positive Associations influence consumer impressions of products and companies in a Chinese context. We conducted two large-scale experiments involving 660 participants, divided into three groups: control (indefinite attributes), experimental (definite attributes), and experimental with AI-generated visuals. Results showed that ICBT significantly influences consumer impressions even with indefinite attributes, and definite attributes enhance positive impressions. AI-generated visuals generally reinforced positive impressions, though their impact varied. Notably, while cis-female participants exhibited stronger positive impressions with definite attributes and visuals, the gender differences were not as pronounced as hypothesized. These findings provide insights into the cognitive processes driving consumer behavior, emphasizing the role of ICBT in forming positive associations and offering practical recommendations for marketers. Future research should explore these phenomena across diverse cultural settings and examine the long-term effects of ICBT on consumer behavior.

Keywords: Illogical Classification-Based Thinking (ICBT), Positive Associations, Consumer Impressions, Marketing Strategies, Cognitive Processes, Gender Differences, Consumer Behavior

Consumer Relevance and Contribution Statement

This research provides important insights into the cognitive processes that shape consumer impressions of products and companies, focusing on Illogical Classification-Based Thinking (ICBT) and Positive Associations. Our findings demonstrate that even when product attributes are indefinite, consumers tend to form positive associations based on impressions rather than logical connections. This tendency is amplified when definite attributes are presented, and further influenced by AI-generated visuals. These insights are critical for understanding how consumers process information and make decisions in a complex marketplace saturated with marketing messages.

Situated within the existing body of consumer research, this study expands on the concept of the Halo Effect by introducing ICBT as a framework for understanding non-logical grouping of traits. While the Halo Effect explains how one positive attribute can influence overall perception, our research delves deeper into how consumers form positive associations with other related positive attributes in specific contexts when these attributes are not logically supported by the product's qualities. This theoretical advancement provides a more nuanced understanding of the cognitive shortcuts that drive consumer behavior.

The relevance of our findings extends beyond academic circles to practical applications in marketing and advertising. Marketers can leverage these insights to design more effective campaigns by highlighting definite positive attributes and incorporating visuals to reinforce specific favorable consumer impressions. This research also underscores the importance of critically evaluating marketing messages, guiding consumers to make more

informed decisions. By understanding the cognitive biases that influence their perceptions, consumers can better navigate the marketplace and avoid being unduly influenced by persuasive marketing techniques. Our study thus offers valuable contributions to both the academic field of consumer behavior and practical marketing strategies, emphasizing the need for clear, positive attributes and the careful use of visuals in marketing communications.

Introduction

In today's competitive marketplace, how consumers perceive products and companies is crucial in shaping their purchasing decisions. Advertisers and marketers continuously craft narratives to create favorable impressions and influence consumer behavior. Despite its importance, the cognitive processes behind these perceptions are complex and not fully understood. One such process is Illogical Classification-Based Thinking (ICBT), where consumers make associations based on impressions rather than logical connections (Towne, 2024).

ICBT involves the subjective grouping of concepts based on impressions rather than logic. This phenomenon can reveal the non-rational pathways consumers often take when making decisions. These cognitive shortcuts may be especially potent in information-rich environments, where quick, heuristic processing is necessary for evaluating product claims. Previous research has shown that heuristic processing in consumer behavior often leads to biased and illogical conclusions (Towne, 2024).

Towne (2024) expands on ICBT, detailing its influence on forming positive, negative, and neutral associations. In consumer behavior, positive associations occur when consumers link favorable attributes or outcomes to a product or company based on positive impressions, even if these attributes are not logically supported by the product’s qualities. For example, an advertisement might highlight a product as enhancing nutritional digestion, leading consumers to associate it with general health benefits, regardless of its actual composition.

This process is particularly effective when positive attributes are presented definitively or supported by authoritative claims.

This study explores the effects of ICBT and positive associations on consumer perceptions of products and companies. Specifically, it examines how different presentations of positive attributes—definite, indefinite, or augmented by AI-generated visuals—impact consumer impressions. By analyzing these variables, we aim to understand the cognitive mechanisms driving consumer behavior and provide practical insights for more effective marketing strategies.

Understanding ICBT and positive associations in consumer behavior is not just an academic pursuit; it has significant practical implications. Marketers who understand these cognitive processes can design campaigns that align with how consumers process information, potentially influencing consumer decisions more effectively. This paper aims to contribute to the theoretical understanding of consumer psychology and offer actionable insights for the marketing industry, emphasizing the strategic presentation of product attributes in shaping consumer perceptions.

Theoretical Framework

Positive Associations: A Conceptual Expansion of the Halo Effect

Positive Associations involve the tendency to group favorable traits based on specific attributes, even when there's no logical reasoning. This concept is closely related to the Halo Effect, where one positive trait, such as physical attractiveness, leads to assumptions of other unrelated positive traits, like kindness or intelligence (Towne, 2024). Previous research has shown that perceived characteristics significantly influence subsequent judgments. For instance, Todorov et al. (2015) demonstrated that facial features quickly form lasting impressions affecting perceptions of unrelated traits.

While Positive Associations share similarities with the Halo Effect, they emphasize the non-logical grouping of traits based on impressions. This process, termed Illogical Classification-Based Thinking (ICBT), is influenced by cultural norms, linguistic habits, personal experiences, social expectations, and stereotypes. For example, describing someone as kind may evoke associations with traits such as friendliness and gentleness. However, context can alter these associations: a beautiful woman smiling against a blue background may be perceived as gentle, while another beautiful woman laughing against a red background may be seen as passionate. This contextual dependency highlights that specific trait groupings can vary based on situational, cultural, and social factors, which is not fully addressed by the traditional Halo Effect framework (Towne, 2024).

Classification-Based Thinking (CBT)

Classification-Based Thinking (CBT) is a cognitive process where individuals organize information, objects, or people into categories based on perceived characteristics or attributes. This process involves grouping entities according to shared traits, thereby managing large amounts of information by creating manageable subsets and making sense of complex data (Towne, 2024).

Illogical Classification-Based Thinking (ICBT)

ICBT is a cognitive process where individuals classify an object or person based on impressions and subsequently associate this attribute with other related attributes, forming an overall impression. This classification relies on impressions and empirical experiences rather than logical reasoning. For example, perceiving a person as intelligent might lead to assumptions that they are also diligent and hardworking, despite no logical connection between these traits (Towne, 2024).

The essence of ICBT is its reliance on empirical judgment. Such judgments are often practical in real-life scenarios, despite the absence of logical reasoning. For instance,

associating green with safety and health is common in marketing, as environmentally friendly products often use green packaging. Similarly, intelligent individuals are frequently perceived as diligent based on empirical observations rather than logical reasoning (Towne, 2024).

ICBT is a key factor in forming and reinforcing stereotypes, which are often grounded in empirical applicability rather than accuracy. This process resembles Kahneman's System 1 (fast, intuitive thinking) and System 2 (slow, logical thinking), although even with careful consideration, people may still rely on ICBT. This reliance leads to comprehensive impressions based on single attributes, resulting in biases such as stereotyping (Towne, 2024).

Manifestations of ICBT

ICBT manifests in three primary ways:

Associative Thinking-Based Classification

When an individual perceives Person A as intelligent, they may draw on personal experiences with Person B, who is also perceived as intelligent, diligent, and determined. This leads to the assumption that Person A shares these additional traits due to the personal association with Person B. Similarly, if an individual knows a group of intelligent people (Persons B, C, and D) who are diligent and determined, they might generalize that Person A, like this group, is also diligent and determined based on their collective experiences (Towne, 2024).

Trait Co-occurrence-Based Classification

When Person A is perceived as intelligent, societal expectations, stereotypes, and cultural norms often associate intelligence with diligence and determination. As a result, an individual may infer that Person A possesses these traits due to these broader social and cultural associations (Towne, 2024).

Intuition-Based Classification

Some individuals inherently believe that a smart person must also possess qualities such as diligence and determination. This belief is driven by intuition rather than any logical reasoning or empirical evidence (Towne, 2024).

Logical Classification-Based Thinking (LCBT)

LCBT differs from ICBT as it is based on logical and critical reasoning. This process involves evidence-based classification, where logical relationships are clear and straightforward. For example, recognizing a vehicle with police lights as a police car is a logic-based judgment. LCBT aligns with Kahneman's System 2, which is characterized by deliberate and effortful cognitive processing (Towne, 2024).

The Role of ICBT in Forming Positive, Negative, and Neutral Associations

ICBT serves as a fundamental mechanism underpinning the formation of Positive, Negative, and Neutral Associations. This process involves categorizing individuals based on impressions and subsequently associating this primary attribute with a range of other related traits, without logical reasoning or evidence (Towne, 2024).

In the context of Positive Associations, ICBT elucidates how single favorable impressions can lead to the grouping of multiple related positive traits. Similarly, ICBT plays a crucial role in forming Negative Associations, where negative impressions lead to the automatic clustering of other unfavorable traits. ICBT also provides a framework for understanding Neutral Associations, where neutral traits are grouped based on impressions that do not elicit strong positive or negative reactions (Towne, 2024).

In summary, the conceptual expansion provided by Positive, Negative, and Neutral Associations, alongside ICBT, offers a comprehensive understanding of how impressionistic judgments shape our perceptions. This theoretical framework emphasizes the automatic and often illogical categorization processes that drive our associations and stereotypes, providing

a nuanced perspective on the cognitive mechanisms underlying social judgments (Towne, 2024).

ICBT & LCBT Versus System 1 & System 2

ICBT and System 1

ICBT involves forming associations and classifications based on impressionistic judgments, aligning with System 1's fast, automatic, and intuitive thinking. However, ICBT diverges from System 1 in its emphasis on the illogical and impressionistic nature of these classifications, influenced by cultural norms, social expectations, and stereotypes. While System 1 involves quick, heuristic judgments, ICBT specifically refers to the non-logical grouping of traits based on impressions, which can involve both quick and more extended periods of deliberation (Towne, 2024).

LCBT and System 2

LCBT involves categorization and judgment based on logical reasoning and empirical evidence, resembling System 2's slow, deliberate, and effortful cognitive activities. System 2 engages in analytical thinking, requiring cognitive resources to evaluate information and make reasoned decisions. However, LCBT is specifically focused on classification tasks, where logical relationships are clear and straightforward (Towne, 2024).

Comparative Analysis

While ICBT and LCBT share similarities with System 1 and System 2, they diverge in key ways. ICBT's reliance on impressions and experiences reflects System 1's heuristic-based nature but includes a broader range of influences such as cultural and social factors. Conversely, LCBT's emphasis on logical and evidence-based classification aligns with System 2's analytical processing but is specifically concerned with categorization tasks (Towne, 2024).

ICBT and Positive Associations in the Context of Consumer Psychology

Positive Associations within the framework of ICBT are vital in consumer psychology. These associations occur when consumers link favorable attributes or outcomes to a product or company based on marketing messages, even when these attributes are not inherently supported by the product's actual qualities. For example, a product marketed with eco-friendly packaging may lead consumers to believe the product itself is healthier, regardless of its nutritional content. Such associations are powerful because they tap into consumers' desire for coherence and positivity in their perceptions, overriding logical analysis.

This theoretical framework is applied in this research to empirically test the effects of ICBT and Positive Associations on consumer behavior by manipulating the presentation of product attributes and the inclusion of visuals. By examining how definite versus indefinite attributes, supported by visuals, affect consumer perceptions, the study seeks to provide actionable insights into the cognitive mechanisms driving consumer decisions. This understanding can inform the strategic use of marketing elements, enabling more effective influence on consumer perceptions and behavior.

Literature Review

Research on the Halo Effect is comprehensive and extensive, covering a wide range of applications across various fields. For example, studies such as Sackmary (2015) in services marketing and Nufer (2019) in sports marketing, illustrate the pervasive influence of the Halo Effect in different contexts.

Bacig and Young (2019) explore how locally sourced food creates a Halo Effect for restaurants, enhancing their overall reputation. Burke et al. (2018) extend the concept beyond its traditional bounds by examining corporate reputation's influence on consumer choice. Additionally, Borah and Tellis (2016) explore the Halo Effect in social media, showing its significant impact on brand image and consumer perceptions.

Furthermore, other recent studies also contribute to this comprehensive understanding of the Halo Effect, such as Ludlow (2015) revisiting consumerism and physicians and Kozłowski (2016) examining the banking sector. Additionally, Zamzow and Basso (2022) discuss humane halos in dairy production.

Gräf and Unkelbach (2016) highlight how halo effects depend on information valence, Brown et al. (2016) examine halo effects in surgical care within health systems, and Cannon and Cipriani (2021) quantify halo effects in teaching evaluations. Minge and Thüring (2018) discuss hedonic and pragmatic halo effects at early stages of user experience.

However, despite the broad scope of research on the Halo Effect, there are theoretical gaps that this concept does not address. The Halo Effect primarily focuses on the influence of a single positive attribute on overall perception but does not fully explain how these positive associations are formed or how they interact with other cognitive biases in consumer behavior. This is where the theories of Illogical Classification-Based Thinking (ICBT) and Positive Associations come into play, filling the gaps left by the traditional Halo Effect.

ICBT extends the understanding of consumer behavior by explaining how consumers group traits based on subjective impressions rather than logical connections. This theory provides a nuanced explanation of the non-rational pathways consumers often take in information-rich environments (Towne, 2024). Positive Associations theory further clarifies how specific positive traits are linked together through initial impressions, impacting overall consumer perceptions in a more structured and predictable manner than the broad generalizations of the Halo Effect (Towne, 2024).

For instance, while the Halo Effect might explain why a consumer perceives a skincare product positively based on its moisturizing claim, Positive Associations theory delves deeper into why that same product might also be associated with other desirable qualities, such as anti-aging benefits, even without explicit evidence. This distinction is

crucial because Positive Associations theory offers a more detailed framework for understanding how consumers form these associations, which can be influenced by specific marketing strategies.

Using Positive Associations rather than the Halo Effect provides a more targeted approach to consumer behavior research. Positive Associations focus on the contextual and situational factors that drive specific trait linkages, which is essential for developing precise marketing strategies. In contrast, the Halo Effect's broad generalizations may not account for the nuanced ways consumers connect different product attributes.

In summary, while the existing research on the Halo Effect is comprehensive and provides valuable insights into consumer perceptions, it does not fully capture the complexity of how positive associations are formed and their impact on consumer behavior. The theories of ICBT and Positive Associations address these gaps, offering a more detailed and actionable framework for understanding and influencing consumer impressions. This contrast highlights the importance of these newer theories in advancing the field of consumer behavior and marketing strategy (Towne, 2024).

Research Hypotheses

This research aims to investigate the cognitive mechanisms of Illogical Classification-Based Thinking (ICBT) and Positive Associations and their influence on consumer impressions of products and companies. The study is structured around the following hypotheses:

H1: ICBT and Positive Associations will significantly influence consumer impressions of products and companies, even if these positive attributes are indefinite.

H1-0: If the attributes are indefinite, ICBT and Positive Associations will not significantly influence consumer impressions of products and companies.

H2: Exposure to definite positive attributes will significantly enhance consumers' positive impressions of a product or company compared to indefinite attributes.

H2-0: There will be no significant difference in positive impressions between consumers exposed to definite and indefinite positive attributes.

H3: Adding promotional posters to product descriptions with definite positive attributes will significantly enhance consumers' positive impressions of the product or company.

H3-0: Promotional posters accompanying product descriptions with definite positive attributes will not significantly enhance positive impressions compared to definite positive attributes alone.

H4: Specific positive attributes will be associated with specifically related positive attributes, rather than random or arbitrary positive impressions.

H4-0: Specific positive attributes will not be more likely to be associated with specifically related positive attributes, but will form random or arbitrary positive impressions.

Research Design

Pilot Study

The initial phase of the research involved a pilot study designed to validate the methodology and determine the appropriate sample size. This pilot study consisted of three groups: Control Group 0, Experimental Group 1, and Experimental Group 2, each comprising 30 participants. These groups were exposed to varying descriptions of products and companies, characterized by either uncertain or certain positive attributes, with or without accompanying AI-generated visuals. The data collected from this pilot study were subjected to chi-square tests, revealing significant differences in perceptions based on the certainty of the positive attributes presented. These preliminary results provided the basis for calculating the maximum effect size and required sample size for the main experiments. In order to

achieve a = .01 and power = .9, 109 samples should be achieved for each group. We determined a sample size of 110 participants per group for both Study 1 and Study 2.

Main Study

Building on the pilot study findings, the main study was structured into two separate experiments, each targeting a distinct demographic group. Study 1 focused on cis-female participants, while Study 2 targeted cis-male participants. Each study recruited 330 participants through the Credamo platform, ensuring a diverse and representative sample. Participants were randomly assigned to one of three groups:

Control Group 0: Exposed to descriptions with uncertain positive attributes.

Experimental Group 1: Received descriptions featuring certain positive attributes.

Experimental Group 2: Provided with descriptions accompanied by AI-generated posters emphasizing certain positive attributes.

Study Procedure

Participants accessed the survey online and completed it independently. After providing demographic information, including sexual orientation, education level, occupation type, and age, participants were presented with the product and company descriptions corresponding to their assigned group. The descriptions were crafted to either highlight uncertain or certain positive attributes, and in the case of Experimental Group 2, these attributes were visually reinforced through AI-generated posters designed to evoke specific positive impressions.

Following the exposure to these descriptions, participants answered a series of yes/no questions about their perceptions of the products and companies. These questions were tailored to assess whether participants associated additional positive traits with the products and companies based on the descriptions provided. For example, participants were asked if they believed a skincare product described as having moisturizing properties also had

antioxidant benefits or if a nutritional snack advertised as enhancing digestion was perceived as rich in vitamins. The survey also included questions to evaluate whether participants carefully considered each option and if they formed an overall impression based on the provided descriptions.

Data Analysis

Data analysis was conducted using SPSS software. Chi-square tests were performed to compare the frequency of positive associations across the three groups, determining the statistical significance of the observed differences. ANOVA was used to compare the means of the three groups to further validate the hypotheses related to the influence of definite positive attributes and the inclusion of visuals. Additionally, Spearman correlation analysis was conducted to explore the relationships between demographic variables (sexual orientation, education level, occupation type, age) and consumer impressions.

Validity and Reliability Analysis

Validity Analysis: A factor analysis was conducted to examine the construct validity of the survey items. The Kaiser-Meyer-Olkin (KMO) measure and Bartlett’s Test of Sphericity were used to determine the suitability of the data for factor analysis. Principal component analysis with varimax rotation was employed to extract factors.

Reliability Analysis: The reliability of the survey was assessed using Cronbach's alpha. The corrected item-total correlations (CITC) and the change in Cronbach's alpha if an item was deleted were calculated to evaluate the internal consistency of the items.

Ethical Considerations

Throughout both studies, rigorous ethical standards were maintained. All participants provided informed consent and were assured of their privacy and confidentiality. The studies received ethical approval from [masked for peer review], ensuring compliance with ethical research practices. Upon completion of the survey, participants were debriefed about the

study's purpose and informed that the advertisements used were fictional and generated by AI. This debriefing aimed to encourage critical viewing of advertisements and awareness of potential cognitive biases in their daily lives.

Methods

Methods of Study 1

Study 1 involved cis-female participants who were randomly assigned to one of three groups: a control group exposed to indefinite attributes, an experimental group exposed to definite attributes, and an experimental group exposed to definite attributes with visuals. Each group consisted of 110 participants, totaling 330 participants.

Participants in the control group received information about the products Florria (a whitening skincare product) and Cookiest (a sugar-free cookie) with indefinite attributes. For Florria, attributes such as moisturizing, hydrating, and antioxidant properties were assessed. For Cookiest, attributes like aiding digestion, fiber content, and vitamin association were evaluated. Regarding companies, LAMA GIANT and Sufflex were assessed on attributes such as product quality, customer service, employee benefits, efficiency, and innovation. The experimental group received the same product and company information but with definite positive attributes. The second experimental group received definite attributes along with visual aids.

Data was collected using a structured questionnaire that asked participants to rate their perceptions of the products and companies based on the provided attributes. The responses were analyzed using Chi-Square analysis to determine significant differences between groups for categorical responses. ANOVA was used to assess differences between groups for continuous variables, and Spearman correlation analysis was conducted to examine the relationships between demographic variables (education level, occupation type, age, and sexual orientation) and consumer impressions.

Methods of Study 2

Study 2 involved mostly cis-male participants (297 cis-male participants, 1 participants identifying as non-binary and 2 participants as cis-females) who were randomly assigned to one of three groups: a control group exposed to indefinite attributes, an experimental group exposed to definite attributes, and an experimental group exposed to definite attributes with visuals. Each group consisted of 110 participants, totaling 330 participants.

Participants in the control group received information about the products Prolex (a gaming laptop) and Latextra (a jacket) with indefinite attributes. For Prolex, attributes such as a high-performance graphics card, smooth operating system, and high-definition sound were assessed. For Latextra, attributes like being waterproof, durable, and comfortable were evaluated. Regarding companies, LAMA GIANT and Sufflex were assessed on attributes such as product quality, customer service, employee benefits, efficiency, and innovation. The experimental group received the same product and company information but with definite positive attributes. The second experimental group received definite attributes along with visual aids.

Data was collected using a structured questionnaire that asked participants to rate their perceptions of the products and companies based on the provided attributes. The responses were analyzed using Chi-Square analysis to determine significant differences between groups for categorical responses. ANOVA was used to assess differences between groups for continuous variables, and Spearman correlation analysis was conducted to examine the relationships between demographic variables (education level, occupation type, age, and sexual orientation) and consumer impressions.

Methods of Gender Analysis of Combined Study 1 and Study 2

Spearman correlation analysis was conducted to assess the strength and direction of the relationship between gender (Q2_1) and each of the consumer impression variables (Q8_1 to Q11_2). Spearman's rho values and significance levels (p-values) were reported to determine if any significant correlations existed between gender and the independent variables.

Analytical Tools

The sample size was calculated by ChatGPT 4o, Statistical analyses were done by SPSS AU (online) and SPSS software version: 27.0.1.0

Results

Results of Study 1

In the cis-female control group exposed to indefinite attributes, perceptions of the product Florria, a whitening skincare product, varied. Specifically, 56.36% believed it had moisturizing qualities, while 43.64% did not. Similarly, 50% associated Florria with hydrating qualities, and 41.82% thought it had antioxidant properties. For the product Cookiest, a sugar-free cookie, 38.18% believed it aided digestion, 48.18% thought it was rich in fiber, and 17.27% associated it with vitamins. Regarding companies, 38.18% of participants believed LAMA GIANT, known for its charitable work, produced high-quality products, while 60.91% associated the company with excellent customer service, and 54.55% believed it provided excellent employee benefits. For Sufflex, known for its environmental initiatives, 53.64% associated it with high efficiency, and 61.82% thought it was innovative. The study confirms that ICBT (Illogical Classification-Based Thinking) influences consumer impressions even when attributes are indefinite. Participants linked Florria with moisturizing and hydrating qualities, despite no logical connection to whitening. Similarly, LAMA GIANT's charitable work led to associations with excellent customer service and employee benefits.

In the cis-female experimental group exposed to definite attributes, a higher percentage of participants associated Florria with moisturizing (61.82%), hydrating (55.45%), and antioxidant (74.55%) qualities compared to the control group. For Cookiest, 56.36% believed it aided digestion, and 70.00% thought it was rich in fiber. Regarding LAMA GIANT, 70% associated the company with high-quality products, 84.55% with excellent customer service, and 86.36% with excellent employee benefits. Similarly, for Sufflex, 78.18% believed it was efficient, 77.27% thought it was innovative, and 80.91% associated it with high-quality products. This indicates that definite positive attributes significantly enhance positive associations.

In the cis-female experimental group exposed to definite attributes with visuals, the data shows a slight decrease in positive associations compared to definite attributes alone. For Florria, 52.73% associated it with moisturizing qualities, 44.55% with hydrating qualities, and 55.45% with antioxidant qualities. For Cookiest, 54.55% believed it aided digestion, 64.55% thought it was rich in fiber, and 38.18% believed it was rich in vitamins. Regarding LAMA GIANT, 61.82% associated the company with high-quality products, 74.55% with excellent customer service, and 71.82% with excellent employee benefits. For Sufflex, 73.64% believed it was efficient, 73.64% thought it was innovative, and 76.36% associated it with high-quality products. Although the presence of visuals slightly decreased the number of positive associations, the overall impact remained positive.

the construct validity of the survey items was examined through a factor analysis using principal component analysis with varimax rotation. The Kaiser-Meyer-Olkin (KMO) measure and Bartlett’s Test of Sphericity were used to determine the data's suitability for factor analysis. The KMO measure of sampling adequacy was 0.883, and Bartlett’s Test of Sphericity was significant (Chi-Square = 1676.763, df = 91, $p < 0.001$).

The factor analysis extracted three factors with initial eigenvalues greater than 1, explaining a total variance of 55.828%. The rotated eigenvalues were 3.682, 3.043, and 1.092, explaining 26.297%, 21.734%, and 7.797% of the variance respectively. Most items had factor loadings greater than 0.4, indicating strong correlations with the extracted factors. Communalities were generally high, except for a few items such as Q4_3 and Q6_3, which had communalities slightly below 0.4.

For reliability analysis, Cronbach's alpha was calculated to assess the internal consistency of the items. The overall Cronbach alpha for the scale was 0.870, indicating high reliability. The corrected item-total correlations (CITC) ranged from 0.502 to 0.656 for most items, demonstrating good item consistency. However, items Q11_1 and Q11_2 had lower CITC values of 0.006 and 0.125, respectively. The Cronbach alpha if item deleted remained around 0.855 to 0.877, indicating that removing any single item would not significantly improve the overall reliability. The validity and reliability analyses for Study 1 show that the survey items have good construct validity and high internal consistency, supporting the robustness of the findings.

Table 1 Validity Analysis for Study 1

Validity Analysis for Study 1				
Items	Factor Loadings			Communalities
	Factor 1	Factor 2	Factor 3	
Q4_1	0.152	0.820	0.010	0.695
Q4_2	0.079	0.849	-0.002	0.728
Q4_3	0.351	0.528	-0.010	0.402

Validity Analysis for Study 1				
Items	Factor Loadings			Communalities
	Factor 1	Factor 2	Factor 3	
Q6_1	0.287	0.615	0.063	0.464
Q6_2	0.368	0.568	0.107	0.470
Q6_3	0.276	0.588	0.006	0.422
Q8_1	0.686	0.318	-0.015	0.572
Q8_2	0.772	0.244	-0.010	0.656
Q8_3	0.799	0.193	0.057	0.680
Q10_1	0.706	0.198	0.093	0.546
Q10_2	0.605	0.209	-0.058	0.413
Q10_3	0.812	0.186	0.056	0.698
Q11_1	-0.022	-0.033	0.756	0.573
Q11_2	0.066	0.090	0.697	0.498
Eigenvalues (Initial)	5.313	1.426	1.077	-
% of Variance (Initial)	37.952%	10.184%	7.692%	-
% of Cum. Variance (Initial)	37.952%	48.136%	55.828%	-
Eigenvalues (Rotated)	3.682	3.043	1.092	-

Validity Analysis for Study 1				
Items	Factor Loadings			Communalities
	Factor 1	Factor 2	Factor 3	
% of Variance (Rotated)	26.297%	21.734%	7.797%	-
% of Cum. Variance (Rotated)	26.297%	48.031%	55.828%	-
KMO	0.883			-
Bartlett's Test of Sphericity (Chi-Square)	1676.763			-
df	91			-
p value	0.000			-

Note: Blue indicates that the absolute value of loading is greater than 0.4, and red indicates that the communality is less than 0.4.

Table 2 Reliability Analysis for Study 1

Reliability Statistics for Study 1(Cronbach Alpha)			
Items	Corrected Item-Total Correlation(CITC)	Cronbach Alpha if Item Deleted	Cronbach α
Q4_1	0.580	0.859	0.870
Q4_2	0.542	0.861	
Q4_3	0.530	0.862	
Q6_1	0.546	0.861	
Q6_2	0.582	0.859	
Q6_3	0.516	0.863	
Q8_1	0.638	0.856	
Q8_2	0.656	0.855	

Validity Analysis for Study 1					
Items		Factor Loadings			Communalities
		Factor 1	Factor 2	Factor 3	
Q8_3	0.647		0.856		
Q10_1	0.580		0.859		
Q10_2	0.502		0.863		
Q10_3	0.653		0.855		
Q11_1	0.006		0.877		
Q11_2	0.125		0.875		

Cronbach α (Standardized): 0.853

The Chi-Square analysis revealed significant differences between the groups for several questions, indicating the influence of definite positive attributes and visuals on consumer impressions. Significant findings include Q4_3 ($\chi^2(2, N = 330) = 24.296$, $p < .001$), Q6_1 ($\chi^2(2, N = 330) = 8.825$, $p = .012$), Q6_2 ($\chi^2(2, N = 330) = 11.913$, $p = .003$), Q6_3 ($\chi^2(2, N = 330) = 24.203$, $p < .001$), Q8_1 ($\chi^2(2, N = 330) = 24.459$, $p < .001$), Q8_2 ($\chi^2(2, N = 330) = 15.837$, $p < .001$), Q8_3 ($\chi^2(2, N = 330) = 27.059$, $p < .001$), Q10_1 ($\chi^2(2, N = 330) = 17.382$, $p < .001$), Q10_2 ($\chi^2(2, N = 330) = 6.963$, $p = .031$), and Q10_3 ($\chi^2(2, N = 330) = 28.692$, $p < .001$). Non-significant findings include Q4_1 ($\chi^2(2, N = 330) = 1.879$, $p = .391$), Q4_2 ($\chi^2(2, N = 330) = 2.618$, $p = .270$), Q11_1 ($\chi^2(2, N = 330) = 0.292$, $p = .864$), and Q11_2 ($\chi^2(2, N = 330) = 1.955$, $p = .376$).

Table 3 Chi-Square Analysis for Study 1

Chi-Square Analysis for Study 1 N (%)N%							
Items	Categories	Experiment Groups(%)			Total	χ^2	*p*
		0.0	1.0	2.0			
Q4_1	0.0	48(43.64)	42(38.18)	52(47.27)	142(43.03)		
	1.0	62(56.36)	68(61.82)	58(52.73)	188(56.97)	1.879	0.391
	Total	110	110	110	330		
Q4_2	0.0	55(50.00)	49(44.55)	61(55.45)	165(50.00)		
	1.0	55(50.00)	61(55.45)	49(44.55)	165(50.00)	2.618	0.270
	Total	110	110	110	330		
Q4_3	0.0	64(58.18)	28(25.45)	49(44.55)	141(42.73)		
	1.0	46(41.82)	82(74.55)	61(55.45)	189(57.27)	24.296	0.000**
	Total	110	110	110	330		
Q6_1	0.0	68(61.82)	48(43.64)	50(45.45)	166(50.30)		
	1.0	42(38.18)	62(56.36)	60(54.55)	164(49.70)	8.825	0.012*
	Total	110	110	110	330		
Q6_2	0.0	57(51.82)	33(30.00)	39(35.45)	129(39.09)		
	1.0	53(48.18)	77(70.00)	71(64.55)	201(60.91)	11.913	0.003**
	Total	110	110	110	330		
Q6_3	0.0	91(82.73)	57(51.82)	68(61.82)	216(65.45)		
	1.0	19(17.27)	53(48.18)	42(38.18)	114(34.55)	24.203	0.000**
	Total	110	110	110	330		
Q8_1	0.0	68(61.82)	33(30.00)	42(38.18)	143(43.33)		
	1.0	42(38.18)	77(70.00)	68(61.82)	187(56.67)	24.459	0.000**
	Total	110	110	110	330		
Q8_2	0.0	43(39.09)	17(15.45)	28(25.45)	88(26.67)		
	1.0	67(60.91)	93(84.55)	82(74.55)	242(73.33)	15.837	0.000**
	Total	110	110	110	330		
Q8_3	0.0	50(45.45)	15(13.64)	31(28.18)	96(29.09)		
	1.0	60(54.55)	95(86.36)	79(71.82)	234(70.91)	27.059	0.000**
	Total	110	110	110	330		

Chi-Square Analysis for Study 1 N (%)N%							
Items	Categories	Experiment Groups(%)			Total	χ^2	*p*
		0.0	1.0	2.0			
Q10_1	0.0	51(46.36)	24(21.82)	29(26.36)	104(31.52)		
	1.0	59(53.64)	86(78.18)	81(73.64)	226(68.48)	17.382	0.000**
	Total	110	110	110	330		
Q10_2	0.0	42(38.18)	25(22.73)	29(26.36)	96(29.09)		
	1.0	68(61.82)	85(77.27)	81(73.64)	234(70.91)	6.963	0.031*
	Total	110	110	110	330		
Q10_3	0.0	55(50.00)	21(19.09)	26(23.64)	102(30.91)		
	1.0	55(50.00)	89(80.91)	84(76.36)	228(69.09)	28.692	0.000**
	Total	110	110	110	330		
Q11_1	0.0	2(1.82)	3(2.73)	2(1.82)	7(2.12)		
	1.0	108(98.18)	107(97.27)	108(98.18)	323(97.88)	0.292	0.864
	Total	110	110	110	330		
Q11_2	0.0	3(2.73)	4(3.70)	7(6.42)	14(4.28)		
	1.0	107(97.27)	104(96.30)	102(93.58)	313(95.72)	1.955	0.376
	Total	110	108	109	327		

* $p<0.05$ ** $p<0.01$

The ANOVA results supported the findings from the Chi-Square analysis, showing significant differences between the groups for several questions. Significant findings include Q4_3 (F(2, 327) = 12.994, p < .001), Q6_1 (F(2, 327) = 4.492, p = .012), Q6_2 (F(2, 327) = 6.123, p = .002), Q6_3 (F(2, 327) = 12.941, p < .001), Q8_1 (F(2, 327) = 13.088, p < .001), Q8_2 (F(2, 327) = 8.242, p < .001), Q8_3 (F(2, 327) = 14.604, p < .001), Q10_1 (F(2, 327) = 9.091, p < .001), Q10_2 (F(2, 327) = 3.524, p = .031), and Q10_3 (F(2, 327) = 15.569, p < .001). Non-significant findings include Q4_1 (F(2, 327) = 0.936, p = .393), Q4_2 (F(2, 327)

= 1.308, p = .272), Q11_1 (F(2, 327) = 0.145, p = .865), and Q11_2 (F(2, 327) = 0.974, p = .379).

Table 4 ANOVA Analysis for Study 1

ANOVA for Study 1					
	Experiment Groups (Mean±Std. Deviation)			*F*	*p*
	0.0 (*n*=110)	1.0 (*n*=110)	2.0 (*n*=110)		
Q4_1	0.56±0.50	0.62±0.49	0.53±0.50	0.936	0.393
Q4_2	0.50±0.50	0.55±0.50	0.45±0.50	1.308	0.272
Q4_3	0.42±0.50	0.75±0.44	0.55±0.50	12.994	0.000**
Q6_1	0.38±0.49	0.56±0.50	0.55±0.50	4.492	0.012*
Q6_2	0.48±0.50	0.70±0.46	0.65±0.48	6.123	0.002**
Q6_3	0.17±0.38	0.48±0.50	0.38±0.49	12.941	0.000**
Q8_1	0.38±0.49	0.70±0.46	0.62±0.49	13.088	0.000**
Q8_2	0.61±0.49	0.85±0.36	0.75±0.44	8.242	0.000**
Q8_3	0.55±0.50	0.86±0.34	0.72±0.45	14.604	0.000**
Q10_1	0.54±0.50	0.78±0.41	0.74±0.44	9.091	0.000**
Q10_2	0.62±0.49	0.77±0.42	0.74±0.44	3.524	0.031*
Q10_3	0.50±0.50	0.81±0.39	0.76±0.43	15.569	0.000**
Q11_1	0.98±0.13	0.97±0.16	0.98±0.13	0.145	0.865
Q11_2	0.97±0.16	0.96±0.19	0.94±0.25	0.974	0.379

* $p<0.05$ ** $p<0.01$

The Spearman correlation analysis showed significant relationships between certain demographic variables and consumer impressions. Significant correlations include Q4_1 with education level (r = 0.156, p < .01), Q4_2 with education level (r = 0.161, p < .01) and age (r

= 0.137, p < .05), Q4_3 with occupation type (r = 0.128, p < .05), Q6_1 with education level (r = 0.127, p < .05), occupation type (r = 0.127, p < .05), and age (r = 0.142, p < .01), Q6_2 with occupation type (r = 0.130, p < .05) and age (r = 0.177, p < .01), Q6_3 with education level (r = 0.137, p < .05) and age (r = 0.174, p < .01), Q8_1 with education level (r = 0.111, p < .05), Q8_2 with sexual orientation (r = 0.110, p < .05) and education level (r = 0.115, p < .05), Q8_3 with education level (r = 0.180, p < .01), Q10_1 with education level (r = 0.140, p < .05), Q10_3 with education level (r = 0.118, p < .05), and Q11_1 with sexual orientation (r = 0.175, p < .01). These findings suggest that demographic factors, particularly education level, occupation type, age, and sexual orientation, influence consumer impressions and the formation of positive associations.

Table 5 Spearman Correlations Analysis for Study 1

Spearman Correlation for Study 1				
	Q2_2	Q2_3	Q2_4	Q2_5
Q4_1	0.060	0.156**	0.025	0.078
Q4_2	0.001	0.161**	0.090	0.137*
Q4_3	-0.031	0.070	0.128*	0.006
Q6_1	0.030	0.127*	0.127*	0.142**
Q6_2	0.015	0.064	0.130*	0.177**
Q6_3	0.027	0.137*	0.071	0.174**
Q8_1	0.028	0.111*	-0.002	0.098
Q8_2	0.110*	0.115*	0.037	0.099
Q8_3	0.029	0.180**	0.021	0.104
Q10_1	0.018	0.140*	0.046	0.016
Q10_2	0.029	0.090	0.060	0.013
Q10_3	0.053	0.118*	0.047	0.017
Q11_1	0.175**	-0.019	0.038	0.068
Q11_2	0.106	0.049	0.039	0.022

Spearman Correlation for Study 1				
	Q2_2	Q2_3	Q2_4	Q2_5

* $p<0.05$ ** $p<0.01$

Results of Study 2

In the cis-male control group exposed to indefinite attributes, 70.91% believed the Prolex gaming laptop had a high-performance graphics card, 82.73% associated it with a smooth operating system, and 57.27% thought it had high-definition sound. Regarding the Latextra jacket, 73.64% believed it was waterproof, 55.45% thought it was durable, and 64.55% found it comfortable. For LAMA GIANT, 51.82% associated it with high-quality products, 75.45% with excellent customer service, and 67.27% with excellent employee benefits. For Sufflex, 74.55% believed it was efficient, 77.27% thought it was innovative, and 64.55% associated it with high-quality products. The data indicates that cis-males are more likely to form positive associations even with indefinite attributes. This contrasts with the cis-female control group, where fewer positive associations were made with indefinite attributes.

In Study 2, the construct validity of the survey items was assessed using factor analysis with principal component analysis and varimax rotation. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.865, indicating that the data was suitable for factor analysis. Bartlett's Test of Sphericity was significant (Chi-Square = 1229.183, df = 91, $p < 0.001$), confirming the appropriateness of the factor analysis.

The factor analysis extracted four factors with initial eigenvalues greater than 1, explaining a cumulative variance of 57.358%. The initial eigenvalues were 4.716, 1.224, 1.080, and 1.010, accounting for 33.688%, 8.743%, 7.715%, and 7.212% of the variance, respectively. After rotation, the eigenvalues were 2.583, 2.419, 1.707, and 1.321, explaining 18.446%, 17.281%, 12.196%, and 9.434% of the variance, respectively. Most items had

factor loadings greater than 0.4, suggesting strong correlations with the identified factors. However, some items like Q8_1 had communalities below 0.4, indicating a lower proportion of variance explained by the factors.

The reliability of the survey was evaluated using Cronbach's alpha, which yielded an overall alpha of 0.841, indicating high internal consistency. The corrected item-total correlations (CITC) ranged from 0.436 to 0.645 for most items, demonstrating good item consistency. Items Q11_1 and Q11_2 had lower CITC values of 0.064 and 0.187, respectively. The Cronbach alpha if item deleted ranged from 0.822 to 0.847, indicating that removing any single item would not significantly improve the overall reliability. The validity and reliability analyses for Study 2 confirm that the survey items exhibit good construct validity and high internal consistency, supporting the robustness of the study's findings.

Table 6 Validity Analysis for Study 2

Validity Analysis for Study 2					
Items	Factor Loadings				Communalities
	Factor 1	Factor 2	Factor 3	Factor 4	
Q4_1	0.172	0.718	0.242	0.091	0.612
Q4_2	0.304	0.684	0.300	0.033	0.651
Q4_3	0.155	0.680	0.215	0.055	0.536
Q6_1	0.093	0.256	0.788	0.015	0.695
Q6_2	0.193	0.100	0.762	0.098	0.638
Q6_3	0.289	0.573	-0.169	0.317	0.541

Validity Analysis for Study 2					
Items	Factor Loadings				Communalities
	Factor 1	Factor 2	Factor 3	Factor 4	
Q8_1	0.484	0.291	0.177	0.197	0.389
Q8_2	0.588	0.207	0.257	0.408	0.622
Q8_3	0.460	0.189	0.337	0.421	0.537
Q10_1	0.607	0.268	0.238	0.026	0.498
Q10_2	0.630	0.191	0.101	-0.072	0.449
Q10_3	0.678	0.377	0.039	-0.065	0.608
Q11_1	0.533	-0.388	-0.034	0.002	0.436
Q11_2	-0.083	0.077	0.040	0.897	0.819
Eigenvalues (Initial)	4.716	1.224	1.080	1.010	-
% of Variance (Initial)	33.688%	8.743%	7.715%	7.212%	-
% of Cum. Variance (Initial)	33.688%	42.431%	50.146%	57.358%	-
Eigenvalues (Rotated)	2.583	2.419	1.707	1.321	-
% of Variance (Rotated)	18.446%	17.281%	12.196%	9.434%	-
% of Cum. Variance (Rotated)	18.446%	35.728%	47.924%	57.358%	-
KMO	0.865				-

Validity Analysis for Study 2					
Items	Factor Loadings				Communalities
	Factor 1	Factor 2	Factor 3	Factor 4	
Bartlett's Test of Sphericity (Chi-Square)	1229.183				-
df	91				-
p value	0.000				-

Note: Blue indicates that the absolute value of loading is greater than 0.4, and red indicates that the communality is less than 0.4.

Table 7 Reliability Analysis for Study 2

Reliability Statistics for Study 2 (Cronbach Alpha)			
Items	Corrected Item-Total Correlation(CITC)	Cronbach Alpha if Item Deleted	Cronbach α
Q4_1	0.567	0.825	0.841
Q4_2	0.645	0.823	
Q4_3	0.517	0.829	
Q6_1	0.460	0.832	
Q6_2	0.446	0.834	
Q6_3	0.436	0.834	
Q8_1	0.520	0.829	
Q8_2	0.618	0.822	
Q8_3	0.549	0.826	
Q10_1	0.552	0.826	

Validity Analysis for Study 2					
Items	Factor Loadings				Communalities
	Factor 1	Factor 2	Factor 3	Factor 4	
Q10_2	0.441		0.833		
Q10_3	0.558		0.826		
Q11_1	0.064		0.847		
Q11_2	0.187		0.844		

Cronbach α (Standardized): 0.830

In the cis-male experimental group exposed to definite attributes, 81.82% believed the Prolex gaming laptop had a high-performance graphics card, 88.18% associated it with a smooth operating system, and 58.18% thought it had high-definition sound. For the Latextra jacket, 75.45% believed it was waterproof, 66.36% thought it was durable, and 65.45% found it comfortable. For LAMA GIANT, 66.36% associated it with high-quality products, 82.73% with excellent customer service, and 85.45% with excellent employee benefits. For Sufflex, 85.45% believed it was efficient, 81.82% thought it was innovative, and 82.73% associated it with high-quality products. This confirms that definite attributes lead to more positive associations compared to indefinite attributes.

In the cis-male experimental group exposed to definite attributes with visuals, 85.45% believed the Prolex gaming laptop had a high-performance graphics card, 87.27% associated it with a smooth operating system, and 71.82% thought it had high-definition sound. For the Latextra jacket, 66.36% believed it was waterproof, 61.82% thought it was durable, and 73.64% found it comfortable. For LAMA GIANT, 64.55% associated it with high-quality products, 78.18% with excellent customer service, and 75.45% with excellent employee benefits. For Sufflex, 73.64% believed it was efficient, 78.18% thought it was innovative, and 69.09% associated it with high-quality products. The presence of visuals slightly reduced the

number of positive associations compared to definite attributes alone, similar to the findings in the cis-female groups. This suggests that while visuals can enhance positive impressions, they may also introduce a slight cognitive overload, leading to a marginal decrease in positive associations. Overall, the study demonstrates that ICBT and Positive Associations significantly influence consumer impressions. The core of ICBT lies in the formation of an overall impression, while Positive Associations are driven by specific contexts and related traits. The findings suggest that while definite attributes strongly enhance positive impressions, visuals can have a mixed impact. This highlights the need for marketers to carefully consider the use of visuals in conjunction with clear, definite attributes to optimize positive consumer impressions.

The Chi-Square analysis revealed significant differences between the groups for several questions, indicating the influence of definite positive attributes and visuals on consumer impressions. Significant findings include Q4_1 ($\chi^2(2, N = 330) = 7.705$, $p = .021$), Q4_3 ($\chi^2(2, N = 330) = 6.227$, $p = .044$), Q8_3 ($\chi^2(2, N = 330) = 10.019$, $p = .007$), and Q10_3 ($\chi^2(2, N = 330) = 9.796$, $p = .007$). Non-significant findings include Q4_2 ($\chi^2(2, N = 330) = 1.566$, $p = .457$), Q6_1 ($\chi^2(2, N = 330) = 2.515$, $p = .284$), Q6_2 ($\chi^2(2, N = 330) = 2.782$, $p = .249$), Q6_3 ($\chi^2(2, N = 330) = 2.529$, $p = .282$), Q8_1 ($\chi^2(2, N = 330) = 5.804$, $p = .055$), Q8_2 ($\chi^2(2, N = 330) = 1.777$, $p = .411$), Q10_1 ($\chi^2(2, N = 330) = 5.523$, $p = .063$), Q10_2 ($\chi^2(2, N = 330) = 0.770$, $p = .681$), Q11_1 ($\chi^2(2, N = 330) = 1.168$, $p = .558$), and Q11_2 ($\chi^2(2, N = 330) = 0.653$, $p = .721$).

Table 8 Chi-Square Analysis for Study 2

Chi-Square Analysis for Study 2 N (%)N%							
Items	Categories	Experiment Groups(%)			Total	χ^2	*p*
		0.0	1.0	2.0			
Q4_1	0.0	32(29.09)	20(18.18)	16(14.55)	68(20.61)	7.705	0.021*

Chi-Square Analysis for Study 2 N (%)N%							
Items	Categories	Experiment Groups(%)			Total	χ^2	*p*
		0.0	1.0	2.0			
	1.0	78(70.91)	90(81.82)	94(85.45)	262(79.39)		
	Total	110	110	110	330		
Q4_2	0.0	19(17.27)	13(11.82)	14(12.73)	46(13.94)		
	1.0	91(82.73)	97(88.18)	96(87.27)	284(86.06)	1.566	0.457
	Total	110	110	110	330		
Q4_3	0.0	47(42.73)	46(41.82)	31(28.18)	124(37.58)		
	1.0	63(57.27)	64(58.18)	79(71.82)	206(62.42)	6.227	0.044*
	Total	110	110	110	330		
Q6_1	0.0	29(26.36)	27(24.55)	37(33.64)	93(28.18)		
	1.0	81(73.64)	83(75.45)	73(66.36)	237(71.82)	2.515	0.284
	Total	110	110	110	330		
Q6_2	0.0	49(44.55)	37(33.64)	42(38.18)	128(38.79)		
	1.0	61(55.45)	73(66.36)	68(61.82)	202(61.21)	2.782	0.249
	Total	110	110	110	330		
Q6_3	0.0	39(35.45)	38(34.55)	29(26.36)	106(32.12)		
	1.0	71(64.55)	72(65.45)	81(73.64)	224(67.88)	2.529	0.282
	Total	110	110	110	330		
Q8_1	0.0	53(48.18)	37(33.64)	39(35.45)	129(39.09)		
	1.0	57(51.82)	73(66.36)	71(64.55)	201(60.91)	5.804	0.055
	Total	110	110	110	330		
Q8_2	0.0	27(24.55)	19(17.27)	24(21.82)	70(21.21)		
	1.0	83(75.45)	91(82.73)	86(78.18)	260(78.79)	1.777	0.411
	Total	110	110	110	330		
Q8_3	0.0	36(32.73)	16(14.55)	27(24.55)	79(23.94)		
	1.0	74(67.27)	94(85.45)	83(75.45)	251(76.06)	10.019	0.007**
	Total	110	110	110	330		
Q10_1	0.0	28(25.45)	16(14.55)	29(26.36)	73(22.12)	5.523	0.063

Chi-Square Analysis for Study 2 N (%)N%							
Items	Categories	Experiment Groups(%)			Total	χ^2	*p*
		0.0	1.0	2.0			
	1.0	82(74.55)	94(85.45)	81(73.64)	257(77.88)		
	Total	110	110	110	330		
Q10_2	0.0	25(22.73)	20(18.18)	24(21.82)	69(20.91)		
	1.0	85(77.27)	90(81.82)	86(78.18)	261(79.09)	0.770	0.681
	Total	110	110	110	330		
Q10_3	0.0	39(35.45)	19(17.27)	34(30.91)	92(27.88)		
	1.0	71(64.55)	91(82.73)	76(69.09)	238(72.12)	9.796	0.007**
	Total	110	110	110	330		
Q11_1	0.0	1(0.91)	3(2.73)	3(2.73)	7(2.12)		
	1.0	109(99.09)	107(97.27)	107(97.27)	323(97.88)	1.168	0.558
	Total	110	110	110	330		
Q11_2	0.0	4(3.64)	6(5.56)	4(3.64)	14(4.27)		
	1.0	106(96.36)	102(94.44)	106(96.36)	314(95.73)	0.653	0.721
	Total	110	108	110	328		

* $p<0.05$ ** $p<0.01$

The ANOVA results supported the findings from the Chi-Square analysis, showing significant differences between the groups for several questions. Significant findings include Q4_1 (F(2, 327) = 3.909, p = .021), Q4_3 (F(2, 327) = 3.144, p = .044), Q8_3 (F(2, 327) = 5.119, p = .006), and Q10_3 (F(2, 327) = 5.002, p = .007). Non-significant findings include Q4_2 (F(2, 327) = 0.780, p = .459), Q6_1 (F(2, 327) = 1.256, p = .286), Q6_2 (F(2, 327) = 1.390, p = .250), Q6_3 (F(2, 327) = 1.263, p = .284), Q8_1 (F(2, 327) = 2.927, p = .055), Q8_2 (F(2, 327) = 0.885, p = .414), Q10_1 (F(2, 327) = 2.783, p = .063), Q10_2 (F(2, 327) = 0.382, p = .683), Q11_1 (F(2, 327) = 0.581, p = .560), and Q11_2 (F(2, 327) = 0.324, p = .723).

Table 9 ANOVA Analysis for Study 2

ANOVA for Study 2					
	Experiment Groups (Mean±Std. Deviation)			*F*	*p*
	0.0 (*n*=110)	1.0 (*n*=110)	2.0 (*n*=110)		
Q4_1	0.71±0.46	0.82±0.39	0.85±0.35	3.909	0.021*
Q4_2	0.83±0.38	0.88±0.32	0.87±0.33	0.780	0.459
Q4_3	0.57±0.50	0.58±0.50	0.72±0.45	3.144	0.044*
Q6_1	0.74±0.44	0.75±0.43	0.66±0.47	1.256	0.286
Q6_2	0.55±0.50	0.66±0.47	0.62±0.49	1.390	0.250
Q6_3	0.65±0.48	0.65±0.48	0.74±0.44	1.263	0.284
Q8_1	0.52±0.50	0.66±0.47	0.65±0.48	2.927	0.055
Q8_2	0.75±0.43	0.83±0.38	0.78±0.41	0.885	0.414
Q8_3	0.67±0.47	0.85±0.35	0.75±0.43	5.119	0.006**
Q10_1	0.75±0.44	0.85±0.35	0.74±0.44	2.783	0.063
Q10_2	0.77±0.42	0.82±0.39	0.78±0.41	0.382	0.683
Q10_3	0.65±0.48	0.83±0.38	0.69±0.46	5.002	0.007**
Q11_1	0.99±0.10	0.97±0.16	0.97±0.16	0.581	0.560
Q11_2	0.96±0.19	0.94±0.23	0.96±0.19	0.324	0.723

* $p<0.05$ ** $p<0.01$

The Spearman correlation analysis showed significant relationships between certain demographic variables and consumer impressions. Significant correlations include Q6_3 with education level ($r = -0.118$, $p < .05$). Most other correlations were not significant, indicating that demographic factors such as sexual orientation, education level, occupation type, and age do not strongly influence most item responses.

Table 10 Spearman Correlations Analysis for Study 2

Spearman Correlation for Study 2				
	Q2_2	Q2_3	Q2_4	Q2_5
Q4_1	-0.013	-0.083	-0.052	0.079
Q4_2	0.011	-0.053	-0.097	-0.025
Q4_3	-0.059	-0.027	-0.074	0.062
Q6_1	-0.035	-0.080	0.009	0.058
Q6_2	-0.015	0.006	0.039	0.091
Q6_3	0.101	-0.118*	-0.034	0.045
Q8_1	-0.016	-0.097	-0.041	0.063
Q8_2	-0.015	-0.084	-0.071	-0.021
Q8_3	-0.023	-0.094	0.001	-0.042
Q10_1	0.037	-0.002	-0.084	-0.020
Q10_2	-0.014	-0.026	-0.032	-0.026
Q10_3	-0.085	-0.059	-0.019	-0.022
Q11_1	-0.020	0.080	-0.009	0.029
Q11_2	0.097	-0.030	0.045	0.100

* $p<0.05$ ** $p<0.01$

Gender Analysis of Combined Study 1 and Study 2

The gender analysis was conducted to further understand its impact on consumer impressions. Using a combined sample of 655 reponses (excluding 5 responses selecting 'other' option in Q11_2) for questions ranging from Q8_1 to Q11_2, the Spearman correlation analysis revealed significant but weak positive correlations between gender and Q10_1 ($r = 0.102$, $p < 0.01$) and Q10_2 ($r = 0.091$, $p < 0.05$). The other variables, including Q8_1, Q8_2, Q8_3, Q10_3, Q11_1, and Q11_2, did not show significant correlations with gender.

Table 11 Spearman Correlation for Gender Analysis

Spearman Correlation for Gender Analysis	
	Q2_1
Q8_1	0.038
Q8_2	0.060
Q8_3	0.054
Q10_1	0.102**
Q10_2	0.091*
Q10_3	0.029
Q11_1	-0.001
Q11_2	-0.001

* $p<0.05$ ** $p<0.01$

Overall, the analyses indicate that gender has a minimal impact on the various consumer impression variables measured. While there are weak positive correlations with Q10_1 and Q10_2, the overall influence of gender on consumer impressions is not strong. These findings suggest that other factors may play a more significant role in shaping consumer perceptions, and future research should explore additional variables or employ different methodologies to gain a deeper understanding of the influences on consumer impressions.

Validation of Research Hypotheses

This study aimed to investigate whether Illogical Classification-Based Thinking (ICBT) and Positive Associations influence consumer impressions of products and companies, regardless of whether the attributes are definite or indefinite.

Hypothesis 1 (H1) posited that ICBT and Positive Associations significantly influence consumer impressions even with indefinite attributes. The results showed that the cis-female control group, exposed to indefinite attributes, formed positive associations for the whitening skincare product Florria, attributing moisturizing and hydrating qualities to it. Similarly, they

formed positive impressions of the sugar-free cookie Cookiest and the companies LAMA GIANT and Sufflex, associating them with positive attributes. This indicates that even with indefinite attributes, ICBT and Positive Associations significantly influenced consumer impressions, thus validating Hypothesis 1.

Hypothesis 2 (H2) suggested that exposure to definite positive attributes results in more favorable impressions. The results from the cis-female experimental group, which was exposed to definite attributes, revealed significantly more positive impressions compared to the control group with indefinite attributes. For instance, the percentage of participants associating Florria with antioxidant qualities was markedly higher (74.55% versus 41.82%). Similarly, Cookiest was more strongly associated with aiding digestion (56.36% versus 38.18%). These findings confirm that exposure to definite positive attributes results in more favorable impressions, thus validating Hypothesis 2.

Hypothesis 3 (H3) proposed that AI-generated visuals accompanying product descriptions would enhance positive impressions compared to text-only descriptions. The comparison between the cis-female experimental groups with and without visuals showed that while some associations slightly decreased with the addition of visuals, the overall positive impressions remained strong. In the cis-male experimental group, visuals further enhanced positive associations with attributes such as high-performance graphics cards and high-definition sound for the Prolex gaming laptop (85.45% versus 81.82% and 71.82% versus 58.18%, respectively). These results partially validate Hypothesis 3, indicating that while visuals generally enhance positive impressions, their impact may vary depending on the context.

Hypothesis 4 (H4) posited that specific positive attributes would be associated with specifically related positive attributes, rather than random or arbitrary positive impressions. The results supported this hypothesis. For instance, in Study 1 (cis-female participants),

61.82% of the experimental group 1 (definite attributes) associated Florria with moisturizing qualities, and among these, 55.45% also associated it with hydrating qualities, and 74.55% with antioxidant properties. Similarly, in Study 2 (cis-male participants), 81.82% of the experimental group 1 (definite attributes) associated the Prolex gaming laptop with a high-performance graphics card, and among these, 88.18% also associated it with a smooth operating system, and 58.18% with high-definition sound. These results indicate that participants tended to associate related positive attributes rather than forming random associations. This tendency was observed consistently across both cis-female and cis-male groups, validating Hypothesis 4.

In summary, the analysis of the data led to the validation of two hypotheses and partial validation of one hypothesis. Specifically, Hypotheses 1, 2 and 4 were validated while Hypothesis 3 was partially validated. These results reflect the nuanced influence of ICBT and Positive Associations on consumer impressions, highlighting the varying impact of definite attributes and visuals across different contexts and demographic groups.

Limitations and Future Research

Limitations

The exclusive focus on China in this study may limit the generalizability of the findings to other cultural contexts. Cultural norms and values significantly influence consumer behavior, and what holds true in China may not apply in regions with different cultural backgrounds. As a result, the findings might not be directly applicable to global markets without further validation.

Although the sample included diverse regions within China, it did not explicitly control or examine other demographic factors such as socioeconomic status, urban versus rural residence, and level of exposure to marketing media. These factors could influence

consumer impressions and the effectiveness of positive attributes and visuals in different ways.

Focusing primarily on positive associations, the research provided limited exploration of negative and neutral associations. This narrow scope may offer an incomplete picture of how ICBT operates in forming consumer impressions, as negative and neutral attributes can also significantly impact perceptions and decision-making processes.

Utilizing AI-generated visuals and controlled descriptions to manipulate variables allowed for precise control over the experimental conditions. However, this approach may not fully capture the complexity of real-world marketing environments, where multiple uncontrolled factors influence consumer perceptions.

Reliance on self-reported measures for data collection introduces potential biases such as social desirability, recall bias, and response fatigue. Participants may not always accurately report their perceptions or might be influenced by how questions are framed.

Finally, the study did not account for the long-term effects of ICBT and positive associations on consumer behavior. Immediate impressions formed during the experiment might differ from the lasting impressions that influence actual purchasing decisions over time.

Future Research

Future research should replicate this study in various cultural settings to determine whether the findings hold across diverse cultural contexts. Such cross-cultural validation would help ascertain the universality or cultural specificity of ICBT and positive associations in consumer behavior.

Expanding the sample to include a broader range of demographic factors, such as socioeconomic status, education levels, and urban versus rural residency, can provide a more

comprehensive understanding of how these variables interact with ICBT and positive associations. This would enhance the generalizability and robustness of the findings.

Investigating the impact of negative and neutral associations on consumer impressions is another crucial direction for future studies. Understanding how these attributes influence consumer behavior can offer a more balanced and complete view of the cognitive processes involved in impression formation.

Conducting field experiments in real-world settings, such as in-store promotions or online shopping environments, can help validate the findings in more naturalistic contexts. This approach would take into account the complexity and variability of real-world marketing conditions, thereby increasing the ecological validity of the research.

Finally, future research should include longitudinal studies that track changes in consumer perceptions and behaviors over time to assess the durability of the impressions formed through ICBT and positive associations. Longitudinal studies would provide insights into the long-term effectiveness of marketing strategies based on these cognitive processes, offering a deeper understanding of their impact on consumer behavior.

Discussion

This research aimed to investigate the role of ICBT and Positive Associations in shaping consumer impressions of products and companies through two large-scale experiments involving 660 participants in China. The participants were divided into three groups: control, definite attributes, and definite attributes with visuals. The findings reveal that both indefinite and definite positive attributes significantly influenced consumer impressions, validating the hypothesis that ICBT and Positive Associations operate even when attributes are not logically connected to the product's qualities. The presence of definite positive attributes significantly enhanced positive impressions compared to indefinite

attributes. AI-generated visuals further influenced consumer perceptions, though the impact was more nuanced, with slight decreases in positive associations in some cases.

The results extend the Halo Effect through Illogical Classification-Based Thinking (ICBT), demonstrating that consumers form associative judgments based on impressions rather than logical analysis. This study underscores the importance of ICBT and Positive Associations in understanding how a single positive trait can lead to associations with other specific positive traits in given contexts. Marketing strategies can leverage this by advertising specific, definite traits to generate related positive traits through Positive Associations. For example, if a company wishes to enhance its image as an employer, it could promote its charity work to create the impression that it also provides excellent care and support for its employees. This approach may be more cost-effective than directly increasing employee benefits, while still positively influencing public perception.

In essence, ICBT and Positive Associations enables the creation of more targeted marketing strategies and campaigns that achieve better-targeted marketing effects without bearing the corresponding responsibility for those statements. This means that companies can strategically advertise a specific positive trait to achieve the desired positive associations, thereby enhancing its desired overall image without the obligation and legal responsibility to deliver the implied benefits.

The findings also suggest that ICBT can lead to comprehensive positive impressions when specific positive traits are highlighted, even if these traits are not inherently connected to the product or company's core attributes. Furthermore, the research found that definite positive attributes can prompt a greater overall positive impression than indefinite positive attributes, an aspect not explored in previous work by Towne (2024). Gender differences were observed, with cis-female participants exhibiting stronger positive impressions and

being more influenced by definite attributes and visuals compared to cis-male participants. However, the differences between genders were not as pronounced as hypothesized.

For marketers and advertisers, these findings offer actionable insights into crafting effective marketing strategies. Highlighting definite positive attributes and using AI-generated visuals can significantly enhance consumer perceptions. The research also suggests tailoring marketing approaches based on gender, given the observed differences in how cis-male and cis-female consumers respond to definite attributes and visuals. Marketing campaigns targeting cis-female consumers might benefit from emphasizing clear, positive attributes and incorporating visually appealing elements to maximize impact.

Given the significant impact of ICBT and Positive Associations on consumer impressions, it is crucial for consumers to approach marketing messages with a critical mindset. Consumers should be aware of the cognitive shortcuts and biases that can influence their perceptions and decisions. It is recommended that consumers scrutinize claims, compare information from multiple sources, be aware of visual influences, reflect on personal needs, and stay informed about common marketing tactics and cognitive biases. By doing so, consumers can make more rational decisions and avoid being unduly influenced by persuasive marketing techniques.

In conclusion, this study highlights the significant role of ICBT and Positive Associations in shaping consumer impressions of products and companies. By demonstrating how definite positive attributes and AI-generated visuals enhance consumer perceptions, the research provides valuable insights for both academic understanding and practical marketing applications. Future research should continue to explore these cognitive processes across different contexts and cultures to develop a more comprehensive understanding of consumer behavior.

Data Availability

The data that support the findings of this study will be publicly available on Figshare under the Creative Commons Attribution 4.0 International (CC BY 4.0) license upon publication.

Editors and reviewers can access to raw data, supplementary materials, tables, and questionnaire templates etc. via https://figshare.com/s/54b9485a7476295457ed

Code Availability

Not applicable.

The Use of AI Statement

During the preparation of this work, the authors used the latest version of ChatGPT 4o to generate images, analyze sample sizes for Study 1 and Study 2, translate the questionnaires for Study 1 and Study 2, and proofread and improve the language clarity and structure of this report. After using this tool/service, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

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