

Research Article

Are Aesthetic Preferences Affected by Gender and Age Differences?

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Abstract

Aesthetic preferences can be crucial for any brand that considers consumer favorites as essential. Form and shape are the most fundamental design elements concerned for all kinds of products and services. Gender and age differences were the main explanatory variables of interest in this study. The perceptions of two forms comprising representation and geometry associated with two contrary shapes involving solid versus airy, were examined. One hundred and eighty respondents participated by using convenience sampling method. Data collection was obtained through an online questionnaire survey and analyzed by ANOVA statistics. The findings suggested that the representational form is recommended for all ages. All genders appreciate it when it combines with solid shape. In addition, the design of geometric form with airy shape is suggested for LGBTQ and younger clients. The implications in this research offer the insight design guidelines for the use of gender and age differences concerned businesses.

Keywords: Aesthetic Preference, Age, Gender, Form, Shape

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Received: 15 September 2022,

Revised: 22 May 2023,

Accepted: 23 August 2023

Introduction

Studies of aesthetic perception benefit most industries and have been surveyed among academic scholars for the last few decades. Cognitive, affective reactions, and appreciative experiences are associated with design characteristics (Henderson & Cote, 1998) and can be utilized in various business categories. (Bloch, 1995). Several aspects of aesthetics such as works of art (Salkind & Salkind, 1997), moderns work of art (Silvia, 2005), shape of product design (Veryzer, 1993), perception of shape (Zhang, Feick, & Price, 2006), user experience (Sarsam & Al-Samarraie, 2018), and mobile game icons (Jylhä & Hamari, 2021) have been studied accordingly. Research on aesthetic perceptions toward demographic differences has been explored recently (Oyibo & Vassileva, 2018). Gender and age differences variables gain most interests when individual preferences are investigated (Salkind & Salkind, 1997). Form and shape, as the simplest elements of all designs have been studied. Naturalness, harmonious, repetition, roundness, (Henderson & Cote, 1998; Van der Lans, et al., 2009) and proportion (Pittard, Ewing, & Jevons, 2007) are shape attributes that have been examined toward consumer response in marketing field. Representational design that clearly communicates what it represents to spectators, receives more favorable by women. While abstract design that has no connection to object in the real world, is rated higher by men (Cupchik & Gebotys, 1988). However, some study shows the opposite outcome that abstract art is attracted more by female than male (Furnham & Walker, 2001). In addition, research on this pair of opposite shapes; naturalness versus abstractness still received attention in the last decade by the study of Machado et al. (2015). As pictorial representational design topic has been increasingly studied recently (Silvennoinen & Jokinen, 2016), it has drawn attention to this research. Pairs of opposing shapes such as angularity versus roundness (Zhang et al., 2006; Lieven et al., 2015) and natural versus abstract form (Machado et al., 2015) are explored toward gender differences perceptions. Various design practices are inspired by gender differences, fashion product such as apparel, shoes, cosmetic, fragrance, etc. are designed to attract their targeted customers: male and female. However, only a few certain designs aimed for LGBTQ client. Besides, research on LGBTQ perception toward aesthetics has seldomly found. Hence, this study firstly focused on aesthetics preferences toward gender differences including male, female, and LGBTQ.

Taste can be influenced by individual personality and personal experience (Osborne, 1986) which develops through aging. Since older and younger adults perceive visual image differently (Neiss, Leigland, Carlson, & Janowsky, 2009), several design stimuli that influence recognition among age-related have been studied (Anderson & Craik, 2000). Literature has shown that older adults tend to prefer familiar logo design when comparing it to new or unknown design (Lambert-Pandraud & Laurent, 2010; Machado et al., 2015). Familiar design or design that connects to real object accelerates recognition and likeness (Henderson & Cote, 1998). As recognition and preference motivate each other, they are interconnected (Leelayudthyothin & Boontore, 2019). Meaningful word or picture stimulates recognition among age-related differences (Koutstaal, et al., 2003). However, a study shows that age differences has no effect toward pictorial art properties in terms of color, subject matter, expression, and medium (Miranda, 2013). The study of graphic user interface preferences reveals that older adults tend to prefer skeuomorph design while younger adults favor simplicity interface (Urbano et al., 2022). Since results of several previous research regarding age differences' preferences are varied. This study aimed to clarify whether aesthetic characteristics had an impact on age differences.

Two main goals focused on this research including: first, to examine aesthetic perception (forms and shapes) toward gender differences (male, female, and LGBTQ). Second, to investigate aesthetic preferences (forms and shapes) toward age differences (≤ 20 years, 21-30 years, 31-40 years, 41-50 years, and ≥ 51 years). The participants in this study comprising undergraduate and graduate students from universities in Bangkok, age between under 20 to 35 years old, and researcher' colleagues, and acquaintances who work in diversified fields such as art and design, education, business administration, engineering, etc. age around 35 to 55 years old.

Literature Review

1. Forms and Shape Characteristics

Previous studies have shown the connection between aesthetic features and the mind. Positive affect can be influenced by decorative and ornamental designs (Schmitt & Simonson, 1997). Complex or irregular form is rather motivating than ordinary shape (Bloch, 1995). Nevertheless, simplicity design that follows

Gestalt principle provides harmonious sensitivity (Henderson P. W., Cote, Leong, & Schmitt, 2003). Machado et al. (2015) proposes that representational or organic design is preferred to abstract object which is difficult to interpret (Seifert, 1992). A study of brand logo design shows that asymmetrical object attracts viewer more than symmetrical design (Luffarelli, Stamatogiannakis, & Yang, 2019). According to Zhang, et al. (2006), angular shape is incorporated with confrontational sensational, while rounded shape connects to sense of compromising. Heavy shape of logo attracts masculinity whereas slender logo shape appeals femininity (Lieven et al., 2015). Among diversified aforementioned forms and shapes, representation and non-representation are of interest. Additionally, art and design topics are examined through gender differences (Salkind & Salkind, 1997). Investigating aesthetic perception toward genders is still rare. This study extended the analysis by making these different forms and shapes more complicated through their combination. Hence, apart from representational versus abstract forms, two contrary shapes are to be selected. Among diverse shapes, heavy and slender shapes are related to gender differences' perceptions (Lieven et al., 2015). Thus, this research utilized them by combining with representational and abstract forms. Consequently, two types of forms comprising representation and geometry (non-representation), as well as two contrary shapes: solid versus airy were assigned as research stimuli. Hence, four visual graphics served as visual stimuli encompassing 1) representational form with solid shape, 2) representational form with airy shape, 3) geometric form with solid shape, and 4) geometric form with airy shape.

2. Psychological Connections with Form and Shape

Evolutionary psychology describes that human body and mind are evolved through natural and sexual selection (Buss, 1995; Saad, 2013). Its concept is applied in analyzing social behavior, specifically sexual behavior (Griskevicius & Douglas, 2013). Evolutionary psychology explains the connection between physical characteristics and masculinity/femininity perceptions (Lieven et al., 2015). In marketing aesthetic literature, masculinity connects to angularity (angular form) while femininity associates with roundness (rounded form) (Schmitt & Simonson, 1997). According to physical characteristics, female attractiveness is involved by curve and slender body shape (Singh & Young, 1995) while male attraction is linked to angularity, V-shape torso, and heavier build (Furnham & Radley, 1989). Evolutionary psychology was extended in this research by exploring various forms and shapes toward gender and age differences' perceptions.

3. Aesthetic Preference

















Perception is one of human algorithms that develops from prior experiences. Aesthetic perception can be influenced by experience, knowledge, motivation, and so on. According to Lavie & Tractinsky (2004), there are two dimensions of visual perceptions including classical aesthetics which clear, symmetry, and orderly are its qualities, while expressive aesthetics are characterized as creativity and originality. Visual design attributes such as image, color, and proportion influence viewers' perceptions in different aspects (Zettl., 1999). Preference, one of aesthetic perceptions is widely used in academic papers. It is an appraisal of an object which can influence attitude (Jun, Cho, & Kwon, 2008). This positive affect toward form and shape can be transferred to product (Henderson & Cote, 1998) as well as a brand or a company. This research employed preference as dependent variable in measuring gender and age differences toward form and shape stimuli.

Method

1. Research Stimuli

Both form and shape served as research stimuli in this study. In term of form, representational form-form that represents or relates to real world object such as animals, plants, and everyday objects, and geometric form-non-representational or abstract form that has no connection with actual object i.e. circle, square, triangle, etc. were appointed as research main focuses. These two forms are presented by combining with solid and airy shapes. Shape that appears bold, thick, and heavy stands for solid type while light, delicate and refined shapes signify airy type. To offer multiple forms in each type for respondents' evaluation, there are altogether sixteen visual stimuli which can be divided into four similar design objects for each group of form and shape mixing, involving representational form: solid and airy shapes, and geometric form: solid and airy shapes, in this study as shown in Table 1.

Table 1 Research stimuli

Form and Shape Mixing: Visual Design Objects						
Representational form	Solid Shape	1				
	Airy Shape	2				
Geometric form	Solid Shape	3				
	Airy Shape	4				

source: (Kuwayama, 1973; Kuwayama, 1988)

2. Procedure

Research participants were undergraduate and graduate students from institutions in Bangkok area, researcher' colleagues, and acquaintances, classified by convenience sampling method. Respondents were asked to evaluate sixteen black and white visual design objects which appeared in randomized positions. No information concerning specific kinds of form and shape was provided in the questionnaire. A five-point Likert scale was utilized where a score of one referred to strongly disagree and a score of five denoted strongly agree. The obtained data was collected through an online questionnaire survey. The mean scores among four objects of each group of forms were calculated and were analyzed by ANOVA statistics accordingly.

Results

1. Study I: Gender

A quantitative method was applied in this study. One hundred and eighty people were participated in this research. Most of the respondents were male (53.3%), while female and LGBTQ were equal (23.3% each). The ages of the participants were categorized as follows: 20 years and younger (3.3%), 21-30 years (40.0%), 31-40 years (10.0%), 41-50 years (11.7%), and 51 years and older (35.0%).

Representational form with solid shape: the results suggested that there was no significant difference among three groups of respondents toward representational form with solid shape (Table 2, Table 4, and Figure 1).

Representational form with airy shape: the results revealed that there was a significant difference on representational form with airy shape at the $p < .05$ level among three groups of participants $F(6.032) = 2$, $p = .003$. Post hoc comparisons using Tukey test indicated that the mean score for male ($M = 2.75$, $SD = 1.124$) was significantly different from female ($M = 2.21$, $SD = .951$) and LGBTQ ($M = 2.14$, $SD = 1.201$). However, the mean score for female ($M = 2.21$, $SD = .951$) did not significantly differ from LGBTQ ($M = 2.14$, $SD = 1.201$) (Table 2, Table 4, and Figure 1).

Geometric form with solid shape: the results indicated that there was a significant difference on geometric form with solid shape at the $p < .05$ level among three groups of participants $F(4.114) = 2$, $p = .018$. Post hoc comparisons using Tukey test showed that the mean score for female ($M = 2.93$, $SD = 1.045$) was significantly different from LGBTQ ($M = 2.29$, $SD = 1.043$). However, the mean score for female ($M = 2.93$, $SD = 1.045$) did not significantly differ from male ($M = 2.66$, $SD = 1.024$) (Table 2, Table 4, and Figure 1).

Geometric form with airy shape: the results showed that there was a significant difference on geometric form with airy shape at the $p < .05$ level among three groups of participants $F(9.239) = 2$, $p = .000$.

Post hoc comparisons using Tukey test indicated that the mean score for male ($M = 2.75$, $SD = 1.005$) was significantly different from female ($M = 3.21$, $SD = .871$) and LGBTQ ($M = 3.43$, $SD = .737$). However, the mean score for female ($M = 3.21$, $SD = .871$) did not significantly differ from LGBTQ ($M = 3.43$, $SD = .737$) (Table 2, Table 4, and Figure 1).

Table 2 Summary of the effects of gender differences toward form and shape preferences

Form & Shape Preferences			Form & Shape Characteristics			
			Representational Form		Geometric Form	
			Solid	Airy	Solid	Airy
			$(2,177) = 2.940$	$(2,177) = 6.032$	$(2,177) = 4.114$	$(2,177) = 9.239$
			p -value			
Post Hoc Tests			Representational Form		Geometric Form	
			Solid	Airy	Solid	Airy
Male	Female	p -value	.045	.026	.331	.019*
	LGBTQ		.895	.009**	.131	.000**
Female	Male		.045*	.026	.331	.019*
	LGBTQ		.224	.953	.013*	.535
LGBTQ	Male		.895	.009**	.131	.000**
	Female		.224	.953	.013*	.535

* The mean difference is significant at the 0.05 level ($p < .05$).

** The mean difference is significant at the 0.01 level ($p < .01$).

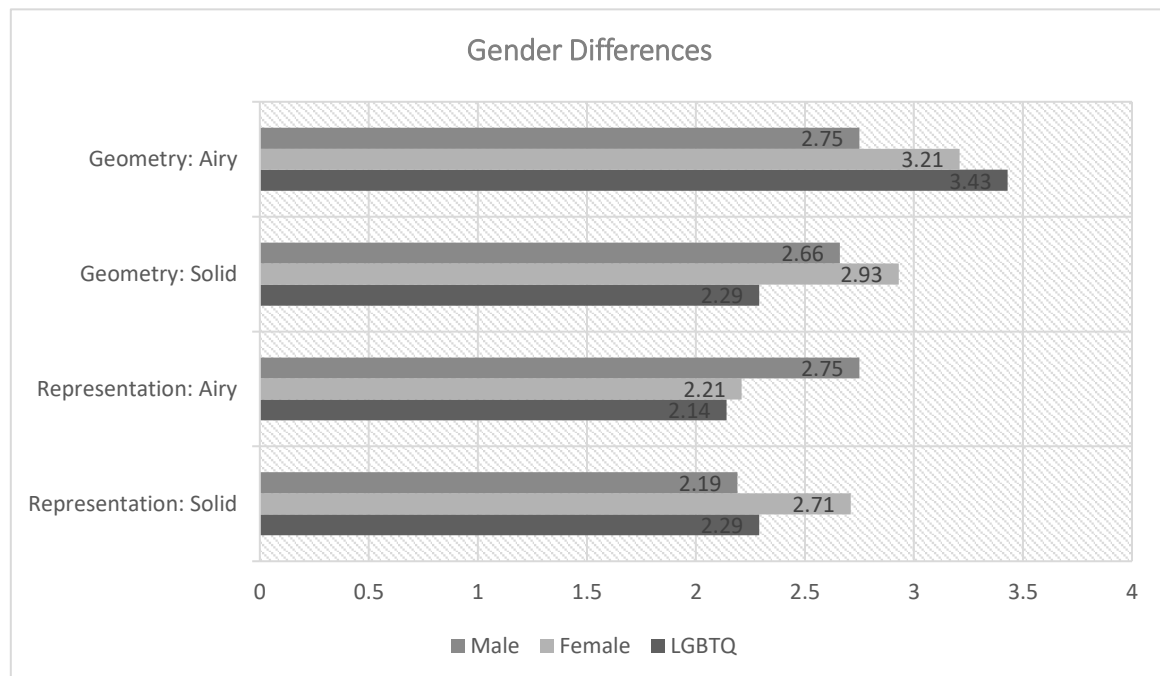


Figure 1 The mean score of the preference toward form and shape of each gender group
source: author, 2022

2. Study II: Age

Representational form with solid shape: the results indicated that there was no significant difference among five groups of respondents toward representational form with solid shape (Table 3, Table 4, and Figure 2).

Representational form with airy shape: the results indicated that there was no significant difference among five groups of respondents toward representational form with airy shape (Table 3, Table 4, and Figure 2).

Geometric form with solid shape: the results indicated that there was no significant difference among five groups of respondents toward geometric form with solid shape (Table 3, Table 4, and Figure 2).

Geometric form with airy shape: the results showed that there was a significant difference on geometric form with airy shape at the $p < .05$ level among five groups of participants $F(10.249) = 4, p = .000$. Post hoc comparisons using Tukey test indicated that the mean score for age ≤ 20 years ($M = 4.00, SD = .000$) was significantly different from age 41-50 years ($M = 2.71, SD = 1.189$), and age ≥ 51 years ($M = 2.62, SD = .958$) but did not significantly differ from age 21-30 years ($M = 3.17, SD = .805$), and age 31-40 years ($M = 3.83, SD = .383$). Additionally, the mean score for age 21-30 years ($M = 3.17, SD = .805$) were significantly different from 31-40 ($M = 3.83, SD = .383$), and age ≥ 51 ($M = 2.62, SD = .958$) but did not significantly differ from age 41-50 years ($M = 2.71, SD = 1.189$). Moreover, the mean score for age 31-40 years ($M = 3.83, SD = .383$) was significantly different from age 21-30 years ($M = 3.17, SD = .805$), age 41-50 years ($M = 2.71, SD = 1.189$), and age ≥ 51 years ($M = 2.62, SD = .958$). Furthermore, the mean score for age 41-50 years ($M = 2.71, SD = 1.189$) did not significantly differ from age ≥ 51 years ($M = 2.62, SD = .958$) (Table 3, Table 4, and Figure 2).

Table 3 Summary of the effects of age differences toward form and shape preferences

Form & Shape Preferences		Form & Shape Characteristics				
		F	Representational Form		Geometric Form	
			Solid	Airy	Solid	Airy
			(4,175) = 1.447	(4,175) = 2.353	(4,175) = .935	(4,175) = 10.249
			p-value	.220	.056	.445
Post Hoc Tests		Representational Form		Geometric Form		
		Solid	Airy	Solid	Airy	
≤ 20	21-30	p-value	.994	.992	.918	.169
	31-40		.900	1.000	.997	.994
	41-50		.967	.959	.998	.015*
	≥ 51		.993	.967	.771	.003**
21-30	≤ 20		.994	.992	.918	.169
	31-40		.885	.955	.944	.034*
	41-50		.313	.983	.900	.230
	≥ 51		1.000	.061	.924	.003**
31-40	≤ 20		.900	1.000	.997	.994
	21-30		.885	.955	.944	.034*
	41-50		.169	.858	1.000	.001**
	≥ 51		.897	.839	.710	.000**
41-50	≤ 20		.967	.959	.998	.015*
	21-30		.313	.983	.900	.230
	31-40		.169	.858	1.000	.001**
	≥ 51		.318	.130	.605	.993
≥ 51	≤ 20		.993	.967	.771	.003**
	21-30		1.000	.061	.924	.003**
	31-40		.897	.839	.710	.000**
	41-50		.318	.130	.605	.993

Are Aesthetic Preferences Affected by Gender and Age Differences?

* The mean difference is significant at the 0.05 level ($p < .05$).

** The mean difference is significant at the 0.01 level ($p < .01$)

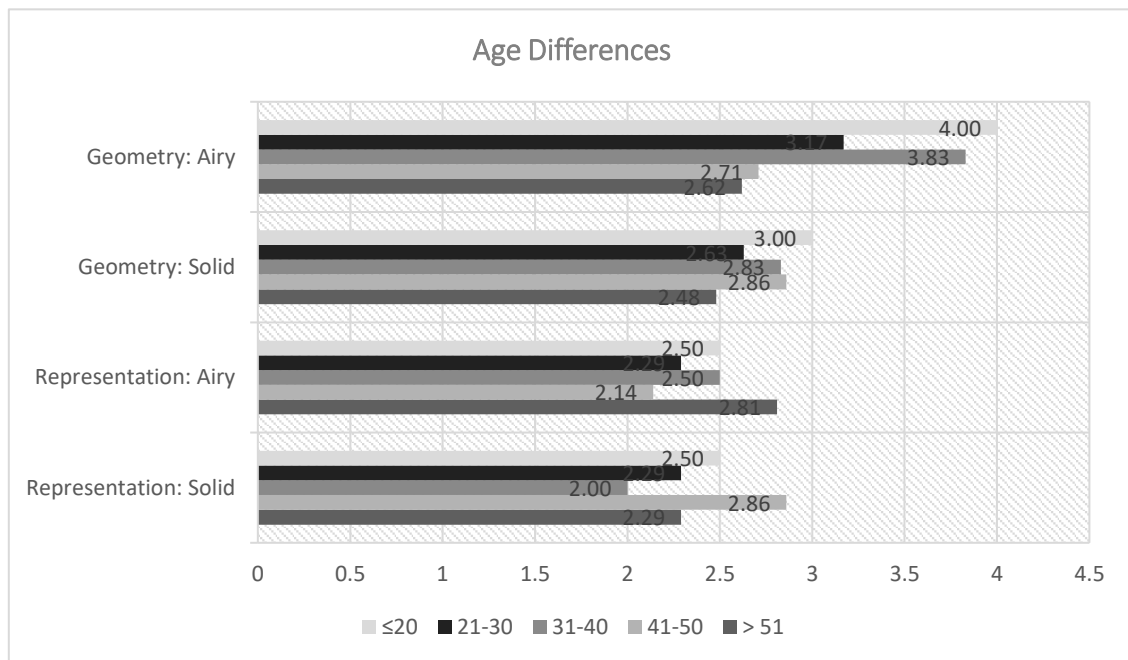


Figure 2 The mean score of the preferences toward form and shape of each age group
source: author, 2022

Table 4 The summary of aesthetic preferences scores toward gender and age differences

Aesthetic Preferences		Gender		Age	
		Highest Score	Lowest Score	Highest Score	Lowest Score
Representational form	Solid Shape	X	X	X	X
	Airy Shape	Male ($M = 2.75$)	LGBTQ ($M = 2.14$)	X	X
Geometric form	Solid Shape	Female ($M = 2.93$)	LGBTQ ($M = 2.29$)	X	X
	Airy Shape	LGBTQ ($M = 3.43$)	Male ($M = 2.75$)	≤ 20 years ($M = 4.00$)	≥ 51 years ($M = 2.62$)

Note: X = There is no significant difference between variable groups.

Discussion & Conclusion

Study I: Gender

The study I in this research sought to determine the effects of gender difference toward form and shape preferences. The findings as illustrated in Figure 1 and Table 4 further confirmed Evolutional psychology concepts on the relationship between gender differences' perceptions and figurative attributes (Lieven, et al., 2015). Gender differences are affected by aesthetic preferences. In comparison between representational and geometric forms, representational form obtained similar perceptions among gender differences but required its combination with solid shape. The preferences among all genders were diverse with geometric forms. These

findings support the perspectives of Seifert (1992) and Machado et al. (2015) that representational design is easier to understand than abstract or geometric form.

With reference to two different shapes, airy motivated diverse feelings than solid. The results differed from prior studies of Lieven et al. (2015) and Singh & Young (1995) that light/delicate shape is likely preferred by femininity. Regarding airy perspective, it received highest preferences scores by male and LGBTQ. In this study, women attracted by solid shape most when combining with geometric form. This result is in line with prior study of Furnham & Walker (2001) that abstract form affected most by female.

Study II: Age

The findings of Study II are demonstrated in Figure 2 and Table 4. In comparison between representational and geometric forms, representational form was appreciated indistinguishable among all ages, no matter what shape it combines with. These results differed from prior studies that only older adults preferred familiarity or meaningful objects (Lambert-Pandraud & Laurent, 2010; Urbano et al., 2022). All ages do. Concerning geometric form, it received similar preferences among all ages when combining with solid shape. However, geometric form with airy shape was achieved most favorably by the youngest age group of ≤ 20 years, but least liked by the oldest age group of ≥ 51 years.

The advantages of this research can be summarized for product and service design standards regarding gender and age differences as follows. Representational form or form that derives from the real world is highly recommended for all ages. Moreover, all genders like it if it combines with solid shape. For other specific suggestions, representational form with airy shape is encouraged for masculinity goods. Geometric form with solid shape is appropriate for lady merchandises. Geometric form with airy shape design should be carefully considered when using. It received diversified perceptions among gender and age differences. However, it is suggested for LGBTQ and younger clients most. These research findings provide practical design guidelines for the choices of visual elements to be used for gender and age-related brands and product development.

Directions for Future Research

Future research can extend these findings in several ways. Other possible design dimensions such as simplicity versus elaborateness design is encouraged. Future work might consider other perception aspects of measuring e.g., recognition, familiarity, etc. to widen more perspectives. In addition to gender and age, other socio-demographic variables such as education, occupation and culture need to be further explored. Future study might evaluate form and shape perceptions toward consumer preferences in specific as well as diversified product categories.

Funding

This work was financially supported by King Mongkut's Institute of Technology Ladkrabang.

Conflict of Interest

The author declared no potential conflicts of interest concerning this article's research, authorship, and/or publication.

References

- Anderson, N. D., & Craik, F. I. (2000). *Memory in the aging brain*. Oxford, England: Oxford University Press.
- Bloch, P. H. (1995). Seeking the ideal form: Product design and consumer response. *Journal of Marketing*, 59(3), 16-29.
- Buss, D. (1995). Evolutionary psychology: a new paradigm for psychology science. *Psychology Inquiry*, 6(1), 1-30.
- Cupchik, G. C., & Gebotys, R. (1988). The experience of time, pleasure, and interest during aesthetic episodes. *Empirical Studies of the Arts*, 6(1), 1-12.
- Furnham, A., & Radley, S. (1989). Sex differences in the perception of male and female body shapes. *Personality and Individual Differences*, 10(6), 653-662.
- Furnham, A., & Walker, J. (2001). Personality and judgements of abstract, pop art, and representational paintings. *European Journal of personality*, 15(1), 57-72.
- Griskevicius, V., & Douglas, K. (2013). Fundamental motives: How evolutionary needs influence consumer behavior. *Journal of Consumer Psychology*, 23(3), 372-386.
- Henderson, P. W., & Cote, J. A. (1998). Guidelines for selecting or modifying logos. *Journal of Marketing*, 62(2), 14-30.
- Henderson, P. W., Cote, J. A., Leong, S. M., & Schmitt, B. (2003). Building strong brands in Asia: selecting the visual components of image to maximize brand strength. *International Journal of Research in Marketing*, 20(4), 297-313.
- Jun, J. W., Cho, C. H., & Kwon, H. J. (2008). Jun, J. W., Cho, C. H., & Kwon, H. J. (2008). The role of affect and cognition in consumer evaluations of corporate visual identity: Perspectives from the United States and Korea. *Journal of brand management*, 15(6), 382-398.
- Jylhä, H., & Hamari, J. (2021). Demographic factors have little effect on aesthetic perceptions of icons: a study of mobile game icons. *Internet Research*, 32(7), 87-101.
- Koutstaal, W., Reddy, C., Jackson, E., Prince, S., Cendan, D., & Schacter, D. (2003). False Recognition of Abstract Versus Common Objects in Older and Younger Adults: Testing the Semantic Categorization Account. *Journal of experimental psychology. Learning, memory, and cognition*, 29(4), 499-510.
- Kuwayama, Y. (1973). *Trademark & Symbols Volume 2: Symbolical Designs*. New York, United States: Van Nostrand Reinhold Company.
- Kuwayama, Y. (1988). *Trademark & Symbols of the World Volume 2: Design Elements*. Gloucester, United States: Rockport Publishers.
- Lambert-Pandraud, R., & Laurent, G. (2010). Why do Older Consumers Buy Older Brands? The Role of Attachment and Declining Innovativeness, 74 (5), 104-121.
- Lavie, T., & Tractinsky, N. (2004). Assessing dimensions of perceived visual aesthetics of web sites. *International Journal of Human-Computer Studies*, 60(3), 269-298.
- Leelayudthyothin, M., & Boontore, A. (2019). Residential versus Organizational Preferences toward Logo of Property Developer in Thailand. *Journal of Administrative and Business Studies*, 5(3), 153-160.
- Lieven, T., Grohmann, B., Herrmann, A., Landwehr, J. R., & Tilburg, M. V. (2015). The effect of brand design on brand gender perceptions and brand preference. *European Journal of Marketing*, 49(1/2), 146-169.
- Luffarelli, J., Stamatogiannakis, A., & Yang, H. (2019). The visual asymmetry effect: An interplay of logo design and brand personality on brand equity. *Journal of Marketing Research*, 56(1), 89-103.
- Machado, J. C., de Carvalho, V. L., Torres, A., & Costa, P. (2015). Brand logo design: examining consumer response to naturalness. *Journal of Product & Brand Management*, 24(1), 78-87.
- Miranda, D. (2013). The role of music in adolescent development: much more than the same old song. . *International Journal of Adolescence and Youth*, 18(1), 5-22.
- Neiss, M. B., Leigland, L. A., Carlson, N. E., & Janowsky, J. S. (2009). Age differences in perception and awareness of emotion. *Neurobiology of aging*, 30(8), 1305-1313.
- Osborne, H. (1986). What makes an experience aesthetic?. *Possibility of the Aesthetic Experience*, 41(2), 157-169.

- Oyibo, K., Adaji, I., & Vassileva, J. (2018). *The effect of age and information design on the perception of visual aesthetics*. 1-5. DOI:10.14236/ewic/HCI2018.208
- Pittard, N., Ewing, M., & Jevons, C. (2007). Aesthetic theory and logo design: examining consumer response to proportion across cultures. *International Marketing Review*, 24(4), 457-473.
- Saad, G. (2013). Evolutionary consumption. *Journal of Consumer Psychology*, 23(3), 351-371.
- Salkind, L., & Salkind, N. J. (1997). Gender and age differences in preference for works of art. *Studies in Art Education*, 38(4), 246-256.
- Sarsam, S. M., & Al-Samarraie, H. (2018). Towards incorporating personality into the design of an interface: a method for facilitating users' interaction with the display. *User Modeling and User-Adapted Interaction*, 28(1), 75-96.
- Schmitt, B., & Simonson, A. (1997). *Marketing Aesthetics: The Strategic Management of Brands, Identity and Image*. New York: Simon and Schuster.
- Seifert, L. S. (1992). Pictures as a means of conveying information. *The Journal of general psychology*, 119(3), 279-287.
- Silvennoinen, J. M., & Jokinen, J. P. (2016, May). *Aesthetic appeal and visual usability in four icon design eras*. In Proceedings of the 2016 CHI conference on human factors in computing systems (pp. 4390-4400). United States: Association for Computing Machinery.
- Silvia, P. J. (2005). Cognitive Appraisals and Interest in Visual Art: Exploring an Appraisal Theory of Aesthetic Emotions. *Empirical Studies of the Arts*, 23(2), 119-133.
- Singh, D., & Young, R. K. (1995). Body weight, waist-to-hip ratio, breasts, and hips: Role in judgments of female attractiveness and desirability for relationships. *Ethology and Sociobiology*, 16(6), 483-507.
- Urbano, I. C. V. P., Guerreiro, J. P. V., & Nicolau, H. M. A. A. (2022). From skeuomorphism to flat design: age-related differences in performance and aesthetic perceptions. *Behaviour & Information Technology*, 41(3), 452-467.
- Van der Lans, R., Cote, J. A., Cole, C. A., Leong, S. M., Smidts, A., Henderson, P. W., Schmitt, B. H. (2009). Cross-national logo evaluation analysis: An individual-level approach. *Marketing Science*, 28(5), 968-985.
- Veryzer, R. W. (1993). Aesthetic response and the influence of design principles on product preferences. *Advances in Consumer Research*, 20(1), 224-231.
- Zettl, H. (1999). *Sight, Sound, Motion: Applied Media Aesthetics*. California, USA: Wadsworth Publishing.
- Zhang, Y., Feick, L., & Price, L. (2006). The impact of self-construal on aesthetic preference for angular versus rounded shapes. *Pers Soc Psychol Bull*, Jun, 32(6), 794-805.