

1 A Moderated Mediation Analysis of the Effect of Lettering Case and Color Temperature on  
2 Trustworthiness Perceptions and Investment Decisions

3  
4 Yao Song, Yan Luximon\* and Jing Luo  
5 School of Design, The Hong Kong Polytechnic University,  
6 Kowloon, Hong Kong SAR

7  
8 **Abstract**

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10 **Purpose:** The purpose of this study is to test the theoretical framework of lettering case, color  
11 temperature, perceived trustworthiness, and investment intentions. First, it aims to test whether the  
12 effect of lettering case on investment intentions is mediated by trustworthiness; Second, the study  
13 will examine if this process is moderated by color temperature.

14 **Design:** Following the behavioral research method, this study employed a 2 (the fully-lowercase  
15 slogan vs. the initial-uppercase slogan) by 2 (warm-color design vs. cool-color design) full factorial  
16 between-subject design. Two hundred participants were recruited for the experiment to test the  
17 hypotheses.

18 **Findings:** For the lowercase slogans (vs. uppercase slogans), we found that people tended to have a  
19 high level of perceived trustworthiness, which led to a high level of investment intentions. In  
20 addition, the indirect effect of the lettering case on investment intentions through the perceived  
21 trustworthiness was moderated by color temperature. Specifically, the visually warm advertisement  
22 (vs. visually cool design) would strengthen the effect of lowercase slogans on customers'  
23 investment intentions.

24 **Originality:** When people make a financial decision with limited, incomplete, or overly complex  
25 information, simplified visual heuristics, rather than rational algorithmic processing, play a  
26 significant role in their decision-making process. However, only a limited amount of research has  
27 addressed the effect of the lettering case on customers' perceptions and the consequent decision-  
28 making process from a financial advertising perspective. This study tries to supplement and extend

29 the visual heuristics theory, highlighting the role of simplified heuristics, rather than rational  
30 algorithmic processing, in financial customers' decision-making process.

## 31 1. Introduction

32  
33 In 2018, the official name of Apple's latest flagship, 'iPhone Xs or iPhone Xr', was  
34 reformatted to be 'iPhone XS or iPhone XR' (Rossignol, 2018). Indeed, it is common to see various  
35 alphabetical combinations of lowercase and uppercase letters in the financial communication  
36 system expressing specific meaning to investors. For example, different credit rating services would  
37 use different lettering cases to indicate the evaluation of a bond issuer's capability to pay principal  
38 and interest. According to Moody's rating system, bond ratings are expressed as letters ranging  
39 from the fully-uppercase letters, 'AAA,' which shows the highest quality, to a combination of  
40 uppercase and lowercase letters, 'AAa,' which reveals a relatively high quality. In addition, when  
41 we browse different securities brokerage corporations' websites and their related advertisements,  
42 we could find various usages of uppercase and lowercase letters in their slogans. For instance, the  
43 Japan Securities Finance (JSF) Corporation uses the almost fully-lowercase slogan in its website,  
44 '*Growing in step with the securities industry and contributing to future,*' while the HSBC securities  
45 used the almost fully-uppercase slogan in its securities advertisement, '*Commercial Customers*  
46 *Enjoy 0.18% Online Brokerage Fee Offer for Local Securities Trades.*' As financial services and  
47 their advertising are attracting more and more academic attention (Mogaji et al., 2018; Rajaobelina  
48 et al., 2019), we might wonder whether the lettering case could influence financial customers'  
49 perceptions and consequent financial behavior.

50 Recent behavioral research has evolved from the traditional economic assumption that  
51 emphasized the rationality of the human being to the intuitional and the emotional perspective in the  
52 decision-making process, indicating the significant role of people's unconscious fantasies, needs,  
53 and desires in the investment decision-making process (Barbić et al., 2019; Farmer, 2009; Han et  
54 al., 2019; Potocki and Cierpiał-Wolan, 2019; Taffler, 2014). For example, the behavioral economics  
55 theory (Secchi and Secchi, 2010) suggested that people not only relied on rational evaluation, but  
56 also emphasized the heuristic process in making an investment decision. Heuristics work as simple

57 strategies to evaluate and make decisions by emphasizing the most relative information of a  
58 complex issue (Shah and Oppenheimer, 2008). When people meet a computationally complex  
59 question, they tend to substitute this process by a relatively easy calculated heuristic attribute and  
60 then make a decision on these simpler attributes to reduce the effort and pain (Montealegre and  
61 Jimenez-Leal, 2019). In particular, when people have to make a financial decision with limited,  
62 incomplete, or overly complex information, they tend to use simplified heuristics rather than a  
63 rational algorithm (Bottom, 2004). Regarding this, visual heuristics play a significant role in  
64 people's decision-making process (Lurie and Mason, 2007). For example, visual heuristics could  
65 raise the salience of information and make people focus on the particular attributes, rather than on  
66 the diagnostic information, in the given context (Mandel and Johnson, 2002).

67         Considering an increasing number of financial corporations and banks are adopting  
68 advertisements as an effective tool to promote and distribute their products and services  
69 (McKechnie et al., 2006), the persuasiveness in their advertising is a prime example of how visual  
70 heuristics are used by financial sectors, communicating specific information and shaping people's  
71 investment behavior in their decision-making process (Ewe et al., 2018; Pinkleton et al., 2002). In  
72 the meanwhile, an appropriate combination of advertising components, such as lettering case and  
73 color temperature, plays a significant role in the advertising design, improving the firm's image and  
74 its market value (Choi et al., 2016; Mathur and Mathur, 1995). Prior research regarding lettering  
75 case or typeface has mainly focused on its effect on people's perceptions of brands and firms from a  
76 general perspective (Jones and Mewhort, 2004; Perea et al., 2015; Xu et al., 2017). For example, the  
77 uppercase font helps to denote the emphasis and information focus of the written message in  
78 marketing communication (McAteer, 1992). However, words written in all capital letters might also  
79 indicate a high arousal state of the writer (Islam and Zibrán, 2018), which makes it hard for readers  
80 to follow (Babayiğit, 2019). In the written message, the lowercase font is usually the norm, easy to  
81 process, and more frequently used in our daily life (Jones and Mewhort, 2004; Perea et al., 2015),  
82 while it might be easy to lose one's attention (Xu et al., 2017). In addition to the lettering case,

83 color temperature is an important element for advertising design (Shabgou et al., 2014) since people  
84 might rely on color information or cue to infer and make judgments (Broniarczyk and Alba, 1994;  
85 Kardes et al., 2004). Indeed, the previous study has suggested color cue, such as color temperature,  
86 might implicitly increase customers' perceptions towards a given brand or company (Lee and Chen,  
87 2017; Petersen et al., 2004). For instance, either visual warmth or visually coolness could gain  
88 positive evaluations under certain circumstances (Choi et al., 2016; Crowley, 1993). However, in  
89 the context of the financial advertisement, the optimal combination of color temperature and  
90 lettering case in influencing perceived trustworthiness is still an unsolved question, which attracts  
91 limited academic attention and needs further theoretical exploration (Xu et al., 2017).

92 Since trustworthiness perception towards securities corporations plays a significant role in  
93 the investor–service provider relationship (Wintoro, 2005), this study tries to solve this question by  
94 examining the effect of different lettering cases and color temperature on customers'  
95 trustworthiness perceptions and the consequent decision-making from the perspective of financial  
96 advertising, exploring the relatively optimal combinations of lettering case and color temperature.  
97 Additionally, this study will contribute to the literature on visual heuristics.

98

## 99 **2. Theoretical background and hypothesis development**

100

### 101 *2.1 Lettering case and trustworthiness*

102

103 Following the company's marketing strategy, an advertising slogan is a short phrase used in  
104 advertising communication to attract public attention and depict specific product or service  
105 information (Dowling and Kabanoff, 1996). The phrases are helpful in addressing the key features  
106 of a particular product or service and building brand personality, forming a fundamental component  
107 in the advertisement (Dimofte and Yalch, 2007). In fact, advertisers have used advertising slogans  
108 to communicate brand equity, enhance brand image, and brand differentiation (Dahlén and

109 Rosengren, 2005; Rosengren and Dahlén, 2006). Previous research on advertising slogan have  
110 explored how specific slogan components affect customer perception, such as slogan jingles (Yalch,  
111 1991), product-slogan congruence (van Rompay et al., 2009), slogan repetition (Kohli et al., 2007;  
112 Olivera et al., 2001), brand-slogan relationship (Kohli et al., 2007), slogan parallelism (Olivera et  
113 al., 2001), slogan semantic relevance (van Mulken and van Enschoot-van Dijk, 2005) and slogan  
114 typeface (Henderson et al., 2004; Van Rompay and Pruyn, 2011). For instance, Henderson and his  
115 colleagues (2004) have discussed the association of different fonts (elaborate, harmony, natural,  
116 flourish weight, and compressed) and their effect on people's perceptions (pleasing, engaging,  
117 reassuring and prominent).

118         Lettering case is the difference between two kinds of letters, uppercase letters (also capital  
119 letters, capitals, caps, or large letters) and lowercase letters (also small letters), in some written  
120 forms of specific languages (Hansard, 2010). Two separate groups of different letters  
121 correspondingly form the uppercase and lowercase letters in that an uppercase letter has an  
122 equivalent letter in lowercase (Hansard, 2010). Therefore, the same letter has two alternative  
123 written forms with an identical name, alphabetical order, and pronunciation (Nesbitt, 1957). People  
124 might have different perceptions of different lettering cases. As for the uppercase letter, although it  
125 helps to capture people's attention and emphasize the information (McAteer, 1992), it might be hard  
126 for people to process and decrease their reading speed. For example, Babayiğit (2019) suggested the  
127 students' speed of reading lowercase letters is 13% higher than reading uppercase letters since  
128 lowercase letters are easy to read and process. As for the lowercase letter, it usually works as a  
129 norm in written language (we only use an uppercase letter in the initial letter of sentences and keep  
130 the rest letters lowercase) (Jones and Mewhort, 2004; Perea et al., 2015). Thus, people would be  
131 more accustomed to lowercase letters than uppercase letters in daily life (Jones and Mewhort, 2004;  
132 Perea et al., 2015). For instance, Jones and Mewhort (2004) summarized the frequencies for  
133 uppercase and lowercase letters in The New York Times corpus from January to March 1992, and  
134 suggested a significant bias in frequency between uppercase letters and lowercase letters. To be

135 more specific, the count of the lowercase letters was around 17.5 times more than the count of the  
136 uppercase letters.

137 As a result of high familiarity and exposure to lowercase letters, people tended to have  
138 stronger cognitive psychological bonds, namely, the reduced psychological distance between  
139 customers and lowercase letters (Tomić et al., 2017; Trope and Liberman, 2010). To specify,  
140 psychological distance influenced the degree to which we think about a person, an object, an event,  
141 or idea as high or low, like concrete or abstract, or as distant or close (Tomić et al., 2017; Trope and  
142 Liberman, 2010). For instance, the more familiar a customer was with an online retailer, the less  
143 psychological distance was between the customer and the retailer (Luo et al., 2018). In this context,  
144 when faced with a lowercase letter in daily life, customers would have a less psychological distance  
145 than faced with an uppercase letter (Xu et al., 2017).

146 In addition, the close psychological distance could encourage correspondence, assist  
147 cooperation, and facilitate perception of friendliness, openness, and congruence (Büttner and  
148 Göritz, 2008; Song and Luximon, 2019; Xu et al., 2017). For instance, Xu, Chen, and Liu (2017)  
149 suggested that customers felt psychologically closer and friendlier to lowercase brand wordmarks  
150 than uppercase brand wordmarks. In addition, compared with online customers, offline customers  
151 who have closer psychological distance tended to exhibit higher levels of trustworthiness perception  
152 (Lii et al., 2013). Moreover, Song and Luximon (2019) further suggested that lowercase letters  
153 might help to decrease fear arousal and increase congruence, eventually promoting an  
154 environmental concern.

155 Previous studies have discussed trustworthiness perception in various topics, contexts, and  
156 disciplines, such as strategic management (Barney and Hansen, 1994), advertisement (Ohanian,  
157 1990), organization (Dyer and Chu, 2003), politics (Levi and Stoker, 2000), and financial markets  
158 (Ng et al., 2015; Wintoro, 2005). There are multiple levels of the definition of trustworthiness  
159 perception. To specify, trustworthiness was defined as the mutual confidence that everyone would  
160 follow a rule without exploiting others' vulnerabilities (Sabel, 1993). In other words, it was an

161 attribute of the individuals involved in a reliable exchange relationship (Barney and Hansen, 1994),  
162 leading to a competitive advantage especially in the financial industry (Roy and Shekhar, 2010).  
163 Although some literature suggests that there are three dimensions of trustworthiness (ability,  
164 benevolence, and integrity) (Lee and Turban, 2001), there seems to be no consensus on the  
165 definition of trustworthiness in financial services (Roy and Shekhar, 2010). In this study, we agree  
166 on the three dimensions of trustworthiness proposed by Roy and Shekhar (2010): competency  
167 (ability and consistency), openness (shared values and communication and similarity) and  
168 benevolence (integrity and honesty and customer orientation), since they are not only consistent  
169 with previous literature, but also focus on the context of financial service provider.

170 As a result, lowercase letters tend to exhibit a higher-level perception of trustworthiness  
171 than uppercase letters, which would be spilled over and transferred into the given product, service,  
172 or brand (Pina et al., 2013). Therefore, we could expect that the trustworthiness perception invoked  
173 by lowercase letters in the advertising slogan could spill over into the given financial service  
174 provider. In this context, we have this hypothesis:

175

176 **H1:** A lowercase (vs. uppercase) advertising slogan causes customers to perceive the  
177 financial service provider as more trustworthy (less trustworthy).

178

## 179 *2.2 Trustworthiness and investment intentions*

180

181 Behavioral and financial research has long focused on the role of trustworthiness perception  
182 in the investor–service provider relationship. To be specific, prior research regarding  
183 trustworthiness and financial investment are mainly divided into two streams: the positive effect of  
184 perceived trustworthiness on offline–customer relationship maintenance and its underlying  
185 mechanism (Dyer and Chu, 2003; Lüders et al., 2017), and the crucial role of trustworthiness in  
186 influencing online customers’ perceptions and in preserving their loyalty (Akhlmaq and Ahmed,



187 2013; Chiou and Shen, 2012; Yu et al., 2015). Although the trustworthiness perception in financial  
188 institutes shifts from time to time via multiple interactions between customers and service  
189 providers, it is significant especially in the initial interaction (Klapper et al., 2016; McKee and  
190 Smouse, 1983; Porter et al., 2010). Therefore, customers' trustworthiness perception invoked by a  
191 financial service provider might be highly related to their initial impression (e.g. financial  
192 advertisement and its advertising slogan).

193 Previous research has also suggested the significant role of trustworthiness perception in  
194 influencing people's behavior. For example, trustworthiness perception is fundamental in increasing  
195 people's intentions to purchase (Chong et al., 2003; Pornpitakpan, 2004; Schlosser et al., 2006), to  
196 share their private data (Bart et al., 2005), to experience higher satisfaction (Cho and Lee, 2011;  
197 Ding et al., 2014), to increase financial customer loyalty from offline service to online service  
198 (Chiou and Shen, 2012), and to deposit or invest in financial institutes (Akhlaq and Ahmed, 2013;  
199 Chiou and Shen, 2012; Kurniawati, 2017; Yu et al., 2015). For instance, Akhlaq and Ahmed (2013)  
200 suggested the perceived trustworthiness in the financial sectors would significantly enhance  
201 people's acceptance of the financial service providers, improving the probability to use their  
202 service. Thus, we propose:

203

204 **H2:** Perceived trustworthiness mediates the effect of lettering case on investment intentions

205

### 206 *2.3 Letter case and color temperature*

207

208 Color temperature (visual warmth vs. visual coolness) also plays a vital role in advertising  
209 communication. Based on the inference theory, customers' decision and judgment making on the  
210 unknown relies on the information or cues available (Broniarczyk and Alba, 1994; Kardes et al.,  
211 2004). In terms of advertising communication, customers rely on the specific advertising elements,  
212 such as color selection, to make a judgment or even decision. Previous research has discussed the

213 effect of color on people's cognitive (e.g. perceived attractiveness) and behavioral reactions (e.g.  
214 purchase intention) (Gorn et al., 1997; Zellner et al., 2010). For example, people tended to like the  
215 advertisement with high-value color and low-level of chroma (Gorn et al., 1997). Research on  
216 promoting advertising experience has evolved from actual color selection to general color tone or  
217 color temperature adaptation; it would facilitate the advertisement to enhance customer experience  
218 and depict their given brand image and equity in a more natural way (Lee and Chen, 2017; Petersen  
219 et al., 2004).

220         The term visual warmth initially suggests the quality or state of being warm in temperature  
221 or the quality or state of being warm in feeling. Additionally, this term could also be used to express  
222 a glowing effect produced by the use of warm colors (Merriam-Webster, 2018). A visually warm  
223 trait functions as an effective tool to communicate specific features in the advertisements (Wastiels  
224 et al., 2012). According to the color theory, 'cool color' (bluish) refers to color temperatures over  
225 5000 K while 'warm color' (yellowish) refers to the color temperature below 3000 K (Davis and  
226 Ginthner, 1990). The reason to have this perception of warmth and coolness may lie in our ancient  
227 memory before (Choi et al., 2016; Labrecque et al., 2013). To be more specific, the color yellow is  
228 usually linked with terms such as the hotness, the sun, and flames, while the color blue is  
229 customarily associated with the moon, silence, and water. Prior research has tried to discuss the  
230 effect of color temperature on people's perceptions. However, the relationship between color  
231 temperature and people's perception or behavioral reaction reflects a nuanced interaction, which  
232 depends on different contexts. For example, a room with warm-color decoration is perceived to be  
233 significantly warmer than a room with cool-color decoration (Itten, 1991). A warm-color beverage  
234 container is regarded as containing the hottest beverage than the other colored containers (Guéguen  
235 and Jacob, 2014a). However, people have a more positive, attractive, relaxed, and comfortable  
236 evaluation towards shopping environment with blue elements than with yellow elements (Bellizzi  
237 and Hite, 1992). Indeed, Crowley (1993) argued there might exist a U-shaped relationship between  
238 people's cognitive reactions and wavelengths of color.

239           The latest research regarding color temperature attempts to explore the mechanism in the  
240 grounded cognition, namely the physiological explanation (Barsalou, 2008; Steidle and Werth,  
241 2013). Particularly, the physiological exposure would link and promote the interaction in memory,  
242 impacting perception, and decision-making process (Bargh and Shalev, 2012; Fay and Maner,  
243 2012). For instance, Bargh and Shalev (2012) suggested that people could experience interpersonal  
244 warmth, such as affection and intimacy, through the application invoked by physiological warmth,  
245 even without awareness of doing so. The reason might lie in our memory restoring the  
246 physiological exposure and its psychological perception in pair simultaneously, increasing the  
247 metaphoric association between these two elements (Barrett et al., 2007; Koole, 2009). In the  
248 context of evaluating people, anonymous people with a warm color background were rated more  
249 positively than those with a neutral and cool color background (Choi et al., 2016). In addition, even  
250 a waiter wearing a warm-color tee shirt was considered to be more attractive and got more tips  
251 (Guéguen and Jacob, 2014b).

252           Furthermore, recent studies have divided the effect invoked by the perceived warmth into  
253 two branches: an assimilative effect and a complementary effect (Rotman et al., 2017; Zhang and  
254 Risen, 2014). To specify, an assimilative effect refers to the consequence of interpersonal warmth is  
255 a result of physical warmth while a complementary effect refers to that physical warmth could  
256 trigger people's psychological desires for warmth which complemented the physical warmth in  
257 return (Rotman et al., 2017). For instance, by introducing embodied warmth or physical warmth  
258 (e.g. holding a hot beverage), people could consider others as closer and kinder (Fay and Maner,  
259 2012), less lonely (Wortman et al., 2014), having more intention to share with others (Zickfeld,  
260 2015), and having more intention to altruistic behaviors (Hu et al., 2016).

261           Concerning the nuanced relationship between color temperature and behavioral reaction,  
262 although visual warmth could elicit people's trustworthiness evaluations towards others (Choi et al.,  
263 2016), visual coolness might also increase a participant's positive evaluation in some situations  
264 (Bellizzi and Hite, 1992). Thus, we propose the following hypothesis:

265

266 **H3:** The mediation role of trustworthiness between lettering case and investment intentions  
267 is moderated by color temperature.

268

269 To sum up, Figure. 1 reveals our theoretical framework. The aim of this study was to  
270 investigate that the lowercase (vs. uppercase) financial advertising slogan could raise people's  
271 investment intentions, the mediating role of perceived trustworthiness, and the moderating role of  
272 color temperature in this mediation process.

273

274 **--- PLEASE INSERT FIGURE ONE HERE ---**

275

### 276 **3. Research method**

277

278 The experiment was designed to examine the main effect of the lettering case on investment  
279 intentions, the mediating role of perceived trustworthiness and the moderating role of color  
280 temperature.

281

#### 282 *3.1 Experiment Design and Stimuli Pretest*

283

284 In order to make stimuli as realistic as possible, the designer carefully made three different  
285 versions of stimuli with the same slogan 'your financial partner'. Ten people from a public  
286 university in China (5 academics and 5 students in design discipline) were invited to choose a more  
287 realistic advertisement as the prime for further studies. The participants were required to look at  
288 three stimuli and then asked to rate on a 7-point Likert-type scale from 1 (strongly disagree) to 7  
289 (strongly agree) the extent to which they agreed that it is a realistic advertisement in their daily  
290 lives. Later, a short interview was conducted to understand the reasons for their answers.

291 Consequently, the stimulus (see Figure 2) with the highest mean score was selected for further tests  
292 (4.9 vs. 4.0 vs. 3.4).

293 Based on the stimuli selected, the designer made four advertisements with different  
294 combinations of lettering cases and color temperature in the context of social media. Thus, the  
295 experiment employed a 2 (the fully-lowercase slogan vs. the initial-uppercase slogan) by 2 (warm-  
296 color design vs. cool-color design) full factorial between-subject design. Franklin Gothic was  
297 adopted as the typeface of slogans since this font was widely used in advertisements  
298 (NewsMDirector, 2017). As for color temperature, in order to elicit different levels of visually  
299 warm perceptions, Adobe Photoshop CC 2015 was introduced to modify the color temperature of  
300 the background and textbox color only (keep the original color tone of the figure; textbox 1000 K  
301 vs. 9000 K wavelength) according to prior related research (Baek et al., 2018). In addition, the  
302 fully-uppercase slogans were relatively rarely used in the advertising practice, so one designer made  
303 financial advertisements of a securities trader based on the original materials retrieved from  
304 Freeimages.com (FreeImages, 2019). Additionally, positioning, proportion, and span of the slogans  
305 in the stimuli were controlled in the same manner. (for experiment stimuli, see Figure 2).

306 As for the manipulation test of the selected stimuli in the study, 40 students from a public  
307 university in China were invited to confirm the manipulated stimuli could reflect their respective  
308 color tone and lettering case. The participants were asked to rate their agreement on the extent to  
309 which the stimuli reflected a visually warm design and contained uppercase letters on a 7-point  
310 Likert scale (1 = strongly disagree; 7 = strongly agree). Results showed, compared with visually  
311 cool advertisements, the visually warm advertisements were rated as more of containing visual  
312 warmth (Mean = 6.25 vs. 2.61,  $F(1, 156) = 190.86, p < 0.01$ ). Compared with lowercase  
313 advertisements, the uppercase advertisements were rated as more of containing uppercase fonts  
314 (Mean = 6.31 vs. 2.18,  $F(1, 156) = 207.95, p < 0.01$ ). Thus, the results suggested both the color  
315 temperature and lettering case design in the stimuli work well in the experiment setting.

316

317 *3.2 Variables and Measurements*

318

319 Since financial literacy might potentially influence people’s perceived trustworthiness and  
320 financial behavior, they were served as control variable in this study (Xiao and Porto, 2017).  
321 Financial literacy is measured by summarizing the correct number of five questions on interest rate,  
322 inflation, bonds, mortgages, and stocks, ranging from 0 to 5. If participants gave a correct answer,  
323 this score was coded 1, and 0 otherwise (Xiao and Porto, 2017). Results showed most of the  
324 participants showed a relatively high level of financial literacy (Mean = 3.31, SD = 1.42).

325 Regarding the dependent variables, this experiment measured the influence of lettering case  
326 and visually warm (vs. cool) design on customers’ trustworthiness perception and investment  
327 intentions. Perceived trustworthiness on the company was measured with four items (I would trust  
328 this company/ I would rely on this company/ This company is safe/ This company looks honest) on  
329 a seven-point Likert scale (Chaudhuri and Holbrook, 2001). In addition, investment intentions were  
330 measured with three items (I would keep my inheritance money in this funds/ If I have more  
331 money, I would invest additional money in this funds/ If my friend asked me for investment advice,  
332 I would recommend this fund to him or her) on a nine-point rating scale (Zhou and Pham, 2004). In  
333 order to maintain the reliability and consistency of the original scale, this study used their original  
334 rating system.

335

336 **--- PLEASE INSERT FIGURE TWO HERE ---**

337

338 *3.3 Participants and Questionnaire*

339

340 We recruited study participants from Amazon Mechanical Turk (AMT) to participate in the  
341 experiment. AMT is a solid platform to recruit people and conduct behavioral research since many  
342 social and behavioral research has suggested that collecting data from AMT has adequate reliability

343 and validity compared with the experiments from a physical lab (Brañas-Garza et al., 2018).  
344 Although there exists a debate on the worker quality problems in this platform (Matherly, 2019), we  
345 believe it is a good data collection source considering the native English speakers and a younger  
346 sample recruited, especially in the context of social media. Furthermore, we used Qualtrics to form  
347 the questionnaires and record the data because it uses the invitation-only mechanism to prevent self-  
348 selection and multiple-time survey taking, generalizing to the population to a significant extent. In  
349 total, 200 participants were recruited in the experiment (mean age = 36.05, SD = 9.99; 127 males  
350 and 63 females; 97% US and 3% Canada; 11% high school or below, 32% some college, 57%  
351 college graduate or above; mean duration = 236s).

352

### 353 *3.4 Experiment Procedure and Analysis*

354

355 The procedure of the experiment contained three parts: recruiting, introduction, and the  
356 main study. After seeing our task, 200 participants were informed of the general description of this  
357 study and consented to participate. Next, they were asked to finish the demographic questions and  
358 were randomly assigned to one of four experiment scenarios (each scenario contained 50  
359 participants). Before exposed to the stimuli, participants were presented with a brief description of  
360 the given scenario, stated ‘Suppose you have inherited \$10,000 from a relative and that the money  
361 was currently invested in mutual funds managed by ‘FINTECHER’ company Conscience  
362 Funds. Please ignore any tax implications.’ (Ewe et al., 2018; Zhou and Pham, 2004). Last, they  
363 were asked to focus on the advertising stimuli in the context of social media for five seconds  
364 (Matukin et al., 2016; Torrico et al., 2018), finish the questionnaire given and an additional test on  
365 financial literacy, and inform the moderators that they have finished the work.

366

367

--- PLEASE INSERT FIGURE THREE HERE ---

368

369 In order to test for H1, a two-way ANOVA was performed with different lettering cases  
370 (lowercase vs. uppercase) and color temperature (visually warm vs. visually cold) as the  
371 independent variables, and perceived trustworthiness as the dependent variable. Supporting H1, the  
372 results showed the main effect that people in the lowercase slogan (Mean = 4.71, SD = 1.13)  
373 showed significantly higher perceived trustworthiness than those in the uppercase slogan (Mean =  
374 4.35, SD = 1.29;  $F(1, 196) = 6.48, p < 0.05$ ). Similarly, the results also showed a significant  
375 interaction between lettering case and color temperature ( $F(1, 196) = 6.13, p < 0.05$ ), while there is  
376 no significant difference between visually warm (Mean = 4.58, SD = 1.10) and visually cool design  
377 (Mean = 4.49, SD = 1.35;  $F(1, 196) = 0.24, p = 0.62$ ; see Figure 3). In summary, the results showed  
378 that customers who faced with the lowercase slogan tended to have higher perceived  
379 trustworthiness towards the securities trader than those grouped in the uppercase slogan scenario  
380 (H1 was supported).

381 In order to test H2, the mediating role of perceived trustworthiness, investment intentions  
382 were regressed on lettering case (uppercase vs. lowercase) with financial literacy as control variable  
383 ( $n = 5000$  resamples; Hayes, 2015). According to the results, we could find a significant total effect  
384 of lettering case on investment intentions ( $\beta = -0.594, SE = 0.294, p < 0.05$ ) and the effect of  
385 lettering case on perceived trustworthiness was also significant ( $\beta = -0.345, SE = 0.170, p < 0.05$ ).  
386 When the mediator, perceived trustworthiness, was controlled, lettering case was not a significant  
387 independent variable of investment intentions ( $\beta = -0.093, SE = 0.162$ ), while the perceived  
388 trustworthiness was a significant independent variable of investment intentions ( $\beta = 1.450, SE =$   
389  $0.067, p < 0.05$ ), which was also consistent with mediating effect. In addition, the indirect effect  
390 was also significant ( $\beta = -0.501, SE = 0.248, LLCI = -0.9802, ULCI = -0.0100$ ) (see Figure 4).

391

392 --- PLEASE INSERT FIGURE FOUR HERE ---

393



394 Given the mediating effect of perceived trustworthiness, a moderated-mediating analysis  
395 was conducted on investment intentions with color temperature (visual warmth vs. coolness) as the  
396 moderator to validate H3 with financial literacy as control variable (n = 5000 resamples; Hayes,  
397 2015). In this analysis, the lettering case (uppercase vs. lowercase) was the independent variable,  
398 perceived trustworthiness was the mediator, and color temperature was the moderator.

399 Supporting H3, the statistical results showed the mediating role of perceived trustworthiness  
400 was moderated by color temperature (Effect: -1.085, SE = 0.498, LLCI = -2.066, ULCI = -0.109).  
401 The results showed a significant interaction effect of the lettering case and the color temperature on  
402 the perceived trustworthiness ( $\beta = -0.753$ , SE = 0.337,  $t = -2.233$ ,  $p < 0.05$ ), and perceived  
403 trustworthiness had a significant impact on the investment intentions ( $\beta = 1.441$ , SE = 0.068,  $t =$   
404  $21.066$ ,  $p < 0.05$ ), suggesting the mediating role of perceived trustworthiness was moderated by  
405 color temperature. To be more specific, for people showed with warm color design, the lettering  
406 case has a significant positive effect on the perceived trustworthiness and the investment intentions  
407 (Effect = -1.038, SE = 0.296, LLCI = -1.625, ULCI = -0.464). Alternatively, for people showed  
408 with cool color design, the effect was not significant (Effect = 0.046, SE = 0.389, LLCI = -0.735,  
409 ULCI = 0.812). To sum up, the results reveal that the moderated mediating effect is associated with  
410 different color temperatures. In other words, the mediating effect of perceived trustworthiness was  
411 significant when faced with a visually warm scenario (see Figure 5).

412  
413 **--- PLEASE INSERT FIGURE FIVE HERE ---**

414

#### 415 **4. Conclusion**

416

417 This study tested the theoretical framework of lettering case, color temperature, perceived  
418 trustworthiness, and investment intentions. For the lowercase slogans (vs. uppercase slogans), we  
419 found that people tended to have a high level of perceived trustworthiness, which led to a high level

420 of investment intentions. In addition, the indirect effect of the lettering case on investment  
421 intentions through the perceived trustworthiness was moderated by color temperature. Specifically,  
422 the visually warm advertisement (vs. visually cool design) would strengthen the effect of lowercase  
423 slogans on customers' investment intentions. However, for the visually cool advertisement, there is  
424 no statistically significant difference between the effect of uppercase and lowercase slogans on  
425 customers' investment intentions. This might be because, compared with visually warm design,  
426 coolness functioned as a dominant role in decreasing intimacy perception for a given relationship  
427 (IJzerman and Semin, 2009) and the intent to approach (Baek et al., 2018). With regard to this,  
428 people might have low intentions to process information and interact with the advertisement, thus  
429 resulting in an insignificant difference in the visually cool design. In addition, previous research has  
430 shown the nuanced relationship between color temperature and people's evaluation (Crowley,  
431 1993). For example, Crowley (1993) suggested, in certain contexts, people might feel good,  
432 attractive, and comfortable with cool color, thus resulting in a stronger reactional intention. This  
433 might be the reason why the uppercase with cool design scenario rated higher in investment  
434 intentions than the uppercase with warm design scenario.

435

## 436 **5. Discussion**

437

438 Across the experiment, we examined if the use of a lowercase slogan in a financial  
439 advertisement could improve customers' perception of trustworthiness, which in turn may increase  
440 their investment intentions. We also indicated that the lettering case-perceived trustworthiness-  
441 investment intention effect is moderated by the color temperature.

442 This study tends to have threefold theoretical contributions. Firstly, this study tried to  
443 supplement and extend the visual heuristics theory in the context of signaling trust. Previous  
444 research on trust-signaling heuristics could mainly be explained by familiarity heuristics, which  
445 indicates trust takes place as the familiarity is favored over novel places, people, or things (Monin

446 and Oppenheimer, 2005). For example, Marsh (2002) indicated that people tended to trust and  
447 cooperate with familiar people while reluctant to work with non-familiar ones since familiarity is an  
448 intuitively social signal of trustworthiness. The reputation of familiar people is already known to  
449 individuals; thus, it was believed that to cooperate with and trust familiar people could enjoy a  
450 lower risk of trust violating. However, scant research has tried to extend trust-related heuristics in  
451 the visual context, which is mainly used to discuss the effect of appearance on likeableness and  
452 emotional reaction (Lau and Redlawsk, 2001). Accordingly, it is theoretically significant to explore  
453 whether the conclusion of trust-signaling heuristics could still work in the visual heuristic context.  
454 Consistent with trust-signaling heuristics, lowercase letters, which are more familiar to people,  
455 enjoyed higher trustworthiness perception and people tend to rely on these heuristics to make  
456 financial decisions (Bottom, 2004). In addition, the results of this study were also consistent with  
457 the finding based on neuroscientific research regarding the role of the amygdala in decision-making  
458 (Levine, 2009; Seymour and Dolan, 2008). To specify, heuristics-followers expressed more  
459 activation than heuristics-violators in the amygdala, the subcortical area most involved with primary  
460 emotional experience, such as the trustworthiness perception (Santos et al., 2016). Secondly, limited  
461 literature has explored the appropriate selection of lettering cases (uppercase or lowercase) in  
462 communicating trustworthiness and consequent behavioral reaction from the perspective of  
463 financial advertising. In order to address this research gap, this study developed a framework on  
464 how the lettering case affects financial customers' investment intentions by identifying the  
465 mediating role of perceived trustworthiness and the moderating role of color temperature in this  
466 mediation process. Finally, prior studies on advertising slogan concentrate on their semantic  
467 meanings (Puntoni et al., 2009). However, it largely neglected to analyze the effect invoked by a  
468 slogan from the perspective of the lettering case. By empirically showing the significant role of  
469 lowercase lettering in trustworthiness evaluation, the current research could help to expand, to some  
470 extent, the literature of online advertising research from this angle.

471

## 472 **6. Implication, limitation and future research**

473

474 This study also tends to have the following managerial implications. Firstly, since  
475 trustworthy image building plays a crucial role in branding activities especially for financial  
476 institutes (Ng et al., 2015), it is important for them to adopt suitable marketing strategies to  
477 communicate trustworthiness. As one of the most important strategies in marketing strategies,  
478 advertising communication should also find appropriate combinations of different advertising  
479 components to maintain or even improve perceived trustworthiness (Ketelaar et al., 2015).  
480 Nevertheless, few studies have tried to discuss how to communicate trustworthiness through  
481 suitable combinations of lettering case and color temperature. The result of this study suggested: 1)  
482 financial institutes might need to pay attention to the lettering case of their financial advertisements  
483 since it could potentially influence customers' perceived trustworthiness; 2) the lowercase slogan,  
484 compared with the uppercase slogan, in financial advertisements might work as a better choice for  
485 financial institutes to improve perceived trustworthiness; 3) color temperature is not a significant  
486 factor in influencing perceived trustworthiness, namely, either warm color or cool color could help  
487 to communicate trustworthiness under certain circumstances; and 4) lettering case in the  
488 advertisements could work as an efficient way to improve financial customers' investment  
489 intentions.

490 Furthermore, the media context adopted in this study was social media. Due to its cost  
491 advantage, most advertisements in all channels are static advertisements (Arraydigital, 2019), as the  
492 type of advertisement examined in this study. Generally speaking, there are two types of  
493 advertisements: static advertisements (like press ad, print ad, newspaper ad, etc) and dynamic  
494 advertisements (like video ad, stream ad, etc). Previous research indicated that the selection of static  
495 or dynamic presentations should depend on the nature of the business (Cian et al., 2014). For  
496 example, the service or product of financial institutes should be perceived as consistent,  
497 professional, and reliable, which might be suitable to use static advertising. As for a fitness gym, it

498 might be appropriate to use dynamic advertising, communicating an energetic and vigorous image.  
499 A company might need to establish an integrated advertising strategy, providing a consistent  
500 experience to their customers in different channels (Jones et al., 2009). Thus, the conclusion in this  
501 study cannot be generalized to dynamic advertising.

502         The current study also has some limitations that need further investigations. First of all,  
503 although we tried to make the advertising stimuli as realistic as possible, we still cannot guarantee  
504 the stimuli would perfectly resemble the realistic advertisements since they might be more effect-  
505 oriented, focusing on bold and exaggerated presentation (Hackley, 2005). In addition, the sample in  
506 this study was mainly recruited online, so it would be ideal if the future study might use a field  
507 experiment, cooperating with financial service providers, to validate the current conclusion. Second,  
508 this study mainly recruited participants via AMT. However, some researches showed the potential  
509 external validity problem in this platform, such as the younger sample (Matherly, 2019). Although  
510 the media context used in this study is mobile social media that exposes to young people more  
511 frequently, we might still face the external validity issue. Further studies would recruit older people  
512 in a laboratory experiment to revalidate the current conclusion. In addition, this study emphasized  
513 only two elements, lettering case and color temperature, in the advertisement. However, there are  
514 many other elements in advertising design, such as font size, humor, and interaction, which would  
515 also potentially elicit trustworthiness perception and investment behavior, contributing to the visual  
516 heuristics theory in behavioral finance (Stubbs, Kennedy, and Skipper, 2014; Zhang, 1996). In a  
517 future study, we would try to explore the effect of lettering cases on other attributes. In addition,  
518 people showed a relatively high level of financial literacy in this study, suggesting they might have  
519 a relatively higher capability to process additional financial information. Thus, the effect of lettering  
520 case and color temperature on people's financial perceptions and intentions could not be  
521 generalized to people with less financial literacy. It needs further validation since this effect might  
522 be similar or even more significant for people with a relatively lower level of financial literacy and  
523 knowledge. An intriguing point worth noting is the gender of the figure in the stimuli. In this study,

524 the figure in the current study is a male while the limited study has discussed the influence of  
525 gender in the stimuli on people's perceptions in the financial context. Future research will try to  
526 explore its effect on financial customers' perceptions and behavioral reactions, explicitly validating  
527 the conclusion in this study. Another interesting area that needs further exploration lies in the  
528 cultural difference in perceiving color tone and lettering case. Numerous studies have discussed the  
529 difference in English attainment, usage, and perceptions between native English speakers and non-  
530 native English speakers (Moussu and Llurda, 2008). Accordingly, there might be a difference in  
531 perceiving lettering case when seeing an advertisement. It is theoretically interesting for future  
532 studies to explore whether non-native English speakers could perceive lowercase letters as  
533 trustworthy in a similar way. In addition, previous research has not reached a consensus on cultural  
534 differences in color preference: some research suggested color perceptions are independent of  
535 cultural factors (Ou et al., 2004), while other literature indicated there existed a significant different  
536 preference for certain colors across cultures (Saito, 1994). Regarding color tone is one of the most  
537 fundamental advertising factors (Shabgou et al., 2014), future studies could try to examine the  
538 effect of color on trustworthiness perception under different cultural contexts.

539

540

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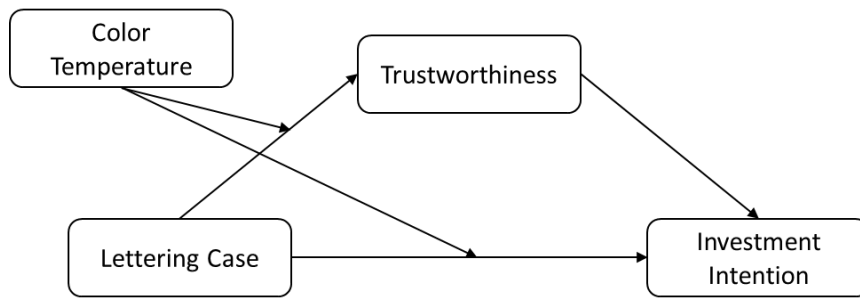
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## FIGURES

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Figure 1. The theoretical framework of this study

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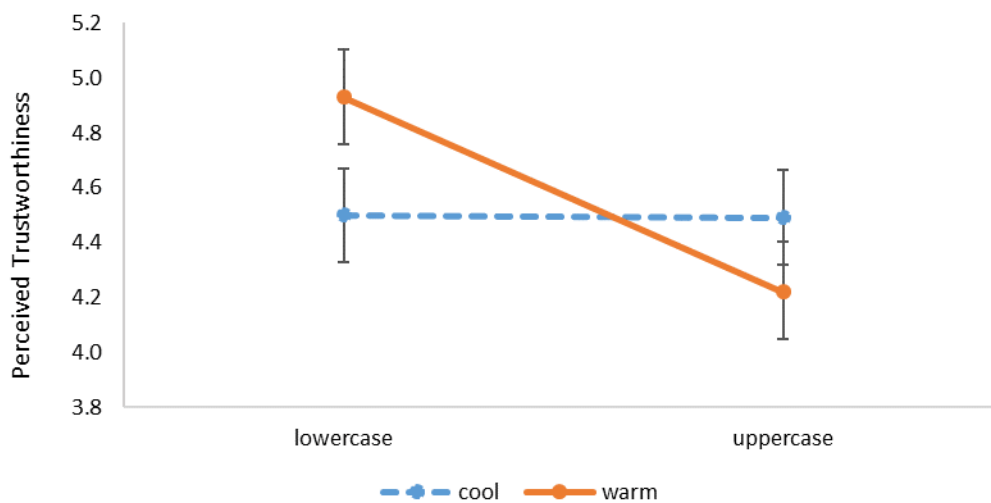


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Figure 2. Experiment stimuli used in this study

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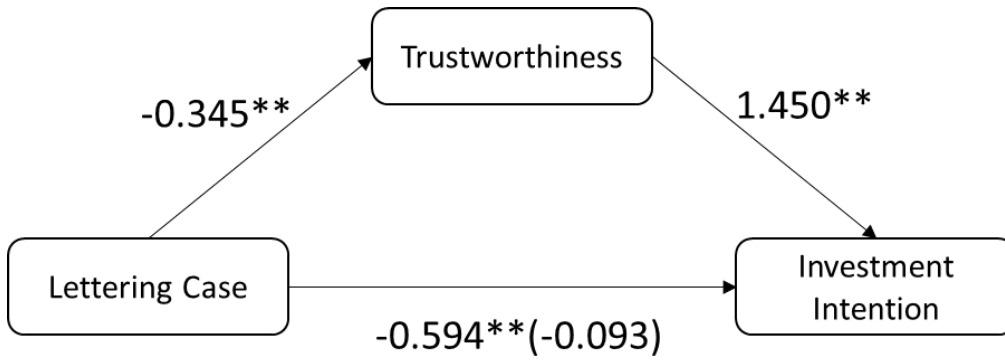


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Figure 3. The interaction of lettering case and color temperature on perceived trustworthiness

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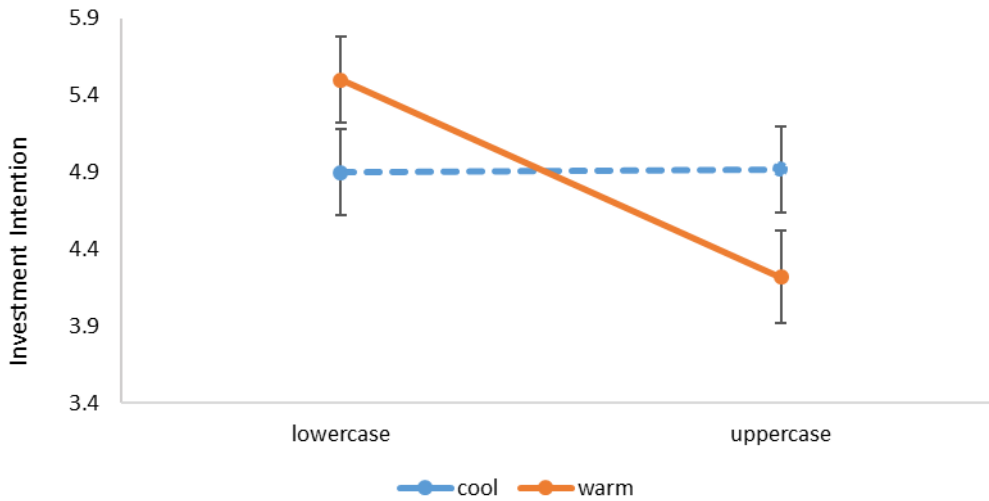


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876 Figure 4. The mediating effect of the perceived trustworthiness

877 Note: \*\* means  $p < 0.05$

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880 Figure 5. The interaction of lettering case and color temperature on investment intentions

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