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Across three studies, we show that an exposure to a larger (vs. smaller) number of applications on the screen causes consumers to perceive the smartphone heavier, while the actual weight does not change. The effect of the visuals on perceived heaviness influences product evaluation and purchase intention of further applications.

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EXTENDED ABSTRACT

Smartphone usage is widespread, and many cellphone models have pre-installed applications for the consumers’ convenience. It is also common practice to add features on the smartphone by downloading different types of mobile applications. As many consumer researchers have studied the role of sense on consumer behavior, we were curious to investigate that the number of application icons works as subconscious visual cues and that such sensory experience affects the perception and judgment of the users. We hypothesize that seeing a greater number of software icons on the electronic devices may bring about the perception related to weight. More specifically, we want to find out whether people perceive their devices heavier given more icons displayed on the screen.

The current research is built upon previous research on sensory marketing, which is defined as the marketing activity “that engages the consumers’ senses and affects their perception, judgment, and behavior” (Krishna 2012, 332). In marketing literature, much research has been done to explain the role of visual attributes of products and advertisements on consumer behavior (e.g. Jiang et al. 2015; Krishna 2012; Krishna and Schwarz 2014; Meert, Pandelaere, and Patrick 2014; Xu and Labroo 2013). Consumers perceive the product heavier when product visuals are located at the bottom-right (in comparison to top-left) position (van Rompay, Fransen, and Borgelink 2013), or they perceive the product heaviness increases when the product image is located in the bottom (Deng and Kahn 2009). Visual imagery, as a consequence, functions as a cue for weight perception.

Based on prior research, we expect that exposure to a greater number of objects could change the user’s weight perception of the product. Specifically, the number of application icons can function as a visual cue, thus as more icons are displayed on the smartphone screen, consumers will perceive the product heavier. While the actual weight does not change, consumers could think heavy devices are full of software, running to its capacity, or lacked in speed. Consequently, greater perceived heaviness would have negative impact on the product evaluation.

In the pretest, we tested the hypothesis that the number of apps presented on the smartphone screen would increase the user’s perceived heaviness. Participants read a short scenario that the manufacturer W is going to launch the smartphone model Y and participants were requested to estimate the weight of model Y in gram or ounce based on the information on model Y and competing models ranged from 129g to 145g. The result revealed that the group who viewed 60 app icons reported significantly higher perceived weight than the group who viewed 30 app icons ($M_{30} = 147.61g, M_{60} = 137.83g; p = .020$).

Study 1 replicated this result and screened out the most plausible alternative explanation that the effect of the number of apps on smartphone weight perception might be caused by visual density. The stimuli were identical to those of pretest except that the size of application icon was smaller in low-density condition than that of in high-density condition. Results indicate that participants in the 60 apps (large) condition rated the smartphone heavier than participants in the 30 apps (small) condition ($M_{30} = 141.53g, M_{60} = 136.921g; p = .038$). However, participants in the high-density condition rated the model Y as heavy as participants in the low-density condition ($M_{30} = 139.80g, M_{60} = 138.20g; p = .457$). Also, the interaction effect of the two main factors was not significant ($F(1, 132) = 1.651, p = .201$).

Study 2 examined whether a smartphone with more applications installed is perceived as less appealing compared to a smartphone with a smaller number of applications, and whether this effect is mediated by the perceived heaviness. Participants read a short scenario that s/he is now using the model Y produced by the manufacturer W. In addition to the weight estimation, participants reported their attitude toward the smartphone, perceived quality, and satisfaction level. First, the effect of the number of apps on perceived heaviness was reconfirmed. Additionally, the mean score of attitude toward the smartphone for the large condition was lower than the mean score for the small condition ($M_{large} = 5.1587, M_{small} = 5.5025; p = .026$). The same tendency was found in perceived quality and satisfaction level. In addition, a bootstrap analysis with 5,000 resamples revealed that the 95% confidence intervals for the significant indirect effect excluded zero (CI: -.2416 ~ -.0207, $p < .05$). We also found that the perceived heaviness partially mediated the effect of the number of apps on perceived quality and fully mediated the effect on satisfaction level.

Study 3 diagnosed whether a smartphone with a larger number of applications installed decreases purchase likelihood of new mobile application than the one with smaller number of applications, and whether this effect is mediated by the perceived heaviness. After exposed identical scenario and stimuli with Study 2, participants read detailed information about fictitious media player application XYZ. Participants were then requested to report their estimation on smartphone weight and purchase intention toward the new released app XYZ. First, the effect of the number of apps on perceived heaviness was reconfirmed. Furthermore, the mean score of purchase intention on app XYZ for the large condition was lower than the mean score for the small condition ($M_{large} = 4.2184, M_{small} = 4.7661; p = .035$). In addition, a bootstrap analysis with 5,000 resamples determined that the 95% confidence intervals for the significant indirect effect excluded zero (CI: -.3282 ~ -.0310, $p < .05$), supporting our hypotheses.

The findings in the current research extend the knowledge about the role of visual on consumer judgments. While prior research has mainly dealt with the role of bodily experience of weight on perception (e.g. Chandler, Reinhard, and Schwarz 2012; Jostmann, Lakens, and Schubert 2009), the present research is the first to examine that the visual experience using app icons can function as a cue to estimate weight and to explore its impact on the product evaluation. This research provides insights about how providing pre-installed applications on smartphone may backfire; consumers may think that bloatware makes their product sluggish. Marketers might want to be cautious to communicate about many installed features. In order to overcome the limitations of scenario-based experiment, field studies with actual stimuli using a real smartphone are suggested to confirm our findings in the future.

REFERENCES


