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Display "Why" Higher than "How": How Display Positioning Affects Construal Level

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Short Paper

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Abstract

Prior research has shown that vertical position of an item is important in both an offline and an online digital context. However, findings in the digital context are inconsistent and atheoretical. Recent psychology research has observed that looking up vs. down can shift processing style (abstract vs. concrete) because looking up (down) tends to associate with observing distant (proximal) stimuli. Based on this insight, we propose that when looking at an object displayed on the top (bottom) of a webpage, users will process the object in a relatively abstract (concrete) way. Further, according to the fit hypothesis in the construal level theory, we propose that advertising with low-level (vs. high-level) construals will be more persuasive when it appears at the bottom (vs. on the top) of the webpage. An initial study has been conducted to examine our propositions. Two future studies using eye-tracking technology are proposed to provide more stringent evidence.
Keywords: Template, formats, instructions, length, conference publications

Introduction

Imagine a firm is going to place an online advertisement on a webpage and considering two display positions for this advertisement: one is on the top of a computer screen and the other at the bottom. Would this positioning difference in a vertical display lead users to process the online advertisements differently, and how would this top versus bottom positioning affect users' ultimate response toward the advertisement? These questions of advertisement positioning are significant and directly related to marketers' return of investment and advertised companies' profit, and thus the positioning design of digital advertisements has attracted intense attention from both practitioners and researchers, especially given the increasing investment in digital advertising market (eMarketer 2015).

Studies in marketing and consumer behavior have consistently highlighted the effects of consumers' position-based beliefs, which underscore the critical role of the vertical position of an item displayed in the retailing environment. For instance, different shelf-display cues can influence consumers' attention (Valenzuela and Raghubir 2009), quality-price judgment (Valenzuela and Raghubir 2015), and even final

product choice (Wongkitrungrueng et al. 2018). Not surprisingly, in the areas of Information Systems (IS) and Human-computer Interaction (HCI), researchers have also started to examine how the vertical display positioning of an online content (e.g., advertisements) affects users' responses (e.g., Shaikh and Lenz 2006; Wojdynski and Evans 2014; Wojdynski and Evans 2016). However, most of these studies have only identified the surface-level association between vertical display positioning and perception without examining in depth on how people cognitively process online information presented at different positions. Our thorough literature review also has found inconclusive evidence of the relative priority between the top versus bottom positioning. One plausible reason is that most of these studies are atheoretical. For example, some studies suggest placing an advertisement on the top of a webpage is preferable as people tend to first branch rightward from the top left of the webpage and then down the page (Shrestha and Lenz 2007; Wojdynski and Evans 2014). While this might suggest the supremacy of a top positioning, there is also evidence that users tend to ignore the headlines and are less likely to view the advertisement placed on the top (Bucher and Schumacher 2006; Shaikh and Lenz 2006) and thus, advertisements positioned at the bottom lead to more recognition than the ones displayed on the top (Wojdynski and Evans 2016). These research gaps motivate a better understanding of the effects of advertisement display positioning.

This paper aims to address this need by examining the cognitive differences aroused by the top versus bottom positioning on a webpage and the subsequent consequences on advertising persuasion. We propose that users would process the top (bottom) positioning objects in a relatively abstract (concrete) way, drawing on the recent observation of the association between moving ones' eyes up or down and abstract versus concrete processing (Van Kerckhove et al. 2015). This association is based on two premises: (1) people are accustomed to look up to process distant stimuli but look down to process nearby ones; (2) according to construal level theory (CLT), people tend to represent distant stimuli with higher-level or abstract concepts but represent nearby stimuli with lower-level or concrete concepts. We postulate that the association between vertical eye movement and construal level could be generalized to the context of online browsing. Specifically, when looking at an object that is displayed on the top of a webpage, users will generally engage in upward eye movements and process the object in a relatively abstract way, whereas when the object appears at the bottom, users tend to engage in downward eye movements and process it in a relatively concrete way. Further, we propose that this effect would affect users' responses toward online advertisements primed with different levels of construal. CLT suggests that a match between a message's construal level and the thinking style of the recipient (i.e., people with abstract thinking engage more with high-level construals while people with concrete thinking engage more with low-level construals) leads to systematic changes in advertisement effectiveness (Lee et al. 2010). Therefore, we also propose that advertising with low-level construals will be more persuasive when it appears at the bottom (vs. on the top) of the webpage, whereas advertising with high-level construals will be more persuasive when it appears on the top (vs. at the bottom) of the webpage. In this research-in-progress paper, we report an initial experiment that we have conducted to verify the relationship between display positioning and abstract versus concrete processing. Two following experiments using eye-tracking technology are then proposed to further examine the hypotheses related to the effect of construal levels elicited by advertisement display positioning on the persuasiveness of online advertisements.

Theoretical Background and Hypotheses

Two streams of literature are pertinent to our research: construal level theory and embodied cognition theory. We discuss them first and then propose our conceptual framework with hypotheses.

Construal Level Theory

People comprehend the natural and social world by constructing objects and events into different mental representations. Construal level theory (CLT) (CLT; Trope and Liberman 2003) proposes two levels of such mental construals. A high-level/abstract construal is a schematic and decontextualized representation that extracts the gist from the available information and consists of a few superordinate core features of an object or event (e.g., people see the entire forest instead of individual trees). In contrast, a low-level/concrete construal is relatively unstructured and contextualized (leading people to appreciate the individual trees; Trope et al. 2007). Any object (e.g., a cake) can be construed in a relatively concrete way (a combination of flour, sugar, salt, and fat) or a relatively abstract way (a tasty way to satisfy hunger). Research guided by CLT demonstrates that people tend to use concrete construals to represent psychologically proximal events

or objects and abstract construals to represent psychologically distal events or objects. Notably, people's construal level mindsets have reciprocally positive relationships with various psychological distances including spatial distances (Trope and Liberman 2010). Previous studies have shown that both geographic distance (e.g., local versus abroad) as well as visual depiction (e.g., small vs. big picture/word size) that alter ones' perceived distance to a target would influence people's construal level (e.g., Amit et al. 2009; Henderson et al. 2011).

Construal levels have significant downstream cognitive and behavioral effects. One such effect is related to people's pursuit of feasibility versus desirability in decision making (Trope and Liberman 2010; Trope et al. 2007). Low-level construals activate feasibility considerations, which focus on the means used to reach the end state (i.e., the "how" aspect of an object), whereas high-level construals trigger desirability considerations that involve the value of the action's end-state (i.e., the "why" aspect of the object). Therefore, people with high-level construals place greater value on desirability considerations over feasibility considerations. However, the effect reverses for people with low-level construals. For example, when deciding whether to attend a lecture, people with a high-level construal tend to focus more on the "why" of the lecture (e.g., whether it can enhance their knowledge) whereas people with a low-level construal tend to look at the means (e.g., whether it is convenient to go to the lecture). Furthermore, previous literature has consistently shown that if the construal level of presented information (e.g., advertisement) fits ones' mindset, the user will be more engaged with the information. This is the fit hypothesis of construal level. For example, people with abstract (vs. concrete) thinking would have more positive attitude to an advertisement that is framed in highlighting the "why" aspects of a product than the one that is framed in highlighting the "how" aspects of the product (Lee et al. 2010).

In this research, we try to demonstrate that ones' eye up or down movements, induced by browsing top or down positioning objects on a webpage, can influence their construal levels. This proposition is based on the arguments by embodied cognition theory.

Embodied Cognition

Embodied cognition literature suggests that human cognition and behavior are influenced by various embodiments, including bodily actions and states or even the mental simulation of bodily actions (Barsalou 2008). Human's body and mind work together and resonate with each other. What people experience is the acts of modality-specific sensory stimulation, and these acts evoke cognitions that guide one's judgment. For instance, nodding heads up and down (vs. side to side) leads to more agreement with an editorial message (Wells and Petty 1980); holding a pen between teeth (facilitating the muscles used during smile) results in a funnier evaluation of funny cartoon (Strack et al. 1988). In addition, various bodily sensations can facilitate the adoption of specific processing style (e.g., abstract vs. concrete), as they provide implicit cues about the processing requirements in a situation (Slepian et al. 2015).

In line with this embodied cognition perspective, several studies have shown that bodily movements of looking up facilitate a more abstract processing style, whereas bodily movements that enable people to look down lead to a more concrete processing style (Van Kerckhove et al. 2015). This prediction builds on two lines of reasoning. First, looking up/down actions provide immediate information about the distance of the focal stimuli. Looking down is usually associated with a narrower visual scope and thus reveals nearby stimuli, whereas looking up tend to yield more distant stimuli as it increases ones' perceptual scope (Slepian et al. 2015). Second, stimuli at different distances induce a different processing style. According to CLT, individuals tend to use a more concrete (vs. abstract) manner to process proximal (vs. distal) stimuli (Liberman et al. 2002). However, prior research on embodied cognition has primarily examined how bodily actions or states of looking up/down influence construal levels and result in other downstream effects. Herein, we examine whether visual display positioning of stimuli that evokes up/down eye movements can affect people's mental construals of the stimuli. Moreover, departing from previous studies that investigate the effects on product choice, we also investigate whether the fit between the processing style evoked by top vs. bottom display positioning and the construals of the stimuli (i.e., online advertisements) can influence users' responses to the stimuli. Thereby, the study not only contributes to the extant literature on embodied cognition and construal level theories but also offers more insightful implications to practitioners about how to position different advertisements on a digital platform. More importantly, we are also planning to examine the underlying mechanisms of attentional engagement by using eye-tracking technology to capture participants' real-time eye movement data.

Hypotheses Development

On-screen Positioning and Perceived Distance

Generally, users' eye fixation is at the center of the screen, where the core contents are displayed on most webpages (Deng and Poole 2010). Therefore, when attending to the objects at the top (i.e., above eye level) or bottom part (i.e., below eye level) of webpages, users are likely to engage in certain bodily movements such as upward or downward eye/head movements. Herein, we propose that the objects on the top of a webpage would be perceived more distal than the ones at the bottom because of the different bodily movements that users use to attend them (Van Kerckhove et al. 2015). This proposition is based on the ecological insight that distant objects are more prevalent in the upper part of the visual field while proximal objects are more dominant in the lower part of the visual field (Previc 1990). Moreover, the relationship between the visual field and the proximity of objects enables people to use different strategies to interact with the objects. For example, when interacting with objects below the eye level, individuals are accustomed to using visually guided actions of the hands such as pointing and grasping, and these actions are more suitable for the objects within reaching distance (i.e., nearby objects, Danckert and Goodale 2001). However, for objects in the upper visual field, individuals tend to use complex visual and space scanning because of the increased perceptual scope, and these approaches are usually used to attend distal objects (Previc 1990). Van Kerckhove et al. (2015) provided direct evidence that the positions (i.e., the upper versus lower of the visual field) can affect one's distance estimation. In one of their studies, participants were asked to sit on a chair with a head restraint placed in a 30° angle in either an upright or downright position so that they can focus on either the upper or lower visual field. The results showed that participants tended to judge the wall in front of them more proximal when the head restraint was downright than upright. This logic should also work during online surfing in that people may perceive the objects at the bottom of the computer screen (i.e., below their eye level) more proximal and perceive the objects on the top of the screen more distal (i.e., above their eye level). Therefore, we hypothesize:

H1: Individuals tend to perceive the stimuli on the top of the computer screen more distant than the ones at the bottom of the computer screen.

On-screen Positioning and Processing Style

People tend to use different processing styles to construe stimuli at different distances. Research on CLT has consistently demonstrated that human processing tends to be more abstract with the increased psychological distance, and alternatively when the psychological distance is close, people are inclined to adopt a more concrete style (Trope and Liberman 2010). As an important factor of evoking people's psychological distance, spatial distance has been specifically found to influence whether an abstract or concrete construal level is adopted. For example, Fujita et al. (2006) find that people tend to use more abstract language to recall a spatially distant event (e.g., a video that is filmed at a spatially distant location) and use more concrete language to recall a spatially proximal event. More relevantly, studies within the CLT field have documented that people's bodily actions of looking up (down) to attend the objects in the upper (lower) part of the visual field lead to a more abstract (concrete) processing style because up/down movements alter their distance estimations (Van Kerckhove et al. 2015). Similarly, these effects replicate when people encounter a panoramic picture with a high versus low horizon, as it can induce a mental simulation of looking up at the sky for distant stimuli versus looking down on the floor for nearby stimuli (Roose et al. 2019). Extending these studies, based on our conjecture that varying display positioning on a computer screen can alter distance estimation, we expect that people tend to adopt different processing styles to construe the top versus bottom positioning stimuli: the objects on the top of the computer screen should be processed in a more abstract way whereas bottom ones should be processed more concretely.

H2: Individuals tend to process the stimuli on the top (bottom) of a computer screen in a more abstract (concrete) manner.

H3: The spatial distance estimation that accompanies with stimuli of display positioning mediates the impact of display positioning on construal level.

The Fit Effect of Advertisement Display Positioning and Construal Level

Another important objective of this research is to explore how the effect of display positioning on construal level would influence the persuasiveness of online advertising. It has been shown that people attend preferentially to information that is compatible with their processing styles and that the increased attention and engagement under conditions of compatibility lead to stronger persuasion effects (Lee et al. 2010). Specifically, people with abstract (vs. concrete) thinking could be more receptive to the appeals that match (vs. mismatch) their thinking styles. According to CLT, high-level construals focus on the desirability of an activity, that is, why certain things are done. In contrast, low construals are concerned with the feasibility of the activity which pertains to how certain things are done. Therefore, people with a more abstract (vs. concrete) thinking manner should have more favorable attitudes to an advertisement that emphasizes desirability (vs. feasibility) when the appeal uses stronger arguments and less favorable attitudes when the appeal uses weak argument, suggesting that the persuasion effects are driven by different engagement with matched (vs. mismatched) appeals (Lee et al. 2010). These persuasion effects are consistent with goal pursuit literature suggesting that a fit with one's goals induce an increased engagement, which intensifies reactions that positive reactions become more positive and negative reactions become more negative.

To the extent that display positioning can alter one's construal level, we expect a similar mechanism at work when the construal level of an advertisement matches its display positioning (bottom vs. up). That is, an advertisement would be more engaging when its construals match people's thinking styles induced by the position where the advertisement is displayed on the screen. More specifically, the advertisement that highlights the desirability or why aspects of a product would be more persuasive when it appears on the top as opposed to the bottom of a webpage, whereas the advertisement that highlights the feasibility or how aspects would be more persuasive when it appears at the bottom as opposed to the top. Thus, we postulate the effect of intensifying positive reactions by enhanced engagement. More formally, we have,

H4: *Advertising with high-level construals will be more persuasive when it appears at the top (vs. bottom) of a webpage, whereas the effect reverses for advertising with low-level construals.*

H5: *Engagement mediates the fit effect of advertisement display positioning and the construal levels in the advertisement.*

Overview of the Experiments

We present three studies to examine the proposed hypotheses. Study 1 has been conducted to uncover the association between stimuli display positioning and construal level and the mediating effect of distance estimation. In the proposed study 2, we will examine the match effect of display positioning and construal level of an advertisement on persuasiveness and the mediating role of engagement. In study 2, engagement data will be collected after participants view the stimulus and we cannot be certain that the fit between display positioning and construal level results in greater engagement in real time. To address this drawback of relying on self-report of engagement, study 3 will adopt eye-tracking technologies to record participants' real-time eye fixation and duration as an objective measure of engagement and examine whether the match between display positioning and construal level would affect engagement.

Study 1: Effects of Stimuli Position on Distance Estimation and Construal Level

This study explores the validity of the idea that a stimulus' online display position (top vs. bottom) affects one's estimation of the distance to the stimulus (H1), and the distance estimation leads to a particular construal level (abstract vs. concrete) (H2). Specifically, as people are more accustomed to processing distal (nearby) stimuli when looking up (down), they may estimate the distance of stimuli displayed at the bottom of the computer screen (inducing looking-down action) to be shorter than the stimuli displayed on the top of the computer screen (inducing looking-up action). According to CLT that far (close) distance is associated with abstract (concrete) processing, stimuli on the top of a computer screen may be processed at a high level or abstractly while stimuli at the bottom may be processed at a low level or concretely.

Method

This study adopts one factor (position: top vs. bottom) between-subject experimental design. Specifically, in the top condition, all the experimental task stimuli only appear on the top of the computer screen whereas, in the bottom condition, the task stimuli are displayed only at the bottom of the screen. Eighty-two online-panel participants recruited through Amazon.com's Mechanical Turk (30 female, 52 male; mean age=30.96 years) took part in this experimental survey in exchange for monetary compensation. Participants first read the cover story describing that, when people are using computers, content may be displayed at different places on webpages; they need to look down/up to view the content; the purpose of the survey is to investigate how different positioning displays during online surfing affect perceptions.

Then participants were asked to complete three tasks. The first task was to complete the Behavioral Identification Form (BIF) as a measure of construal level (Cronbach α=0.83). There are twenty-five items in the BIF. Each item indicates an act, followed by two alternative descriptions, low and high in construal level; subjects need to choose the alternative that best describes the action for them (Vallacher and Wegner 1987). BIF has been used as an adequate measure of construal level in a vast number of studies. In our experiment, participants were informed that any behaviors could be identified in many ways, for instance, "typing an academic paper" might be described as "expressing thoughts" or "pushing keys" and that they needed to indicate their preference for one of two descriptions. They also read that people's preference is situation-specific and that we were interested in their personal, momentary preferences for describing various behaviors. In the top (bottom) condition, the twenty-five BIF items were randomly displayed at the top (bottom) of the survey webpage one at a time. To exclude the confounding effect of fatigue and ensure that participants did engage in looking up/down movements, we inserted a fixation page every five BIF items, asking them to focus on the central of the webpage and rest for thirty seconds.

Next, participants proceeded to a target decision problem that was adapted from Liu (2008) and involved a desirability-feasibility trade-off task. Previous studies have consistently validated that abstract (concrete) processing makes people place more importance on desirability (feasibility) over feasibility (desirability) (Trope and Liberman 2010). Therefore, a printer choice task involving desirability-feasibility trade-off decision was adopted as an indirect measurement of construal level. Specifically, participants were informed that they were asked to purchase a printer and they could choose between two options differing in print quality (desirability) and reliability (feasibility). Depending on the assigned condition, the two printer options were displayed at the top or bottom of the survey webpage. While printer A was described as higher in print quality (scoring 9 of 10) but lower in reliability (scoring 8 of 10); printer B was lower in print quality (scoring 8 of 10) but higher in reliability (scoring 9 of 10). Hence, printer A could be identified as an option that is more compatible with abstract processing, whereas printer B is more congruent with concrete processing. Participants were asked to indicate their preferred option.

Finally, participants were asked to report their perceived distance (in centimeter) from their eyes to the top/bottom of the computer screen. Then, they reported on how (un)comfortable they experienced when conducting the survey. This variable was collected to make sure that uncomfortableness caused by stimuli position (top/bottom) would not bias our results. Three items (comfortable, exhausting, or difficult to focus) in a range from 1 to 9 were used (Cronbach α=0.77). These questions were followed by three control variables, including the device type (desktop, laptop or mobile device) that they used to do the survey, their relationship with the device (the device is on their desk, they are holding the device by themselves, or others) and the screen size of their devices (smaller than 11", 11", 13", 15" and 17").

Results and Discussion

Overall, the mean estimated distance between eyes and computer screen (M=48.24) was in the normal range of the recommended distance (40 to 76 cm, Optometrists 2019). There was a significant difference in distance estimations between participants who were asked to estimate the distance from their eyes to the bottom of their computer screens (M=41.64) and those who estimated their distance to the top of their computer screens (M=54.85; $F_{(1,80)}$=5.86, p=0.018). Therefore, Hypothesis 1 was supported. Next, we created a construal level index by summing participants' answers for the twenty-five BIF items (high-level construal option was coded as 1 while low-level construal option was coded as 0) and thus higher values indicated a higher construal level. An ANOVA test revealed that the mean level of construal in the top condition (M=17.56) was higher than the mean level of construal in the bottom condition (M=14.78; F

(1,80)=6.25, p=0.014), thus supporting Hypothesis 2. More importantly, in line with Hypothesis 3, this effect of display positioning on levels of construal was mediated by spatial distance estimation as the 95% confidence interval, as identified by a bootstrapping mediation test encompassing 5,000 bootstrap samples (Preacher and Hayes 2004), excluded 0 (Effect=0.46; 95% CI=[0.03, 1.34]).

Finally, we conducted a logistic regression with stimuli position as the independent variable and choice of the printer as the dependent variable. The results revealed that participants were more likely to choose printer A with high print quality but low reliability when the information of the two printers were displayed on the top of the webpage (76%, 31 out of 41) versus the bottom of the webpage (54%, 22 out of 41; Wald χ^2=4.21, p<0.05). This finding replicates the effect of display positioning on the level of construal and supports Hypothesis 2. The above results remain consistent when perceived comfortableness, device type, device position, and screen size were included as controls in the analysis.

Study 1 identifies that the position that stimuli appear on the computer screen affects how people construe the stimuli. Specifically, when the stimuli appear on the top (bottom) of the computer screen, people tend to construe them in a higher (lower) construal level. Moreover, it also demonstrates that the influence of display positioning on construal level is mediated by distance estimation. People tend to estimate the distance from their eyes to the top of the computer screen longer than to the bottom of the screen. These varying distance estimations, in turn, invoke different construal levels. While study 1 only focused on the effect of display positioning on construal levels, two future studies with different methods are designed to examine the downstream effects on consumers' responses to advertisements displayed on the top versus bottom of the computer screen.

Future studies

Study 2. This study is designed to examine the consequences of the construal level induced by the positions that stimuli appear (Hypotheses 3 & 4). The fit hypothesis from CLT notes that the fit between people's mindset and construals of a stimulus can influence their responses toward the stimulus. In study 2, we will adopt a 2 (advertisement framing: high- vs. low-level construal) × 2 (position: top vs. bottom of the webpage) between-subject design. An elliptical trainer will be adopted as the experiment stimulus. We have designed two versions of advertisements for a fictitious elliptical trainer named Ultimate. The high-level construal advertisement has a headline, "The Ultimate Aerobic Machine for a great workout! – Why Exercise?", and a high-construal level description, "Burn more calories, gain muscle tone, and improve overall health with this ultra-efficient workout machine." In contrast, the low-level construal advertisement has a headline, "The Ultimate Aerobic Machine with the Right Features! - How to Exercise?", and a low-construal level description, "No-impact stepper designed to cushion each step. Oversized textured non-slip footplates will accommodate all sizes." Around 120 university students will be recruited to take part in our experiment and randomly assigned to the 4 conditions. They will be informed to use the same desktop model to view an online article related to a large public university's plastic straw ban and indicate their opinions. The computer will be set on a desk and the distance between participants and the desk will be kept the same (70 cm). As such, we can control the confounding effects device differences and individual body position. When viewing the webpage, either a high or low construal level floating advertisement of the aerobic machine will appear in the center of the webpage and then automatically move to the top or bottom of the screen as shown in Figure 1. The advertisement will float on the webpage so that it will not disappear when participants roll up/down the webpage. This kind of floating advertisement is widely used by various online platforms. The design of displaying on the center of the screen and moving to the top/bottom can ensure that participants will notice the advertisement and adopt looking up/down movements to follow the advertisement. After viewing the webpage, participants will be asked to report their opinions toward the plastic straw ban, attitudes toward the IT promotion advertisement, engagement with the advertisement. We expect that participants will respond more favorably to high level/"why" version advertisement when it is at the top (vs. bottom) of the webpage, whereas they will respond more favorably to the low level/"how" version advertisement when it is at the bottom (vs. top) of the webpage, and more importantly, engagement mediates this interaction effect.

Study 3. We also plan to conduct a study using eye-tracking technology (study 3). The main goal of study 3 is to provide more stringent evidence for the mediating effect of attentional engagement, as study 2 will only measure engagement using self-report questionnaire after participants view the webpages. Prior literature has defined "engagement" as attention to an object, as evident by longer gaze durations and

increased refixations on the object (Teixeira et al. 2012). Thus, we will use eye-tracking technology to record real-time duration and number of fixations as objective measures for engagement. Similar to study 2, study 3 will also adopt a 2 (advertisement framing: high vs. low construal levels) × 2 (promotional advertisement position: the top vs. the bottom of the computer screen) between-subjects design. To increase the generalizability of our findings, we will use a digital camera advertisement either highlighting its desirability or feasibility as the experimental stimulus for the proposed study 3.
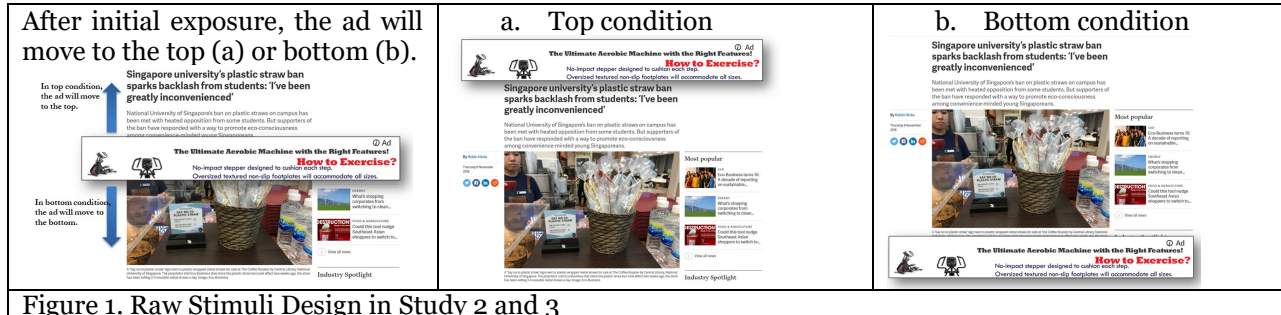

Figure 1. Raw Stimuli Design in Study 2 and 3

Conclusion

The current research-in-progress paper examines the effects of stimuli display positioning on construal level and its implications for enhancing online advertisement persuasion. Integrating the literature on embodied cognition and construal level theories, we propose that individuals tend to estimate the objects on the top of a computer screen more distal than the ones at the bottom and the differential distance estimations lead them to construe the top (bottom) positioning objects in a more abstract (concrete) manner. Based on the fit hypothesis of construal level (Lee et al. 2010), we also propose that an advertisement framed with high construals would be more persuasive when it is displayed at the top (vs. bottom) of a webpage; whereas an advertisement framed with low construals would be more persuasive when it is displayed at the bottom (vs. top) of a webpage. We have conducted an experiment that offers support for our prediction of the relationship between display positioning and construal level and the mediating effect of distance estimation. Two future studies are also designed to provide more in-depth insights into the fit effects of display positioning and advertising framing on persuasiveness. The current research may contribute to the literature in several aspects if the proposed hypotheses are supported by future studies. First, it enhances the current literature on embodied cognition by suggesting that people's eye movements when interacting with computers can influence their cognitive processing style (Barsalou 2008). In addition, this research enriches the literature on construal level theory by providing a novel view that the display position of online stimuli can serve as a situational cue for the adoption of abstract versus concrete processing style. Lastly, our research contributes to the literature on digital product interface design to more effectively engage users. Our study implies that the effectiveness of online advertisements may jointly depend on its content and display positioning. Besides, our research may have important practical implications for digital marketers in terms of designing their advertisements based on positioning. Specifically, advertisements framed with high (low) level construals would work better when placed on the top (bottom) of a webpage.

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