Drawn to the Light: Loneliness Predicts a Preference For Products in Brightness But Not Darkness

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Research across 5 studies showed that lonely people prefer products presented with bright versus dark ambient lighting, and that negative feelings towards the products, which occur through an automatic information processing route, mediate this effect. The effect of loneliness on product preference only occurs when the product has self-reference salience.

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EXTENDED ABSTRACT

Today’s consumers are lonelier than ever. Between 1985 and 2004, the number of people who said there was no one with whom they discussed important matters tripled, to 24.6 percent (McPherson, Smith-Lovin, & Brashears, 2006). As the size of this segment of consumers grows, more research is called for to understand the impact of loneliness on consumption. Recent research has begun to address this gap. For example, it has demonstrated that loneliness can contribute to materialism (Pieters, 2013), willingness to try an illegal drug (Mead, Baumeister, Stillman, Rawn, & Vohs, 2011), choice of an unappealing item favored by a peer (Mead et al., 2011), and preference between minority- or majority-endorsed products (Wang, Zhu, & Shiv, 2012). There is also evidence that loneliness and related negative states such as hopelessness can literally translate common metaphors for these states into sensory perceptions and, accordingly, elicit preferences for warmer food (Zhong & Leonardelli, 2008) and brighter light (Dong, Huang, & Zhong, 2015) perhaps to compensate for the negative states. In this paper we extend research on the product preferences of lonely people by examining the extent to which darkness, a metaphor often linked to loneliness, might also influence lonely people’s preferences for products presented with dark or bright ambient lighting. In testing this proposition, we draw upon three theoretical frameworks, semantic network models of emotion (Bower, 1981; Ingram, 1984), conceptual metaphor theory (Lakoff & Johnson, 1980), and self-product congruency theory (Sirgy, 1982).

Everyday metaphors and literary references suggest a close association between loneliness and the concept of darkness. Phrases such as “left in the dark” and “in the shadows” are often used to communicate social exclusion and isolation, states which are conceptually linked to loneliness. In Robert Frost’s poem “Acquainted with the Night”, the night (a time of darkness) is used as a metaphor for loneliness and depression. From a more concrete perspective, being in darkness literally means that people cannot see their surroundings nor if anyone else is nearby, which can be analogous to feeling alone and socially isolated. Semantic network models of emotion (Bower, 1981; Ingram, 1984) suggest that we store information about emotions in organized nodes that encapsulate the beliefs and antecedents associated with a particular emotion, and that emotions and their semantic nodes are dynamically and bidirectionally linked. Thus, experiencing an emotion activates the associated node and its information, and activating the nodal information can elicit the associated emotion (Niedenthal, Winkielman, Mondillon, & Vermeulen, 2009). Importantly, the processing of this information occurs via an automatic and non-conscious rather than a conscious route (Bower, 1981). From this perspective, the emotional experience of loneliness may be represented psychologically by darkness and the absence of light, and darkness itself may in turn activate feelings of loneliness.

Conceptual metaphor theory (Lakoff & Johnson, 1980) provides further explanation as to how darkness and feelings of loneliness may become metaphorically linked. This theory suggests that our understanding of higher level, abstract concepts is informed by our lower level more concrete experiences in the world, such that the easily grasped lower concepts (e.g., darkness) are used to gain a better understanding of higher level concepts (e.g., loneliness) for which we may have less experiential knowledge. Research applying this theory found that induced hopelessness, an emotional state that is strongly associated with loneliness (Chang, Sanna, Hirsch, & Jeglic, 2010), resulted in an increased desire for a brighter room (Dong et al., 2015).

The literal translation of the metaphors associated with negative states into metaphorically-linked perceptual changes illustrated in this and other research implies that feelings of loneliness evoke conceptual metaphors that may influence consumers’ preferences for products that metaphorically reflect loneliness. Following this logic, products that have a dark ambient lighting may be viewed by lonely people as being consistent with their own emotional state, which could have the effect of heightening awareness of feeling lonely, a state which is unpleasant to most people (Hawkley & Cacioppo, 2010). This proposition is consistent with self-product congruency theory (Sirgy, 1985), which states that products serve as cues that activate self-schemas about actual self-image, and ideal self-image. Products that are congruent with actual self-image reflect self-congruity, and products that are congruent with ideal self-image reflect ideal-congruity.

According to this theory either form of self-product congruity can motivate preferences for a product, but the nature of the product preference depends also on how both the self and the product are evaluated. Sirgy (1985) proposes that the self-esteem motive (a need to act in ways that enhance self-esteem) and the self-consistency motive (a need to act in ways consistent with self-image) are key for understanding how self-product congruity influences product preferences when self-image is negative or positive. For someone who is lonely, actual self-image would be negative (Jones, Freeman, & Goswick, 1981), and a product that has dark ambient lighting, and thus evokes the conceptual metaphor of loneliness, would also be viewed as negative. This negative self-congruity would result in a product preference conflict because motivation to enhance self-esteem would promote product avoidance, whereas motivation to maintain self-consistency would promote product approach. However, we argue that because loneliness is associated with low self-esteem (McWhirter, 1997; Olmstead, Guy, O’Mally, & Bentler, 1991), the self-enhancement motive will outweigh the self-consistency motive and a product associated with darkness will be avoided because it evokes negative self-referent feelings. Sigly (1985) has also demonstrated that people who are low in self-esteem tend to be more influenced by ideal-congruity in their product preferences, as products that activate ideal self-schemas offer the promise of seeing oneself in a positive light and are therefore self-enhancing. If we consider that lightness is the absence of darkness, then products presented with bright ambient light may be similarly viewed as metaphorically reflecting the absence of loneliness, and therefore be viewed as desirable by lonely people. Taken together, this theory and research provides support for the proposition that when lonely people are presented with a product that activates ideal self-concept, they will show a preference for the product with bright ambient lighting because of a congruity between their ideal self-image and the product (Sirgy, 1985).

Across five studies employing several different product types we tested whether chronic (Study 1) and situational (Study 2) loneliness would be linked to a preference for products that were presented with bright versus dark ambient lighting. In Studies 1 & 2 we also tested the effect of loneliness on preference for products with dark and light colours to rule out the possibility that the effects were due to factors other than those related to loneliness.
to the darkness or lightness of the product itself rather than the background lighting. Study 3 replicated the results from the first two experiments and further tested whether negative feelings towards products with dark ambient lighting explained non-preference for these products. Consistent with the automatic processing of emotional information suggested by semantic network models of emotion (Bower, 1981; Niedenthal et al., 2009), in Study 4 we asked participants to consciously think and write about the product presented with dark ambient lighting. We expected that so doing would eliminate the effects of loneliness on product preference through negative emotions proposed and tested in Study 3. Finally, in Study 5 we tested the proposition that the effects of loneliness on product preference would only be present for products that were personally relevant for the individual, and that she/he would personally use rather than purchase for someone else.

**STUDY 1**

The goal of Study 1 was to test the effects of chronic loneliness on preferences for products presented with either dark or bright ambient lighting. We also tested the effect of loneliness on product color preferences to demonstrate that the loneliness is psychologically represented as darkness (e.g., a product in dark ambient lighting) rather than simply to a product having a dark colour.

**Methods**

Undergraduates at a Canadian liberal arts university voluntarily participated in exchange for three dollars. After completing personality filler questions, participants were told to think about the product as if they were shopping for themselves, and then were presented two different IKEA product pairs in a counterbalanced order: one pair with a desk in bright or dark ambient lighting, and one with a shelving unit of dark or light colour. Participants indicated their product preference across three items rated on a 7-point scale (1=not at all; 7=very much): 1) How do you like the product? 2) How interested are you in the product? 3) How likely are you to get this product in the future? Participants completed the 20-item revised UCLA loneliness scale (Russell, 1996).

**Results and Discussion**

Regression analysis predicting product preference for the desk from chronic loneliness found significant main and interaction effects as a function of brightness versus dark ambient lighting. Spotlight analysis at 1 standard deviation above and below the mean of loneliness scores revealed that lonely participants reported higher product preference for the desk with a bright background. Regression analysis predicting product preference for the shelf from chronic loneliness found no significant main or interaction effects as a function of product color. Together these findings indicate that lonely participants preferred a product with bright versus dark ambient lighting, but the colour of the product had no effect on their preferences.

**STUDY 2**

The goal of Study 2 was to replicate the findings from Study 1 using a measure of situational loneliness.

**Methods**

Participants recruited via Mechanical Turk participated in an online experiment in exchange for 75 cents. Participants were randomized to either a loneliness or non-loneliness condition, and first completed personality filler questions as in Study 1. Those in the loneliness condition wrote an essay about a time in which they felt socially isolated, whereas those in the non-loneliness condition wrote an essay about a time that they felt a sense of social belonging. A self-perception scale, which included two items assessing state loneliness, served as a manipulation check. Participants were presented the product pairs (desk and shelf; Figures 1a and 1b) and rated their product preferences as in Study 1.

**Results and Discussion**

Participants in the loneliness condition reported significantly higher levels of loneliness than those in the non-loneliness condition. Results of the 2X2 ANOVA revealed a significant interaction between loneliness and ambient lighting, with pairwise comparisons indicating that lonely participants reported significantly higher preference for the desk with bright ambient lighting. The ANOVA on product colour revealed nonsignificant main and interaction effects. Overall, the results are consistent with those in Study 1 in that lonely participants prefer a product with bright ambient lighting.

**STUDY 3**

The goals of Study 3 were to replicate the results from the first two experiments and further test whether negative feelings towards products with dark ambient lighting explained lonely participants non-preference for these products, as Middlestandt (1990) found that ambient background colour conveys emotion.

**Methods**

Participants recruited via Mechanical Turk participated in an online experiment in exchange for $1.30. Participants were randomized to either a loneliness or non-loneliness condition, and completed the same filler questions, writing task, and manipulation check as in Study 2. They were then presented the images of the desk as in Study 1 and asked to rate their current level of negative emotion associated with the desk (1=not at all; 7=very much). Participants then rated their product preferences as in Study 1.

**Results and Discussion**

Participants in the lonely condition reported significantly higher levels of loneliness than those in the non-lonely condition. Consistent with Study 2, the 2X2 ANOVA and pairwise comparisons revealed a significant interaction between loneliness and ambient lighting, with lonely participants reporting significantly higher preference for the desk with bright ambient lighting. A bootstrap analysis of the indirect effects of loneliness on product preference via negative affect for the lonely participants was significant indicating that higher levels of negative affect for the desk presented with dark ambient lighting explained their lower preference ratings.

**STUDY 4**

The goal of Study 4 was to test the proposition that the link from loneliness to negative affect to product preference demonstrated in Study 2 reflected an automatic, unconscious process rather than a conscious one.

**Method**

Participants recruited via Mechanical Turk participated in an online experiment in exchange for $1.50. Participants were randomized to either a loneliness or non-loneliness condition and completed filler questions, a writing task, and manipulation check questions as in Study 2. They were then presented the image of the desk in dark or bright ambient lighting. To engage participants in a conscious information processing route, participants were asked to write down any thought that came to mind when seeing the product image. They then completed a measure of negative affect associated with the product and rated their preference for the product as in Study 3.
Results and Discussion

Participants in the loneliness condition reported significantly higher levels of loneliness than those in the non-lonely condition. A 2X2 ANOVA revealed no significant or interaction effects of loneliness and ambient lighting on product preference after participants deliberated over the product. The ANOVA on negative affect as a function of loneliness and ambient lighting was also non-significant. Together these results indicated that negative mood was not associated with the product on a dark ambient background after engaging in conscious information processing of the product image.

**STUDY 5**

The goals of Study 5 were to replicate the findings regarding loneliness and product preference from Studies 1 to 3, and to test the moderating effect of product authorship. The study employed loneliness (continuous) by authorship (for self vs. for other) by ambient lighting (dark vs. bright) between-subjects design, where loneliness was measured and authorship and ambient lighting were manipulated.

Method

Undergraduates at a Canadian liberal arts university voluntarily participated in exchange for three dollars. After completing filler questions about personality and lifestyle, participants were presented an image of a pair of gender neutral T-shirts, one with a dark ambient lighting and one with bright ambient lighting. They were told to imagine that they were shopping for the product either for themselves or for others, and then rated their emotional perceptions (socially isolated, pure, extroverted, warm, sophisticated) of the featured product one a 7-point scale (1=not at all; 7=very much). Participants then completed the 20-item revised UCLA loneliness scale (Russell, 1996).

Results and Discussion

The regression analysis with product preference toward the t-shirt as the dependent variable and loneliness (mean-centered), authorship (0=for self; 1=for others), ambient lighting (0=bright; 1=dark), and all their interactions as predictors revealed a marginally significant main effect of authorship, a significant two-way interaction between authorship and loneliness, and a significant three-way interaction. A simple slope analyses of the effects of loneliness on product preference toward the t-shirt as a function of product ambient lighting indicated that when shopping for self, lonely (vs. non-lonely) participants reported higher product preference toward the t-shirt when it was in bright versus dark ambient lighting. However, shopping for others, the product preferences of lonely participants was the same as non-lonely participants for both dark and bright ambient lighting.

Spotlight analyses at 1 standard deviation above and below the mean of loneliness scores revealed that when shopping for self, lonely participants reported higher product preference toward the t-shirt when the product ambient lighting was bright than when it was dark, whereas non-lonely participants’ product preference was not impacted by product ambient lighting. When shopping for others, both lonely participants and non-lonely participants showed equal levels of product preference when the product ambient lighting was bright and dark. Overall, the results revealed that the effects of loneliness on product preference were only present for products that participants would personally use rather than purchase for someone else.

**GENERAL DISCUSSION**

Our findings extend and advance research on the product preferences of lonely people and the metaphorical mapping of loneliness by demonstrating for the first time that loneliness, whether chronic or situational, is associated with a preference for products presented with bright rather than dark ambient lighting. Importantly, our findings suggest that negative feelings towards a product in dark ambient lighting explains why lonely people do not prefer products presented in dark ambient lighting. We also provide supportive evidence that the activation of the metaphoric link between loneliness and product preference through negative mood reflects an unconscious information processing route rather than a conscious one. Our findings also suggest that the effects of loneliness on product preference occurs only when the product has self-referent salience, supporting the notion that lonely people’s preferences for products with bright but not dark ambient lighting reflect congruity between the ideal self and the product, and helps them avoid a state of motivational conflict (Siryg, 1985). This is consistent with the notion that by avoiding products associated with a threatened aspect of identity, lonely people are able to view the self more positively (White, Argo, & Sengupta, 2012).

The current research should be considered in the context of several limitations and strengths. First, although we presented two different products in ambient lighting, it is unknown if the effects found will generalize to other product types and classes; they could be particular to desks/furniture. Future research is needed to address this issue. Second, the effects of product authorship on preferences were only tested for one product, a clothing item, as it was expected that preferences for clothing may more readily activate ideal-product congruity. Further research is needed to understand if this effect generalizes to other products. Despite these limitations, replicating the results across several studies with both chronic and situational loneliness and with large community and student samples are clear strengths of the research. Ruling out the competing hypotheses of product colour in Studies 1 and 2 also provides additional support for the hypotheses that the effects were due to the ambient lighting. Testing and ruling out the alternative hypothesis that the effects found were due to depression rather than loneliness is another clear strength of this research.

Our research provides novel insights into the meaning of background color in marketing that has important implications for marketing practice. Product ambient colors can be manipulated by 1) displaying a product in a bright (versus a dim) place in a retail setting, and 2) by featuring a product in an advertisement with bright or dim background color. Our research suggests that advertisement or retailing display featuring a product in a bright ambient lighting can be more effective if marketers consider the target segments’ loneliness orientations. Marketing practitioners normally consider that white background color signifies cleanliness and purity, and black background color is positively associated with authority, prestige and exclusivity (Gorn, Chattopadhyay, Yi, & Dahl, 1997). Thus, in general, dark background color is used to denote cool sophistication and a powerful sense of extreme luxury or expense. Our research offers a caveat in using dark background color for advertisement or retailing product display. Because our findings indicate that lonely consumers prefer a product in a bright rather than dark background because the dark background activates negative feelings towards the product, they may not view products presented with dark ambient lighting as desirably as would non-lonely consumers. Accordingly, marketers need to be cautious in presenting products with a dark ambient background color as it may not have the intended effects on consumer preferences if their targeted market segment includes a substantial portion of lonely consumers.