Self-Expression Cues in Product Rating Distributions: When People Prefer Polarizing Products

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Previous research has shown that material goods can help people self-express, either because the products are themselves self-expressive (e.g., a band T-shirt) or because the products are associated with a desired group. This article examines a new signal of self-expressiveness: whether the product is polarizing—that is, whether some people strongly like the product and other people strongly dislike the product. Eight studies examine how polarization and its associated indicator in the online domain (a bimodal distribution of user star ratings) affects consumer preferences. The results indicate that polarizing products are perceived to be more self-expressive and to serve as stronger indicators of one's tastes and personality. As a result, people find products with bimodal rating distributions to be more desirable when they experience temporary or chronic low self-concept clarity. Further, people evaluate products with bimodal distributions more favorably in consumption contexts in which self-expression is important. These effects emerge when the bimodal distribution pertains to a self-expressive attribute (e.g., style) but not when it pertains to a non-self-expressive attribute (e.g., quality). Last, the effect is especially strong when people have the motivation to express an individual- rather than group-level identity. Hence, polarizing products are seen as vehicles for individual self-expression.

Keywords: self-expression, consumer behavior, identity, online commerce

People frequently use online ratings as a basis for making purchase decisions. Retailer websites typically compute and present the average rating consumers give the product on the product's page. More recently, many websites have begun providing the distribution of consumer ratings in addition to the mean rating, but little is known about what meaning, if any, product rating distributions convey to consumers and how such meaning would influence the desirability of the product. In this article, we examine one form of meaning that consumers can extract from product rating distributions, namely inferences about how polarizing products are. Polarizing products are those that some people like a great deal but others dislike a great deal. The focus of our investigation is what effect such polarization has on the perceived desirability of the product in domains in which consumers are motivated to self-express.

With this work, we provide several contributions. First, we show that polarizing products—operationalized as products with bimodal rating distributions—are perceived to be more self-expressive than nonpolarizing products. Second, we show that when the need for self-definition and self-expression is high—whether due to chronic or temporary low self-concept clarity—the self-expressive benefits

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of polarizing products lead them to be preferred, even though they have more negative reviews. Third, we show that this effect also manifests in self-expressive consumption contexts and for self-expressive product attributes (e.g., shoe style). Fourth, we offer evidence that the mechanism behind this effect is that products with bimodal ratings are perceived to be more self-expressive. Fifth, we show that the desirability of polarizing products is greater when one wishes to express an individual-level rather than group-level identity. Our overarching finding is that rating distributions, by indicating the extent of polarization in consumer opinions, lead consumers to draw inferences about the product's ability to serve as a self-expression vehicle and thereby affect product desirability and willingness to pay (WTP) judgments.

EFFECTS OF PRODUCT RATING DISTRIBUTIONS ON DESIRABILITY

There has been limited research on how online reviews affect product desirability perceptions. Some of the research on online reviews examines the influence of written consumer reviews on product purchase and evaluation. This work has explored which types of written reviews are more influential (Sen and Lerman 2007), what motivates them to be written (Sridhar and Srinivasan 2012), and how they influence the processing of product information (Tang, Fang, and Wang 2014). By contrast, this work examines star rating distributions and how they can serve as a source of information to consumers.

Research on numeric star ratings has shown that average ratings are predictive of sales, (Dellarocas, Zhang, and Awad 2007; Sun 2012), especially for less well-known brands (Ho-Dac, Carson, and Moore 2013; Zhu and Zhang 2010). In addition to average star ratings, some websites display the distribution of such ratings. Whereas the mean rating conveys the average liking for the product, the distribution conveys the level of agreement among consumers. Research to date on rating distributions has focused primarily on rating variance and has yielded mixed findings regarding how rating variance affects product desirability (Clemons, Gao, and Hitt 2006; Moe and Trusov 2011; Moon, Bergey, and Iacobucci 2010; Sun 2012; Zhu and Zhang 2010; see He and Bond 2015 and Wang, Liu, and Fang 2015 for overviews).

In an attempt to reconcile the mixed findings, more recent work on rating variance has focused on moderating factors that determine when variance increases or decreases product desirability. For example, one article (Wang et al. 2015) showed that high variance in user ratings lowers perceived desirability unless there is also high variance in critic reviews and clear indications of high product quality, in which case high user rating variance raises perceived desirability. The researchers argued that this occurs because high variance in critics' ratings is unexpected and leads consumers to engage in deeper processing of all information (e.g., written reviews). This deeper processing of written reviews, they argue, can lead consumers to find overlap between their preferences and the features of the reviewed product, thereby increasing its desirability if it is high quality. Another article (He and Bond 2015) focused on the attributions people make to rating variance based on information about consumer taste similarity in a product domain. This article showed that when tastes for a product are believed to be similar, variance in consumer ratings has a negative effect, but this is mitigated when tastes for a product are believed to be dissimilar. The reasoning is that when tastes are expected to be similar, variance in product ratings is attributed to variability in product performance (e.g., quality control problems), but when tastes are expected to be dissimilar, this same variance is attributed to characteristics of the consumer (e.g., that consumers had differing expectations for their experience). Both of these articles argue and show that variance in consumer ratings is negative, but that under some circumstances, additional information about the product (e.g., critic reviews, quality information, and rater taste similarity) can mitigate or even reverse this negative effect.

In this article, we take a different tack. We study a specific type of variance in consumer ratings—polarization—and we examine individual difference and contextual variables that lead to active preference for polarizing products. Because of our focus on polarization, our investigation primarily examines two prototypical types of distributions: unimodal and bimodal distributions. Unimodal distributions have one clear mode or peak. By contrast, bimodal distributions have two modes or peaks. In this article, we specifically examine bimodal distributions that convey polarization (i.e., those with clear peaks at the higher and lower star ratings). We call products that exhibit this pattern *polarizing* products.

THE SELF-EXPRESSIVENESS OF POLARIZING PRODUCTS

An unexamined question addressed by this article concerns what inferences people draw from polarized product rating distributions. We argue that products with polarized rating distributions are perceived to be more self-expressive. Note that polarization is different from mere variance. Variance in product ratings is indicative of heterogeneity, and heterogeneity is one component necessary for something to serve as a signal about one's identity, but it alone may not serve as a strong signal.

We argue that as products become more polarizing, they serve as greater signifiers due to the strong and differentiated opinions they generate. For example, consider a uniform distribution (e.g., equal numbers of people rating the product 1, 2, 3, 4, and 5 stars). This rating distribution

would have high variance (i.e., heterogeneity), but any given rating would say little about the person who gave it. As that distribution came to reflect greater polarization (i.e., as the number of extreme ratings increased relative to the more moderate ratings), it would serve as a stronger signal about an individual's characteristics.

This is because polarizing products, by implying the presence of two opposing camps of opinions, lend themselves naturally to signifying one's characteristics. According to the tenets of structural anthropology (Levi-Strauss 1972), human thought is naturally structured around binary opposites (hot-cold, male-female, etc.) because binary opposites help organize worldviews. The essence of binary opposition is difference, and hence definition. Divergent opinions about a target make an individual's opinions more informative regarding who he or she is, and hence, such opinions are more self-expressive. Therefore,

> **H1:** Polarizing products (i.e., products with bimodal rating distributions) will be perceived as more self-expressive than nonpolarizing products.

As noted previously, products could garner high variance in overall ratings for multiple reasons (He and Bond 2015). Online reviews sometimes decompose overall ratings into individual attributes of the products, thereby clarifying the reason for a polarized rating distribution. For example, Zappos.com collects ratings for comfort and style, in addition to overall product ratings. This breakdown can be important, as different product attributes can have different potential for self-expressiveness (Shavitt 1990). We hypothesized that products with bimodal rating distributions would be viewed as particularly self-expressive when the rating distribution pertained to an attribute that people often use to self-express (e.g., the product's style). We expected diminished effects of bimodality on perceived self-expressiveness when the distribution pertained to a more functional attribute (e.g., the product's quality) because polarization along functional attributes does not indicate as strongly that the product would be a good vehicle for self-expression. For example, differing perceptions of a product's quality could be due to inconsistencies in manufacturing rather than anything related to the user (He and Bond 2015). Hence,

> **H2:** Products with polarized (i.e., bimodal) rating distributions for self-expressive attributes (e.g., style) will be perceived to be more indicative of product self-expressiveness than those with polarized rating distributions for less self-expressive attributes (e.g., quality).

NEED FOR SELF-CONCEPT CLARITY AND SELF-EXPRESSION

People have various psychological needs, one of which is the need for clarity in the self-concept. Self-concept clarity refers to the extent to which people have clear, consistent, stable, and confidently held self-views (Campbell 1990). Lacking certainty and clarity in one's self-views is aversive (McGregor and Marigold 2003) and is associated with negative outcomes such as low self-esteem, increased neuroticism, low conscientiousness, low agreeableness, and low attunement to internal states (Campbell et al. 1996; Campbell, Assanand, and Di Paula 2003; Fromkin 1972).

As with many other psychological threats, low self-concept clarity can result in compensatory behaviors. One compensation mechanism is a voicing of opinions that differentiate one from others (McGregor et al. 2001; Morrison, Johnson, and Wheeler 2012; Morrison and Wheeler 2010; Rios, Wheeler, and Miller 2012). This type of self-expression helps to clarify and articulate one's self-views. Of course, such compensatory behavior need not be limited to the expression of abstract opinions about topics such as art or political events (McGregor et al 2001; Rios et al. 2012). Compensatory behaviors are often expressed in product preferences and choices. A long line of consumer behavior research has shown that association with products can serve as a means of defining and expressing the self in much the same way that one's personal values, personality traits, and accomplishments can (Belk 1988; Chaplin and John 2005; Gao, Wheeler, and Shiv 2009; Reed 2004; Rucker and Galinsky 2008; Schultz, Kleine, and Kernan 1989; Wheeler, Petty, and Bizer 2005; Wicklund and Gollwitzer 2013). If hypothesis 1 is correct and people perceive polarizing products to be more self-expressive, those products should be particularly desirable to people with high needs for self-expression, such as those lacking self-concept clarity, whether dispositionally or due to a temporary threat.

People do not only have self-expression needs when their self-concept clarity is threatened, however. In many consumption contexts, people use their product choices as a means of projecting their self-image (Oyserman 2009). For example, people could have high self-expression needs when consuming a product for self-expressive purposes (e.g., dressing for an art show). Hence, polarizing products could also be particularly preferred in self-expressive consumption contexts. Accordingly,

> **H3:** Products with polarized rating (i.e., bimodal) distributions will be perceived as more desirable among those with high need for self-expression, whether due to dispositional or contextual factors.

INDIVIDUAL- VERSUS GROUP-LEVEL IDENTITY EXPRESSION

The discussion thus far has been focused on the expression of individual-level identity. As noted before, individual identity expression involves expressing one's distinctiveness from others. This is one reason why the

divergent opinions present in polarized rating distributions may be especially effective at signaling self-expressiveness. However, in some cases, people have a desire to express a group level of identity, one that emphasizes their similarity to and belongingness with others. Hence, though people try to find a balance between being different from and being the same as desired group members (Brewer 1991; Chan, Berger, and van Boven 2012), a desire for individual-level identity expression increases differentiation from a group, whereas a desire for group-level identity expression increases assimilation to a group (Pickett, Bonner, and Coleman 2002). Therefore,

> **H4:** When rating distributions are generated from the ratings of fellow in-group members, products with polarized (i.e., bimodal) rating distributions will be preferred more when individual-level (vs. group-level) identity expression needs are high.

OVERVIEW OF STUDIES

We predicted that when people wanted to self-express, they would find products with bimodal (vs. unimodal) rating distributions more desirable. Moreover, we predicted that this effect would be mediated by the perceived self-expressiveness of the products (i.e., that polarizing products would be perceived as more self-expressive and be preferred for this reason). We examined these predictions across eight studies. Studies 1a and 1b examine whether polarizing products (vs. nonpolarizing products) are perceived to be more self-expressive than nonpolarizing products. Studies 2a and 2b test whether consumers whose sense of self-concept clarity is compromised find products with bimodal distributions more desirable. Study 3 explores whether self-expressive consumption contexts increase the preference for polarizing products. Study 4 builds on study 3 to explore whether the basis of the polarization (i.e., a self-expressive or non-self-expressive product attribute) moderates this type of effect. Study 4 also explores whether the perceived self-expressiveness of the polarizing products underlies the preference for polarizing products. Finally, study 5 explores individual-level and group-level identity expression contexts, testing whether people have a stronger preference for products their in-group finds polarizing when seeking to express an individual-level identity or when seeking to express a group-level identity.

STUDY 1A: BIMODAL DISTRIBUTIONS AND SELF-EXPRESSIVENESS PERCEPTIONS

Study 1a provides a test of hypothesis 1 by examining whether people infer from bimodal rating distributions that such products are more self-expressive. In line with hypothesis 1, we predicted that products with bimodal rating distributions would be viewed as more self-expressive and indicative of a person's unique identity than would products with unimodal rating distributions.

Participants

One hundred nineteen participants (33 women, 86 men, $M_{age} = 30.06$ years, age range: 19–64 years) were recruited from Amazon.com's Mechanical Turk. This pool represents participants from various demographics, occupational backgrounds, and regions of the United States. Participants were paid $.50 for participation in the study.

Procedure

Participants read a brief hypothetical scenario, in which they were asked to imagine that "An acquaintance you met only recently mentions that they really enjoyed a certain movie. You look up the movie to see what other people thought of it. Imagine that you see one of the following ratings for the movie." Below this prompt, participants saw a bimodal and unimodal distribution. The product rating distributions were designed to be bimodal or unimodal but have identical means. The bimodal distribution consisted of two clusters of ratings: one cluster at the five-star rating and the other cluster at the one-star rating, with fewer ratings in between. The unimodal distribution had one main cluster of ratings with the ratings tapering off toward the lower tail. See appendix A for rating distribution stimuli, which were used across all studies, except study 1B.

Next, participants were asked to respond to four questions that assess the self-expressiveness of each distribution. Given the two different rating distributions, which distribution would (1) be more self-expressive (reveal the most information) about your acquaintance's tastes? (2) suggest that your acquaintance has very distinct and unique taste in movies? (3) tell you more about the type of person your acquaintance is? (4) give you the most information about the types of movies that your acquaintance likes? Participants responded to each question on a sliding scale, with a unimodal distribution at one end and bimodal distribution at the other end (counterbalanced), with the slider starting in the center. The values on the sliding scale were not displayed to the participant, but ranged from 0 to 100. Ratings were coded such that any rating below 50 indicated learning more about the person who liked the movie with the unimodal distribution, and any rating above 50 indicated learning more about the person who liked the movie with a bimodal distribution.

Results and Discussion

We hypothesized that people would think that the bimodal movie reviews would be rated as more self-

expressive, more indicative of unique taste, and more informative both about the type of person and type of movies they like than a unimodal distribution. To test this hypothesis, we ran a *t*-test analysis comparing the distribution preference to 50, the midpoint on the scale indicating that the movies with bimodal and unimodal distributions were equally informative regarding the acquaintance's tastes and characteristics. In support of our hypothesis, we found a significant effect across all four questions. Participants thought that preference for a bimodal distribution was more self-expressive ($M = 65.94$, $SD = 32.56$, $t(118) = 5.34$, $p < .001$), suggested distinct and unique taste in movies ($M = 69.72$, $SD = 31.82$, $t(118) = 6.76$, $p < .001$), conveyed more information about the acquaintance's personality ($M = 69.58$, $SD = 29.04$, $t(118) = 7.35$, $p < .001$), and provided more information about the types of movies that the acquaintance likes ($M = 69.05$, $SD = 29.35$, $t(118) = 7.08$, $p < .001$).

This study provided initial evidence that products with polarized (i.e., bimodal) rating distributions are perceived to be more self-expressive than products with nonpolarized (i.e., unimodal) rating distributions. However, it is possible that any high-variance rating distribution would lead to the same effect on perceptions. Study 1b addresses this possibility by comparing the effects of high-variance, nonpolarized distributions to equally high-variance, polarized distributions on perceptions of self-expressiveness.

STUDY 1B: COMPARISON WITH NONPOLARIZED, HIGH-VARIANCE DISTRIBUTIONS

Study 1b comprises two very similar studies that are presented as one for purposes of expediency. In both studies, participants were assigned to view (between participants) either a flat, high-variance, multimodal distribution or a high-variance, bimodal distribution. Consistent with hypothesis 1, we predicted that the distribution reflecting opinion polarization (i.e., the bimodal distribution) would be perceived to indicate more product self-expressiveness.

Participants

Each dataset comprised approximately 200 participants (across the two samples, there were 405 participants (171 women, 233 men, one declined to state; $M_{age} = 34.18$ years, age range: 19–74 years). Participants were recruited from Amazon.com's Mechanical Turk and were paid $.30 for participation in the study.

Procedure

Participants in study 1b read the initial instructions from study 1a and then saw a rating distribution. Within each study, participants viewed either a bimodal distribution or a flat, multimodal distribution (see Appendix B for stimuli). Within each study, the mean and standard deviation of the distributions were equated. In the 10-mode study, participants were randomly assigned to view either a flat distribution, in which all ratings had roughly an equal number of responses, or a bimodal distribution with modes at ratings of 3 and 8. The five-mode study was similar, except that participants were randomly assigned to view a five-mode distribution with modes at ratings of 1, 3, 5, 8, and 10, or a bimodal distribution with modes at ratings 2 or 9. Due to a production error, the y-axes in this latter study were not equivalent, even though the total number of ratings was. Participants then answered the same four dependent variable measures from study 1a. Because participants were not comparing two distributions (they saw only one), the response slider represented a bipolar scale (e.g., not at all self-expressive to extremely self-expressive).

Results and Discussion

To save space, we report in the text only analyses on an average index of the four dependent variables for each study. Results for the individual items are reported below.[1] In both the 10-mode and five-mode studies, the bimodal (polarizing) distribution was perceived to be more self-expressive than the multimodal (nonpolarizing) distribution (10-mode $F(1, 200) = 5.197$, $p = .02$, five-mode $F(1, 199) = 7.264$, $p = .008$), thus supporting hypothesis 1.

Study 1a showed that people view bimodal rating distributions to be indicative of more self-expressive products than unimodal distributions, and study 1b showed this same effect comparing high-variance bimodal and multimodal distributions. Study 1b shows that polarization can add above variance to promote perceptions of self-expressiveness. Together, these two studies show that people think that polarizing products convey more self-expressive information than do nonpolarizing products. In subsequent studies, we explore whether, because polarizing products are perceived as a means of self-expression, they are preferred when self-expression needs are high.

As previously discussed, motivation for self-expression increases when an individual experiences threats to his or her self-concept clarity. In the next two studies, we explore how such threats affect evaluations of products with bimodal product rating distributions. Previous research showed that people compensate for self-uncertainty through consumption of products that bolster self-certainty (Gao et al. 2009). When people suffer from low self-concept clarity (i.e., the general sense of not having clear and coherent self-views), they could potentially restore that clarity through polarizing products because these products

1 One participant completed only the first dependent measure in the 10-mode study, resulting in uneven degrees of freedom across measures. Patterns of significance do not change with listwise exclusion.

TABLE 1

MEANS, STANDARD DEVIATIONS, AND STATISTICAL COMPARISONS FOR ALL DEPENDENT MEASURES (STUDY 1B).

	10-mode study	Five-mode study
Self-expressive	Multimodal ($M = 48.58$, SD = 27.33) Bimodal ($M = 59.78$, SD = 24.30) $F(1, 201) = 9.52$, $p = .002$	Multimodal ($M = 52.19$, SD = 30.27) Bimodal ($M = 61.95$, SD = 28.42) $F(1, 199) = 5.55$, $p = .02$
Distinct	Multimodal ($M = 45.51$, SD = 26.82) Bimodal ($M = 57.09$, SD = 25.37) $F(1, 200) = 9.95$, $p = .002$	Multimodal ($M = 44.01$, SD = 27.89) Bimodal ($M = 60.72$, SD = 25.89) $F(1, 199) = 19.39$, $p < .001$
Tell type	Multimodal ($M = 43.36$, SD = 29.15) Bimodal ($M = 52.24$, SD = 25.00) $F(1, 200) = 5.40$, $p = .002$	Multimodal ($M = 44.28$, $SD = 25.48$) Bimodal ($M = 56.09$, SD = 27.27) $F(1, 199) = 10.06$, $p = .002$
Give info	Multimodal ($M = 57.26$, SD = 27.49) Bimodal ($M = 65.25$, SD = 22.02) $F(1, 200) = 5.20$, $p = .002$	Multimodal ($M = 58.19$, SD = 27.19) Bimodal ($M = 67.68$, SD = 22.55) $F(1, 199) = 7.26$, $p = .008$

are seen as generally more self-expressive and self-defining, as shown in studies 1a and 1b. Hence, when people's self-concept clarity is threatened, products with bipolar rating distributions could be more desirable. To examine this hypothesis, we explored the effect of chronic (study 2a) and momentary (study 2b) low self-concept clarity on evaluations of products with bimodal and unimodal distributions.

STUDY 2A: DISPOSITIONAL SELF-CONCEPT CLARITY

Study 2a examined the impact of individual differences in self-concept clarity on evaluation of products with different product rating distributions. As noted earlier, low self-concept clarity is aversive and associated with negative psychological consequences, and hence should increase the need for self-expression and self-definition. Because polarizing products are perceived to be more self-expressive and self-defining, we hypothesized that participants with low self-concept clarity would evaluate a product with a bimodal distribution more favorably (hypothesis 3).

Participants

One hundred forty-nine participants (115 women, 34 men, $M_{age} = 35$ years, age range: 18–65 years) were recruited from a web-based participant pool. Participants in the database are recruited via online and paper advertisements. This pool represents participants from various demographics, occupational backgrounds, and regions of the United States. Potential participants can sign up through the database to receive weekly notifications of studies for which they may be eligible. All participants were entered into a drawing to win one of several $10 Amazon.com gift certificates.

Procedure

Participants viewed a movie poster and information about the plot for *Contagion* (not yet released at the time of the experiment). The unimodal and bimodal distributions from study 1a were paired with the target stimulus. Participants were randomly assigned to one of the two distribution conditions (unimodal or bimodal). Each stimulus was presented on a single survey web page for 15 seconds before participants were able to proceed to the next step.

After viewing the movie information, participants evaluated the movie on a seven-point scale of perceived quality (good/bad), likelihood of purchasing the movie (likely/unlikely), and likelihood of seeing the movie (likely/unlikely). Participants then completed the previously validated 12-item self-concept clarity scale, which assesses the stability and consistency of the self (e.g., "My beliefs about myself often conflict with one another," "In general, I have a clear sense of who I am," and "Sometimes I feel that I'm not really the person that I appear to be"; Campbell et al. 1996).

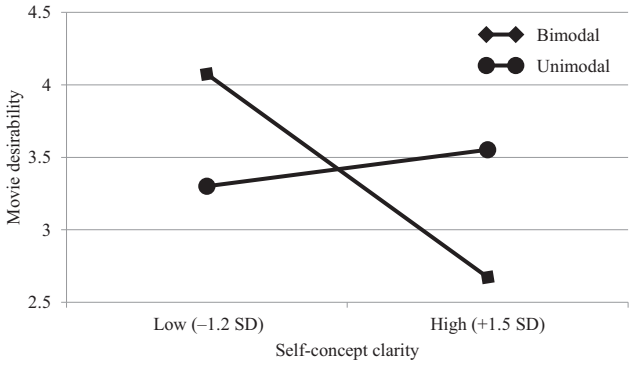
Results and Discussion

The three desirability questions were factor analyzed. One factor emerged accounting for 79.3% of the total variance. We therefore averaged the items to form a desirability index ($\alpha = .91$). We wanted to make sure that the experimental condition did not have a significant effect on the self-concept clarity scale, which came after participants viewed the product rating distributions. A *t*-test measuring the difference between self-concept clarity in the unimodal and bimodal distribution condition did not reveal a significant difference ($M_{Bimodal} = 3.7$, $SD_{Bimodal} = .74$ vs. $M_{Unimodal} = 3.8$, $SD_{Unimodal} = .90$; $b = -.53$, SE = .33, $t(147) = -1.17$, $p = .24$).

We hypothesized that those with low self-concept clarity would find products with bimodal distributions to be more desirable. To test this hypothesis, we regressed desirability on mean-centered self-concept clarity, experimental

FIGURE 1

STUDY 2A: MOVIE DESIRABILITY AS PREDICTED BY SELF-CONCEPT CLARITY SCORES



condition (contrast-coded; –1 = unimodal, 1 = bimodal), and their interaction. In support of our hypothesis, we found a significant self-concept clarity × product distribution interaction ($b = –.37$, SE = .15, $t(145) = –2.41$, $p = .02$; see figure 1). For this analysis, one extreme outlier (studentized residual = 2.56; Chen et al. 2007; DFFITS = .58, which was twice as high as the acceptable value $2\sqrt{\frac{p}{n}} = .28$; Belsley, Kuh, and Welsh 1980) was dropped. Inclusion of the outlier did not change the pattern of significance ($b = –.31$, SE = .15, $t(146) = –2.02$, $p = .045$). The regression analysis was followed by simple slopes analysis (Aiken and West 1991). The simple slopes were not significant at +/– 1 SD, but given the significant interaction, we decomposed the interaction using the Johnson-Neyman test to determine the self-concept clarity value at which there was a significant preference for one movie over the other. The movie paired with a bimodal distribution was significantly preferred by those with self-concept clarity scores 1.2 standard deviations below (see table 1) the mean ($b = –.77$, SE = .34, $t(145) = –2.00$, $p = .048$, self-concept clarity score of 2.76). The movie paired with a unimodal distribution was marginally preferred by those with self-concept clarity scores 1.5 standard deviations above the mean, the upper bound of the five-point self-concept clarity scale ($b = .88$, SE = .5, $t(145) = 1.92$, $p = .057$, self-concept clarity score of 5). This suggests that low self-concept clarity increases preference for movies with bimodal rating distributions, consistent with hypothesis 3.

Our examination of product desirability based on rating distributions showed a moderating influence of self-concept clarity. Those with low self-concept clarity found the movie with the bimodal distribution more desirable than they did the movie with the unimodal distribution. Those with low self-concept clarity preferred the polarizing product despite it having more negative ratings. Although this result is encouraging, we wished to replicate our result with an experimental manipulation of self-concept clarity to more conclusively establish the causal locus of our effect.

STUDY 2B: SITUATIONAL THREAT TO SELF-CONCEPT CLARITY

The goal of study 2a was to examine whether the effect shown in study 2a would hold in contexts of momentary rather than chronic lapses in self-concept clarity. To examine momentary lapses in self-concept clarity, we manipulated how clear or conflicted people felt about their identity. Our prediction was that participants in the conflicted condition would find movies with bimodal distributions to be more desirable.

Participants

One hundred twenty-seven participants (62 women, 65 men, $M_{age} = 29.1$ years, age range: 18–60 years) were recruited from Amazon.com's Mechanical Turk. Participants were paid $.50 for participation in the study.

Procedure

Participants completed a task, based on items in the self-concept clarity scale (Campbell et al. 1996), that was designed to lower or heighten participants' self-concept clarity. Participants were randomly assigned to a clear or conflicted condition, and read a prompt that asked them to think of a time they had a clear or conflicted sense of themselves:

> There are times when you have [don't have] a clear and consistent sense of who you really are, when you feel like you [don't] truly know what you are like. You have consistent [conflicting] views about yourself that do not change over time [shift from day to day]. For example, you may have felt clear [conflicted] and sure [unsure] about particular traits or aspects of yourself or been in a situation that displayed that you had a clear [conflicting] sense of yourself.
>
> Please take a few minutes to recall and immerse yourself in a time when you felt that you had [didn't have] a clear and consistent view of who you really were. Please describe this in as much detail as possible—what happened, how you felt, etc.

A separate pretest of this manipulation showed that participants had lower self-concept clarity, as measured by the self-concept clarity scale (Campbell et al. 1996), in the conflicted condition, as compared to the clear condition ($M_{Conflicted} = 3.46$, $SD_{Conflicted} = .94$ vs. $M_{Clear} = 3.73$, $SD_{Clear} = .96$; $t(196) = –2.03$, $p = .04$).

After a filler task (Wichman, Brunner, and Weary 2008), participants were asked to imagine they were thinking of

watching a specific movie (no actual movie information was provided) and had logged on to a movie review website to find out what previous viewers thought. They then saw either a bimodal or unimodal rating distribution for the movie they were considering seeing. After viewing the ratings, participants completed the three desirability items from study 2a. Participants also noted the amount, in dollars, that they would be willing to pay to purchase the movie. We added this question to examine whether the effects would extend to the value people attributed to movies with different ratings.

Results and Discussion

The three desirability questions were factor analyzed. One factor emerged accounting for 55% of the total variance. We therefore averaged the items to form a desirability index ($\alpha = .73$).

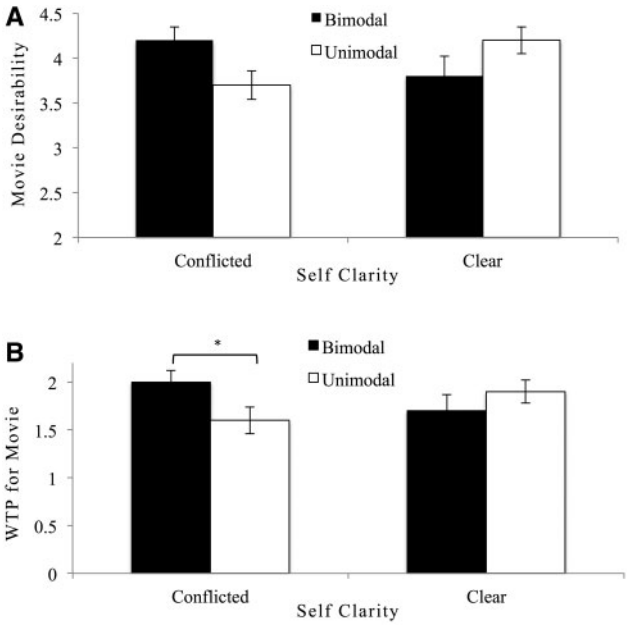
We hypothesized that because a conflicted sense of self leads people to seek self-expression through their product choices, people in the conflicted condition would have higher desirability and willingness to pay (WTP) for a movie with a bimodal rating distribution, as compared to a movie with a unimodal rating distribution. To test this hypothesis, we regressed desirability ($\alpha = .73$) on clarity condition (contrast-coded; 1 = clear, –1 = conflicted) and experimental condition (contrast-coded; 1 = bimodal, –1 = unimodal), and their interaction. In support of our hypothesis, we found a significant effect of clarity × rating distribution on desirability, consistent with hypothesis 3 ($M_{\text{Bimodal/Clear}} = 3.8$ vs. $M_{\text{Bimodal/Conflicted}} = 4.2$ vs. $M_{\text{Unimodal/Clear}} = 4.2$ vs. $M_{\text{Unimodal/Conflicted}} = 3.7$; $b = -.17$, SE = .08 $t(123) = -2.15$, $p = .03$; see figure 2A). Participants in the conflicted condition found the movie with a bimodal distribution marginally more desirable than that with a unimodal distribution ($b = -.40$, SE = .22, $t(123) = -1.79$, $p = .08$). Those in the clear condition did not differ in their preference between the movies with the bimodal and unimodal rating ($b = .31$, SE = .24, $t(123) = -1.28$, $p = .20$).

The hypothesis was also confirmed with respect to willingness to pay (log-transformed to normalize). We found a significant clarity × rating distribution interaction ($M_{\text{Bimodal/Clear}} = 1.7$ vs. $M_{\text{Bimodal/Conflicted}} = 2$ vs. $M_{\text{Unimodal/ Clear}} = 1.9$ vs. $M_{\text{Unimodal/Conflicted}} = 1.6$; $b = -.53$, SE = .33, $t(123) = -1.92$, $p = .05$; see figure 2b). People in the conflicted condition were willing to pay significantly more for the movie with a bimodal ratings distribution than the movie with a unimodal ratings distribution ($b = -.38$, SE = .19, $t(123) = -2.01$, $p = .05$). No differences emerged in the clear condition ($b = .15$, SE = .20, $t(123) = .76$, $p = .45$).

We predicted that products with bimodal ratings, viewed as more self-expressive and thus useful in conveying clear and coherent self-concept, would be evaluated more favorably when self-concept clarity was threatened. In two studies, one that measured (study 2a) and one that manipulated (study 2b) self-concept clarity, we found that people who have a need to clarify the self-concept find polarizing products to be more desirable. In study 3, we examined how contexts can affect the perceived desirability of polarizing products, even when self-concept clarity is not threatened.

FIGURE 2

STUDY 2B: MOVIE DESIRABILITY (A) AND WILLINGNESS TO PAY (B) WITHIN CLEAR AND CONFLICTED IDENTITY



STUDY 3: SELF-EXPRESSIVE CONSUMPTION CONTEXTS

We have discussed how contexts can heighten or lower people's need for self-expression. Contexts differ in the extent to which they facilitate the motivation to stand out in certain ways, such as by wearing more polarizing clothing. In some contexts, such as art openings, where this type of self-expression is accepted and valued, one might desire to express one's unique self-characteristics through attire. In other contexts, such as a job interview, one might be less willing to risk any potential negative reactions from others and so may have attenuated desire for polarizing products. Put another way, in some contexts, polarizing products may not express the "right" self. Hence, we hypothesized that products with bimodal rating distributions would be more desirable in the highly self-expressive context of an

art opening than in the less self-expressive context of a job interview to provide another test of hypothesis 3.

Participants

One hundred nine participants (64 women, 45 men, M_{age} = 21.19 years, age range: 18–33 years) took part in an in-lab study, during which they participated in several other unrelated tasks and were compensated with $20 for an hour of their time. Participants were university students and staff who opted into receiving emails about opportunities to participate in studies.

Procedure

To test our hypotheses, participants were randomly assigned to imagine that they were purchasing clothes for either a gallery opening or a job interview. They were then asked to write about the considerations and motivations they would have in choosing clothing for the specified occasion:

> *Gallery*. Imagine that a friend has invited you to an exclusive art gallery opening party in New York. It's being touted as the "it" party, with top people in the art, music, and movie business attending. You want to look good and appropriately dressed for the occasion, so you start shopping for something to wear to the party. You want to be sure to make the right impression. Take a moment to write down the types of considerations and motivations you might typically have in choosing clothing for a party like this.

> *Job interview*. Imagine that you have been invited to interview for your dream job. The top executives will be there on the day of your interview. You want to look good and be taken seriously, so you start shopping for something to wear to the interview. You want to be sure to make the right impression. Take a moment to write down the types of considerations and motivations you might typically have in choosing clothing for an interview.

Next, participants were told to imagine they were considering purchasing an outfit, and were presented with rating distributions for this outfit that either had a unimodal or bimodal style rating distribution. Hence, the study was a 2 (use context: gallery vs. interview) × 2 (rating distribution: bimodal vs. unimodal) design. Participants then responded to four questions, which served as the dependent variables. We reframed the desirability question in this survey to apply to an outfit, and changed the WTP question to control for the wide variance in how much people spend on clothes. The possible responses for questions 1 through 4 were presented on a seven-point scale. (1) "How good or bad do you think this outfit is?" (good/bad); (2) "How likely would you be to buy this outfit?"(unlikely/likely); (3 and 4) "What is your attitude toward this outfit?" (favorable/unfavorable and negative/positive); (5) "How much would you be willing to pay to purchase this outfit?" This question was presented on 12-point scale, ranging from 10% of the retail price to 120% of the retail price to reduce the skew in responses (Rucker and Galinsky 2008).

Results and Discussion

We hypothesized that the outfit paired with the bimodal rating distribution would be evaluated more favorably (higher desirability and willingness to pay), but only in the self-expressive context of a gallery opening. The desirability questions were factor analyzed. One factor emerged accounting for 78% of the total variance. We therefore averaged the items to form a desirability index (α = .93). To test the hypothesis, we regressed desirability and WTP on the use context (contrast-coded; 1 = gallery, –1 = interview), and rating distribution (contrast-coded; 1 = bimodal, –1 = unimodal), and their two-way interaction.

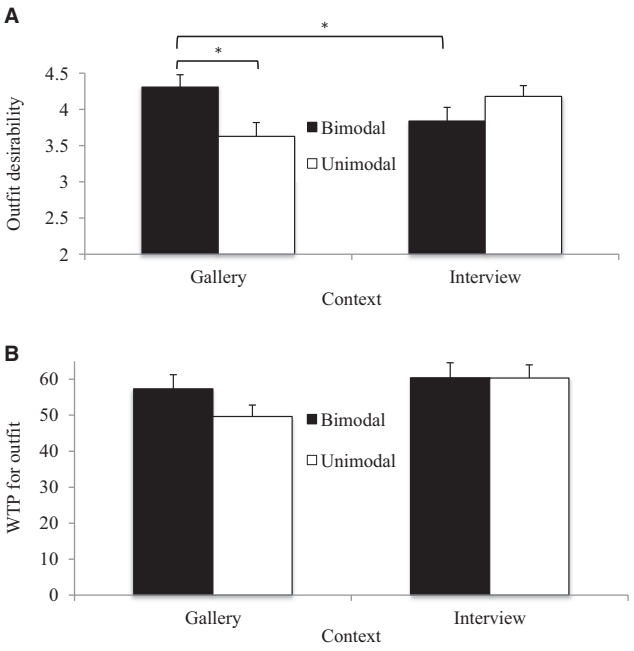
Desirability. In support of our hypothesis 3, we found a significant effect of context × rating distribution on desirability ($M_{Bimodal/Gallery}$ = 4.3 vs. $M_{Bimodal/Interview}$ = 3.8 vs. $M_{Unimodal/Gallery}$ = 3.6 vs. $M_{Unimodal/Interview}$ = 4.2; b = .14, SE = .13, $t(105)$ = 2.82, p = .006; see figure 3A). Participants in the gallery condition found the outfit with a bimodal distribution more desirable than that with a unimodal distribution (b = –.67, SE = .25, $t(105)$ = –2.65, p = .009). However, there was no significant difference between the bimodal and unimodal distribution in the interview condition (b = .34, SE = .25, $t(123)$ = 1.34, p = .18). The perceived desirability of the outfit with the bimodal ratings was marginally higher in the gallery context than in the interview context (b = –.47, SE = .26, $t(105)$ = –1.81, p = .07). On the other hand, the perceived desirability of the outfit with the unimodal ratings was significantly higher in the interview context than in the gallery context (b = –.54, SE = .25, $t(105)$ = –2.18, p = .03).

Willingness to Pay. Although the pattern of results was similar for willingness to pay, the interaction was not significant ($M_{Bimodal/Gallery}$ = 50.7 vs. $M_{Bimodal/Interview}$ = 60.4 vs. $M_{Unimodal/Gallery}$ = 49.6 vs. $M_{Unimodal/Interview}$ = 60.4; b = .04, SE = .03, $t(105)$ = 1.07, p = .29; see figure 3B).

Our results suggest that the context in which people plan to use a certain product can also influence the relative preference for polarizing and nonpolarizing products. Contexts that are generally associated with greater need for self-expression in attire, such as a gallery opening, garner positive ratings for polarizing attire. Contexts in which expressing a polarizing self-identity is less desirable, such as a job interview, garner less positive ratings for polarizing attire. In our next study, we examined whether the product attribute that the ratings reflect (i.e., style vs. quality) is also predictive of whether people prefer polarizing ratings or not. We additionally tested the mediational role of perceived product self-expressiveness in determining the effects.

FIGURE 3

STUDY 3: OUTFIT DESIRABILITY (A) AND WILLINGNESS TO PAY (B) PREDICTED BY CONTEXT (GALLERY VS. JOB INTERVIEW)



STUDY 4: DISTRIBUTIONS FOR DIFFERENT ATTRIBUTES

As in study 3, we manipulated the context of consumption. In this study, we had participants reflect on a self-expressive (vs. utilitarian) context for wearing shoes and predicted that polarizing products would be more appealing when purchased for consumption in self-expressive contexts, but not in strictly utilitarian contexts. We also manipulated the product attribute (style vs. quality) to which the rating distribution applied. We predicted that bimodal rating distributions for self-expressive attributes (e.g., style) would increase the desirability of the product more than bimodal ratings for more utilitarian attributes (e.g., quality).

To provide further evidence of our proposed mechanism, we additionally assessed how self-expressive participants thought the product with the bimodal (vs. unimodal) rating distribution was. Although we have already provided evidence that bimodal and polarizing ratings are seen as being more self-expressive, we have not yet established whether the perceived self-expressiveness of polarizing products is responsible for the increase in product desirability observed when self-expression needs are heightened. Additionally, this assessment allows us to test whether the perceived self-expressiveness of products depends not only on the shape of the distribution, but also the attribute to which the distribution pertains (hypothesis 2). We predicted that the perceived self-expressiveness of the product would mediate the increased desirability of bimodal ratings on self-expressive attributes for products purchased for self-expressive purposes.

Participants

Four hundred twenty-five participants (165 women, 260 men, $M_{age} = 28.91$ years, age range: 18–68 years) were recruited from Amazon.com's Mechanical Turk. Participants were paid $.80 for participation in the study.

Procedure

To test our hypotheses, we asked participants to evaluate a pair of shoes they were considering for either a self-expressive or functional purpose. Ratings for the shoes had either a bimodal or unimodal distribution but had equivalent means, as in studies 2a, 2b, and 3. However, instead of providing overall ratings distributions, we showed participants ratings for either a self-expressive attribute (the shoes' style) or a functional attribute (the shoes' quality), a rating akin to those used on the online shoe store Zappos.com. Hence, the study was a 2 (use context: self-expressive vs. functional) × 2 (rating distribution: bimodal vs. unimodal) × 2 (rated attribute: style vs. quality) design.

We manipulated the context by asking participants to list the last time they purchased shoes for either a functional or a self-expressive purpose:

> Think back to the last time you purchased shoes for a purely functional [self-expressive] purpose. That is, shoes that only needed to be practical and useful, rather than be attractive or stylish. [That is, shoes that only needed to reflect your style and your individuality, rather than be functional or practical.]

Next, participants were prompted with the same purchase purpose that they had just listed and asked to imagine that they were going to make a purchase for this purpose again. To manipulate the rated attribute, participants were randomly assigned to view ratings that either represented the style or quality of the shoe. They were asked to imagine the following scenario:

> You are looking to purchase new shoes. These are shoes you plan to wear on a regular basis. You'd like to make sure that you make a purchase you'll be happy with. You find an item that seems to fit what you want, but first you decide to read what previous purchasers have to say about it.
>
> In this case, you see the previous customer ratings in terms of the style (e.g., type/color/your fashion sense) [quality (e.g., material/durability/comfort)] of the shoes you are considering.

After reading this scenario, participants were randomly assigned to see either a bimodal or unimodal rating distribution. As in study 3, participants then responded to questions about the desirability of the shoes and their willingness to pay for the shoes. Finally, participants were prompted with the style or quality ratings again so that they could see the ratings while answering the question about the extent to which the ratings suggested that the shoes were self-expressive (seven-point scale, 1 = not at all, 7 = very much so). To reiterate, the study was a 2 (use context: self-expressive or functional) × 2 (rating distribution: unimodal or bimodal) × 2 (rated attribute: style or quality) full-factorial design.

Results and Discussion

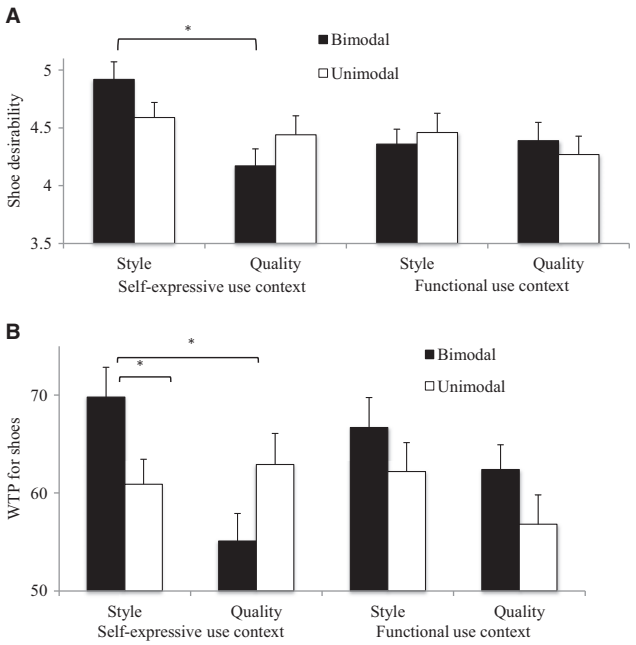
We hypothesized that shoes with bimodal ratings would be evaluated more favorably (higher desirability and willingness to pay) in self-expressive use contexts rather than functional use contexts, when the bimodal rating reflected a self-expressive shoe attribute (i.e., style) rather than a less self-expressive shoe attribute (i.e., quality). The desirability questions were factor analyzed. One factor emerged accounting for 78% of the total variance. We therefore averaged the items to form a desirability index ($\alpha = .93$). To test the hypothesis, we regressed desirability and WTP on the rated attribute (contrast-coded; 1 = style, –1 = quality), the use context (contrast-coded; 1 = self-expressive, –1 = functional), and rating distribution (contrast-coded; 1 = bimodal, –1 = unimodal), and their two-way and three-way interactions.

Desirability. In support of our hypothesis, we found a marginally significant three-way interaction for desirability ($b = .10$, SE = .05, $t(417) = -1.87$, $p = .06$; see figure 4A), along with a main effect of rated attribute ($b = .13$, SE = .05, $t(417) = 2.47$, $p = .01$). In order to decompose this interaction, we next examined two-way interactions within the use contexts.

In the self-expressive use context, there was a significant rating distribution × rated attribute (style vs. quality) interaction ($b = .15$, SE = .07, $t(205) = 1.99$, $p = .05$). Products with bimodal rating distributions reflecting style were seen as more desirable than products with bimodal rating distributions reflecting quality ($b = -.744$, SE = .21, $t(205) = 3.53$, $p < .01$). No other significant effect emerged within the self-expressive use context, although the predicted trend for preference for products with a bimodal distributions within the style condition was present ($b = -.33$, SE = .21, $t(205) = -1.56$, $p = .12$). There was no significant interaction within the functional use context ($b = -.05$, SE = .08, $t(212) = -.68$, $p = .50$). These results suggest that bimodal ratings associated with self-expressive rated attributes such as style are perceived more positively than when those same ratings are associated with a less self-expressive attribute like quality of the product, but this effect emerges when the product will be consumed in self-expressive, but not utilitarian, contexts.

FIGURE 4

STUDY 4: SHOE DESIRABILITY (A) AND WILLINGNESS TO PAY (B) SCORE PREDICTED BY PRODUCT ATTRIBUTE AND PRODUCT DOMAIN



Willingness to Pay. We predicted the same pattern of results for WTP as for desirability scores. In support of our hypothesis, we found a significant three-way interaction for the willingness to pay dependent variable ($b = .22$, SE = .10, $t(417) = 2.17$, $p = .03$; see figure 4B), along with a main effect of rated attribute ($b = .28$, SE = .10, $t(417) = 2.74$, $p = .006$). In order to decompose this interaction, we next examined two-way interactions within each use context.

Within the self-expressive use contexts, the rating distribution × rated attribute (style vs. quality) interaction was significant ($b = .42$, SE = .15, $t(205) = 2.87$, $p < .01$). Similar to the desirability effects, products with bimodal rating distributions reflecting style garnered a higher willingness to pay than products with bimodal rating distributions reflecting quality ($b = 1.47$, SE = .41, $t(205) = 3.57$, $p < .01$). We also found that products with a bimodal distribution reflecting style garnered higher willingness to pay than products with a unimodal distribution reflecting style ($b = .89$, SE = .41, $t(205) = 2.18$, $p = .03$). The results were reversed within ratings reflecting quality, where products with a bimodal distribution garnered marginally lower

willingness to pay than products with a unimodal distribution ($b = –.78$, SE = . 41, $t(205) = –1.88$, $p = .06$) There was no significant interaction within the functional use context ($b = –.03$, SE = .14, $t(212) = –.20$, $p = .84$). Similar to the desirability results, the willingness to pay results suggest that bimodal ratings associated with self-expressive rated attributes such as style are perceived more positively than when those same ratings are associated with a less self-expressive attribute like quality of the product, and that these effects occur within self-expressive use contexts. In addition, we showed that within self-expressive use contexts, self-expressive rated attributes such as the style of the shoe benefit from having a bimodal rather than unimodal rating distribution. Interestingly, less self-expressive attributes such as quality of the shoes can benefit from a unimodal rating, suggesting that for non-self-expressive attributes bimodal distributions may sometimes be undesirable.

Mediation. We hypothesized that our results would be mediated by the perceived self-expressiveness of the product. More specifically, we predicted that products with bimodal rating distributions should be seen as more self-expressive, but only when the rating concerns a self-expressive attribute (i.e., style, not quality). Additionally, we expected perceived self-expressiveness to mediate resulting desirability perceptions, but only when the product was consumed for self-expressive purposes. To that end, we conducted a moderated mediation analysis using the PROCESS bootstrapping procedure (Hayes 2013, model 29). This model incorporates the independent variable (rating distributions), dependent variables (desirability/WTP), and two moderators (rated attribute and use context; see figure 5). Because the predictions for desirability and willingness to pay were identical, we simultaneously describe the model for both dependent variables, though separate analyses were conducted for each DV.

The SPSS PROCESS macros (Hayes 2013) test the indirect effect at each value of the moderator. The moderated mediation models for each dependent variable (desirability and WTP) were carried out, and revealed an indirect effect via perceived self-expressiveness of product for both dependent variables. As predicted, this indirect effect was significant for self-signaling rated attribute (style) within self-signaling use context (self-expressiveness). The 95% bias-corrected confidence interval for indirect effect excluded zero (indirect effect $_{\text{Desirability}} = –.11$, 95% $CI_{\text{Desirability}}$: –.22, –.03; indirect effect $_{\text{WTP}} = –.13$, 95% CI_{WTP}: –.34, –.03; 1,000 samples; see table 2 for confidence intervals for all the paths), which indicates significant mediation (Preacher, Rucker, and Hayes 2007). These results indicate that products with bimodal distributions are perceived as more self-expressive when the ratings reflect a self-expressive product attribute such as style, consistent with hypothesis 2. Because such products are perceived as more self-expressive, people find them more desirable and are willing to pay more for them (hypothesis 3).

FIGURE 5

MODERATED MEDIATION MODEL

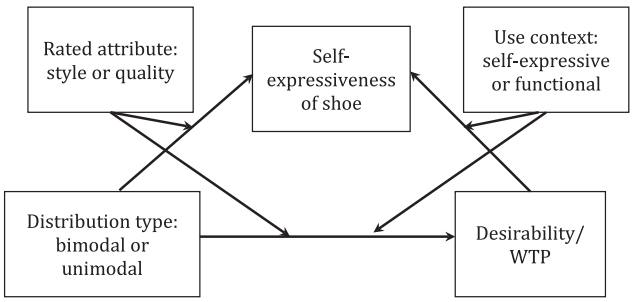


TABLE 2

INDIRECT EFFECT OF SELF-EXPRESSION ON PRODUCT DESIRABILITY (A) AND WILLINGNESS TO PAY (B)

A. Rated attribute	Use context	Indirect effect	SE	Confidence interval
Style	Self-expressive	–0.11	0.05	[–.22, –.03]
Style	Functional	–0.08	0.04	[–.18, –.02]
Quality	Self-expressive	–0.03	0.05	[–.13, .05]
Quality	Functional	–0.02	0.03	[–.11, .03]

B. Rated attribute	Use context	Indirect effect	SE	Confidence interval
Style	Self-expressive	–0.13	0.07	[–.34, –.03]
Style	Functional	–0.07	0.06	[–.23, .01]
Quality	Self-expressive	–0.03	0.05	[–.17, .05]
Quality	Functional	–0.02	0.04	[–.19, .02]

There was an additional, unexpected significant indirect path for style distributions in functional use contexts (indirect effect $_{\text{Desirability}} = –.08$, 95% $CI_{\text{Desirability}}$: –.18, –.02). This effect emerged only for the desirability DV and not for the willingness-to-pay DV. Recall also that this direct contrast was not significant. Given that this effect was unexpected, that it was not replicated on the willingness-to-pay variable, and that its meaning is unclear, we do not interpret this finding further.

The overarching finding is that products that serve a self-expressive purpose are perceived more favorably when accompanied by bimodal ratings, but only when those ratings correspond to a self-expressive attribute. These effects were shown both for desirability ratings and willingness to pay. We show that this effect emerges because bimodal distributions are perceived as being more self-expressive, particularly for self-expressive product attributes. Based on these results, we show that while holding the average product star rating constant, people infer

information about products from the distribution of the star ratings. The distribution takes on different meanings depending on what aspect of the product it represents.

STUDY 5: GROUP- VERSUS INDIVIDUAL-LEVEL IDENTITY

The focus of the studies presented in this article so far have been on the expression of individual-level identity, but it is an open question how product rating distributions would affect desirability perceptions when people have motivations to express group-level identities. Much research has been conducted on how people adopt or disadopt products to signal group-level identity (Berger and Heath 2007; White and Argo 2011; White, Argo, and Sengupta 2012), and this research generally shows that people want to consume products associated with desired groups and distance themselves from products associated with undesired groups.

Online ratings are often uninformative with respect to expressing group-level identities, because the websites do not indicate who the raters of the product are, or, in the case of bimodal rating distributions, who holds opinions represented by each tail of the distribution. That is, one knows neither the population from which the ratings come (e.g., whether they are in-group members) nor what types of people like or dislike the product. Were this possible, people desiring to express group-level identities would likely gravitate toward the tail of the distribution reflecting the desired identity, as would be predicted by prior research.

In our final study, we examined a more realistic context that presents more novel predictions. Although one rarely knows which group is responsible for positive and negative online ratings, there are contexts in which one knows the population from which the ratings are generated. One such context is when the ratings are displayed on a website selling to a particular group of known individuals, such as a university bookstore, which sells primarily to people affiliated with that university. Ratings on university bookstore websites are therefore ratings from in-group members, provided one is also affiliated with the university.

University-related product purchases also provide a context in which people can use a purchase to express either group-level or individual-level identities. That is, one can express one's group-level identity as a student of that university, or one can express an individual-level identity that sets one apart from the crowd. Expressing group-level identities involves assimilating one's identity to the larger group to emphasize one's belongingness with the group, whereas expressing individual-level identities involves differentiating oneself from others (Brewer 1991). As the need to individuate becomes stronger, so does the need for differentiation. Because of this, we predicted that the desire to express an individual-level identity would increase preferences for products with a bimodal distribution more so than the desire to express a group-level identity (hypothesis 4).

Participants

One hundred eight (69 women, 39 men, M_{age} = 19.73 years, age range: 18–23 years) university students who regularly attended football games were recruited to partake in this study. Students took the study online and were paid $2 for participation.

Procedure

Participants were assigned to either the individual identity or group identity condition. Depending on condition, they read one of the following scenarios:

> *Individual identity condition*. Imagine that you are attending a winter party at [in-group university name]. Because the party is outside, it will be cold out, so you are looking for a new sweatshirt to buy.
>
> For this party, you want a sweatshirt to express your individual self-concept. That is, you want to choose something that will emphasize to others your personal and unique self-concept and reflect your individual taste and style.
>
> *Group identity condition*. Imagine that you are attending a [in-group university name] vs. [out-group university name] football game. Because the game is outside, it will be cold out, so you are looking for a new sweatshirt to buy.
>
> You want a sweatshirt to express your self-concept as a [in-group university name] student. That is, you want to choose something that will indicate your similarity to other [in-group university name] students and reflect your belongingness with other [in-group university name] students.

Next, on a seven-point scale (1 = not at all important, 7 = very important), students rated the importance of (1) expressing their university identity in choosing the sweatshirt, and (2) their individual identity in choosing a sweatshirt. These measures served as possible mediator variables.

Finally, participants were told that they had narrowed down their choice to two sweatshirts. Both sweatshirts had ratings from other students from their own university (i.e., same in-group). However, one of the sweatshirts had a unimodal distribution of ratings, while the other one had a bimodal distribution of ratings. The rating distributions shown to participants were the same as in the prior studies. Students rated their preference for the sweatshirts on a sliding scale, with a unimodal distribution at one end and bimodal distribution at the other end (counterbalanced), with the slider starting in the center. The values on the sliding scale were not displayed to the participant, but ranged from 0 to 100. Ratings were coded such that ratings below 50 indicated a preference for the sweatshirt with the unimodal

distribution, and ratings above 50 indicated a preference for the sweatshirt with a bimodal distribution.

Results and Discussion

We hypothesized the sweatshirt with the bimodal rating distribution would be preferred more in the individual identity condition than in the group identity condition. To test this hypothesis, we ran a *t*-test analysis comparing the mean preference in the group and individual identity conditions. In support of our hypothesis, we found a significant effect. Students had a stronger preference for the sweatshirt with a bimodal distribution in the individual identity condition ($M_{individual} = 66.75$, $SD_{individual} = 25.56$ vs. $M_{group} = 56.50$, $SD_{group} = 26.69$, $t(106) = 2.04$, $p = .04$), thereby supporting hypothesis 4.

Mediation. We hypothesized that as the desire to express the individual identity increases, the preference for the sweatshirt with the bimodal distribution would also increase. On the other hand, we hypothesized that as the desire to express the group identity increased, the preference for the sweatshirt with the bimodal distribution would decrease. We conducted a mediation analysis with a bootstrapping procedure using the desire to express an individual identity in one model, and the desire to express a group identity in the other model.

As we hypothesized, participants in the individual identity condition ($M_{Individual} = 4.78$, $SD_{Individual} = 1.76$) found the need to signal their individual identity significantly more important than did those in the group identity condition ($M_{Group} = 3.25$, $SD_{Group} = 1.50$), $t(106) = 4.85$, $p < .001$). Conversely, participants in the individual identity condition ($M_{Individual} = 2.69$, $SD_{Individual} = 1.58$) found the need to signal their group identity significantly less important than did those in the group identity condition ($M_{Group} = 5.34$, $SD_{Group} = 1.37$), $t(106) = -9.29$, $p < .001$).

We entered both of these mediators into a simultaneous mediation model with identity condition predicting preference. Contrary to our predictions regarding group identity, the 95% bias-corrected confidence interval for indirect effect of the importance of group identity included zero (indirect effect = –4.65, 95% CI: –13.54, 5.48), indicating that it was not a significant mediator (Preacher et al. 2007). More important, however, there was significant mediation of the effect by the importance of individual identity (indirect effect = 6.02, 95% CI: 1.28, 13.08). After we controlled for the mediators, the direct effect of identity condition on preference was no longer significant (direct effect = 8.94, $t = 1.31$, $p = .19$).

These results suggest that the preference for polarizing products in this study is influenced by the desire to signal an individual identity (rather than a decrease in the desire to signal a group identity or both). Interestingly, when we compare to the midpoint of the scale ($M = 50$), which suggests indifference between bimodal and unimodal ratings, both the individual- and group-level identity expression conditions tended to prefer the sweatshirt with the bimodal distribution ($M_{individual} = 66.75$, $SD_{individual} = 25.56$ vs. $M = 50$, $t(48) = 4.58$, $p < .001$; $M_{group} = 56.50$, $SD_{group} = 26.69$ vs. $M = 50$, $t(58) = 1.85$, $p = .07$). Note that even those in the group-level identity condition indicated a moderate desire to express their individual-level identity (i.e., the mean was marginally above the midpoint of the scale). This speaks to the pervasive desire of people (at least those in Western cultures) to express their individual identities even when they seek to affiliate with an ingroup (Chan et al. 2012). Nevertheless, when expressing an individual-level identity was the dominant motivation, participants had even greater preference for the sweatshirt with the bimodal rating distribution, providing still further evidence for the perceived utility of polarizing products in individuating and defining the self.

DISCUSSION

In the rapidly growing domain of online retail, the influence of product rating distributions on consumer behavior has only recently gained the attention of researchers, and no research has examined the psychological inferences about products that people draw from the shape of the rating distribution. That was the goal of the present research. Rating distributions indicate, among other things, how polarizing products are. Whereas unimodal distributions signal that the product has a similar level of appeal to most consumers, bimodal distributions signal that the product is polarizing. We predicted and found that these signals are relevant for consumer choice when people have a desire to self-express.

Our first three studies showed that polarizing products are perceived to convey more information about the consumer than are nonpolarizing products. Study 1a showed that products with bimodal (vs. unimodal) ratings are perceived to tell you more about the person who likes them. The two studies reported in study 1b replicated this finding using different distributions and a different comparison (i.e., high-variance multimodal distributions). This provides evidence that polarization (as reflected by bimodality in ratings) increases perceptions of self-expressiveness above equally varied but more equally distributed preferences. Hence, polarizing products are perceived to be more self-expressive.

The remaining studies examined contexts in which bimodal distributions lead to more favorable evaluations and greater willingness to pay. Previous literature showed that lacking clarity in one's self-views is aversive (McGregor and Marigold 2003) and leads people to act in ways that will help them clarify their self-views. In line with these findings, studies 2a and 2b showed that people low in

self-concept clarity found movies with a bimodal (vs. unimodal) distribution to be more desirable and were willing to pay more to purchase them. These results are consistent with the idea that as compared to products with unimodal ratings distributions, products with bimodal ratings distributions provide a better means of self-expression. Study 3 showed that contexts in which it is important to express one's individual identity (e.g., an art gallery opening) led polarizing outfits to be perceived as more desirable, but this was not the case in contexts in which one might want to avoid too much individual self-expression through one's dress (e.g., a job interview). Study 4 showed that self-expressive product attributes (e.g., style) and self-expressive consumption contexts led products with bimodal ratings distributions to be evaluated more favorably. Further, we showed that these effects are mediated by the perceived self-expressiveness of the product. Last, study 5 showed that the desire to express an individual-level identity, compared to a group-level identity, led to an increased preference for products that one's in-group finds polarizing. Thus the overarching takeaway of our work is that polarizing products can serve as effective indicators of one's individual-level self-concept and are therefore preferred when individual-level self-expression needs are dominant.

Because ratings take on different meanings for various product attributes and various consumers, breaking down ratings by product attributes may be a good strategy for firms to adopt. Separating the rating distributions for quality and style could be important for identity-relevant products, for which some distributions convey information about self-expressiveness and others do not. For example, separating out ratings for the quality and style of clothing could allow shoppers to more accurately interpret the self-expressive nature of the product. It is also interesting to consider the expertise of the target customers as a predictor of how a product rating distribution will be interpreted. For example, a professional woodworker could find the quality rating of a hammer to be self-expressive, and may not care about the visual appeal (i.e., the style) rating of the hammer. On the other hand, someone who is just looking to purchase a hammer for odd jobs could interpret the quality ratings to have a functional, non-self-expressive meaning. Distinguishing between quality and style rating distributions could also be important for populations that generally have low identity clarity and are thus looking for a way to individuate. For example, adolescents, who are still developing their sense of self and identity (Erikson 1959), could be more likely to choose products with polarizing distributions. In advertising to self-uncertain demographics, firms would be advised to disclose rating distributions particularly if those distributions are polarizing.

Because polarized rating distributions are defined by a distribution of divergent consumer ratings, our results also contribute to the literature on identity signaling through distinctiveness cues. Because an unclear self-concept creates negative affect (McGregor and Marigold 2003) and a coherent self-concept is psychologically beneficial (Campbell et al. 1996), people attempt to restore self-concept clarity when it is threatened. For example, people choose an apple over M&Ms when their confidence in their self-view of being a healthy individual is threatened (Gao et al. 2009). This article is the first that we know of to show that choice of polarizing products is another route consumers take to clarify their self-views. Our work also shows that people prefer polarizing products more generally when they have self-expression needs, such as when consuming a product in a self-expressive context. Whereas previous work has focused on products with specific group-identity associations or products that vary in their overall uniqueness, our research focuses on the level of consensus about how good or bad an individual product is.

Because consumers are increasingly shopping at online retailers, it is important to examine how online and brick-and-mortar shopping contexts might differ. A key difference is the social dynamic across the two contexts. The interactions that exist between the consumer and a salesperson, other consumers, or shopping companions are absent in the primarily solitary activity of online shopping. However, social influence still exists in online social networks and the abundant online ratings and reviews. Rating distributions are an example of an emerging social dynamic in the consumer space. That is, the level of consensus of opinions among other consumers, and where the customer's opinion of the product lies relative to other consumers, provides potentially valuable social information.

It is worth noting that, although our focus was on polarization as operationalized by bimodality in rating distributions, our findings could be applicable to any context in which a product's polarizing nature is known or can be inferred. That is, rating bimodality is only one indicator of a polarizing product. These findings could therefore generalize to any context in which people can infer that a product is polarizing, even in the absence of product ratings. We have some data in support of this idea. In an additional study not reported in the present article, participants viewed 100 products listed on Amazon.com (heart rate monitor, batteries, *Jurassic Park* movie, photo frame, etc.). They saw the image and description of the product but did not see any ratings. They then rated each product themselves and later indicated how expressive they thought each product was. We found that products that had greater bimodality in the participant sample ratings were viewed as more self-expressive. Hence, in this study, people naturally inferred self-expressiveness from products that happened to be polarizing even though they did not see any rating distribution and were not directed to think about whether the product is polarizing.

This suggests the possibility that those with high self-expression needs may prefer polarizing products even when they have no explicit indication of others' perceptions of the product.

Boundary Conditions and Directions for Future Research

This work highlighted conditions under which people exhibited an active preference for polarizing products. Perhaps surprisingly, people exhibited a preference for polarizing products even when choosing a sweatshirt to express their group identity (study 5). This preference for polarizing products was far from universal, however. We consistently showed a directional, though frequently nonsignificant, preference for products with unimodal distributions when self-expression needs were low. Consistent with other prior literature, we expect that there are other potential moderators of this effect. For example, the products in our studies belong to categories that were all at least ambiguously self-expressive and for which relatively low consumer consensus could be expected to exist (Berger and Heath 2007). In more utilitarian product categories with greater consensus, preference for polarizing products could be reversed (e.g., He and Bond 2015).

Culture is an additional likely moderator of the effects. Whereas expression of group identity is central for people from Eastern cultures (Markus and Kitayama 1991; Triandis 1989, 1995), individual self-expression is much more important to people from Western cultures (Kim and Sherman 2007). In fact, those in Western cultures seek ways to accentuate their individual identities even when trying to express group identity (Chan et al. 2012). As a result, one might expect smaller preferences for polarizing products in Eastern cultures, though this could depend further on the nature of the polarization (e.g., within-group polarization vs. between-group polarization).

Although we examined three prototypical types of rating distributions, there are unexplored variations in rating distributions that could have implications for the extent to which they indicate product self-expressiveness. We expect that the perceived self-expressiveness of products, as inferred from rating distributions, is enhanced as the distributions increase in variance and indicate greater distinctiveness between modes, but other dimensions could also matter.

For example, the valence of the distribution mean could potentially further moderate the effects. Like previous work, this article focused on distributions with positive means because the vast majority of products have positive ratings on average. However, because self-expressiveness could stem not only from the polarizing nature of the product but also from simply having an atypical opinion, the overall valence of the distribution could have a further effect. We conducted an exploratory test of this notion by using the prompt in study 1a and comparing unimodal to bimodal rating distributions while varying both the average star rating (3.5 vs. 2.5) and the acquaintance's opinion of the movie (liked vs. disliked) between participants. We found that across all four conditions, the product with the bimodal distribution was viewed as significantly more self-expressive, suggesting that uniqueness alone is not driving the effects. That said, uniqueness itself can also serve needs for self-expression (Morrison and Wheeler 2010) and can lead products to be preferred (Wang et al. 2015), so future research is needed to establish the extent to which uniqueness could contribute above the effects we have shown for polarization.

Conclusion

Our work sheds new light on the psychological inferences people draw from online product rating distributions, and in doing so, it also demonstrates a novel feature of products that are used for self-expression and self-definition: polarization. Polarizing products serve as a means of creating self-concept clarity and expressing oneself to others. Although adopting polarizing products is not without risk—by definition, a large number of people dislike polarizing products—this risk is outweighed by the benefits of clear and defined self-views. In our quest to say who we are, it helps to simultaneously say who we are not.

DATA COLLECTION INFORMATION

The first author collected and analyzed all of the data with the exception of study 1b, which was collected and analyzed by the second author. All analyses were reviewed by the first and second authors. The data were collected between 2011 and 2016. Participants for the studies were recruited through Amazon's Mechanical Turk (studies 1a, 1b, 2b, and 4), Survey Sampling International (study 2a), and university student pools (studies 3 and 5).

APPENDIX A

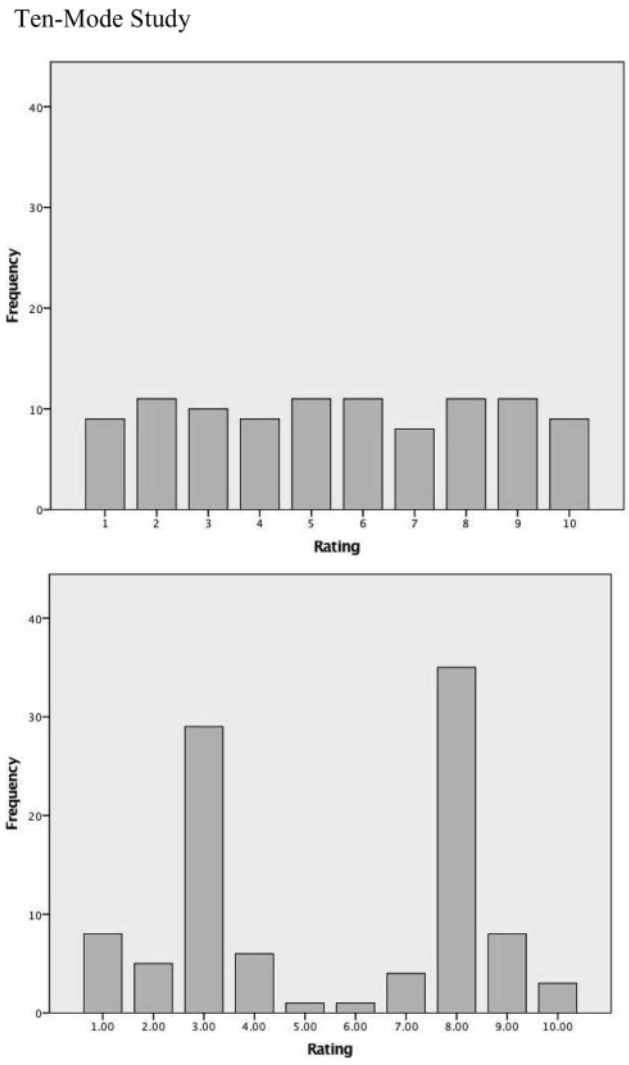
PRODUCT RATINGS WITH A BIMODAL (POLARIZING) DISTRIBUTION (A) AND UNIMODAL (NONPOLARIZING) DISTRIBUTION (B) USED IN STUDIES 1A AND 2–5.

I.

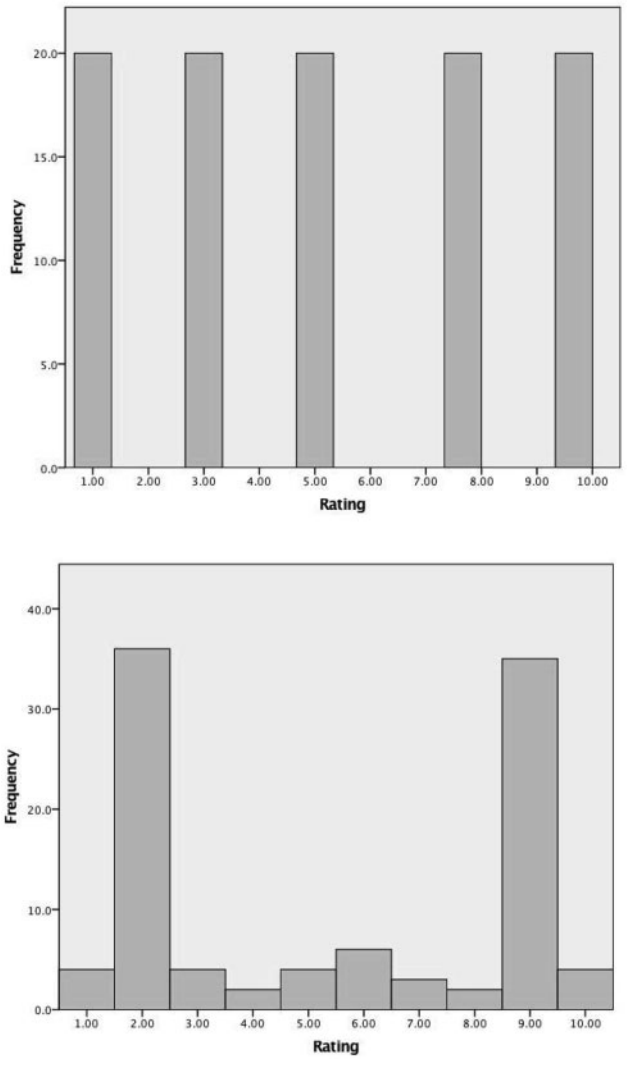
II.

APPENDIX B

PRODUCT RATINGS WITH A FLAT, MULTIMODAL (NONPOLARIZING) OR BIMODAL (POLARIZING) DISTRIBUTION USED IN STUDY 1B



Five-Mode Study



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