ASSOCIATION FOR CONSUMER RESEARCH

Labovitz School of Business & Economics, University of Minnesota Duluth, 11 E. Superior Street, Suite 210, Duluth, MN 55802

How Does Incongruity Perception Influence Product Evaluation? Examination of the Inverted U Shape Relation Predicted By Schema Congruity Theory

Xin Gao, Wageningen University, The Netherlands

Ilona E. de Hooge, Wageningen University, The Netherlands

Arnout R.H. Fischer, Wageningen University, The Netherlands

The frequently-used schema congruity theory argues product-incongruity to effect product-evaluations in an inverted u-shape. To test this, we measured a continuous incongruity in within-subjects approach. Five pre-registered studies did not support the theory on group or on individual level, instead showed evaluations to be unaffected by incongruity.

[to cite]:

Xin Gao, Ilona E. de Hooge, and Arnout R.H. Fischer (2020) ,"How Does Incongruity Perception Influence Product Evaluation? Examination of the Inverted U Shape Relation Predicted By Schema Congruity Theory", in NA - Advances in Consumer Research Volume 48, eds. Jennifer Argo, Tina M. Lowrey, and Hope Jensen Schau, Duluth, MN : Association for Consumer Research, Pages: 348-349.

[url]:

http://www.acrwebsite.org/volumes/2660007/volumes/v48/NA-48

How Does Incongruity Perception Influence Product Evaluation? Examination of the Inverted U Shape Relation Predicted by Schema Congruity Theory

Xin Gao, Wageningen University, The Netherlands
Ilona E. de Hooge, Wageningen University, The Netherlands
Arnout R.H. Fischer, Wageningen University, The Netherlands

EXTENDED ABSTRACT

To develop positively evaluated new products, it is crucial to understand the relation between incongruity of products and product evaluation. Consumers easily get bored with typical products, while they often reject products that are extremely incongruent with their expectation (Alexander, Lynch Jr, & Wang, 2008). Schema congruity theory predicts an inverted u shape relation between incongruity and evaluation. Moving from stimuli that are congruent to extremely incongruent, evaluation first increases then decreases (Mandler, 1982).

Although findings from multiple studies seem to support the theory (e.g., Noseworthy, Di Muro, and Murray, 2014; Jhang, Grant, and Campbell, 2012), the evidence appears circumstantial. Most studies created three incongruity levels (congruent, moderately incongruent, extremely incongruent) and examined the theory in between-subjects approach (individuals never saw different stimuli from all three incongruity levels). This approach has two disadvantages. First, where incongruity is defined as the degree of discrepancy between a presented object and the existing schema (Meyers-Levy & Tybout, 1989), dividing incongruity into three levels does not fully reflect the nature of incongruity as a subjective perception from individuals. Second, the theory implies that effect of incongruity on evaluation occurs on individual level, but between-subject approach can only examine the effect on group level. The current research aims to overcome these disadvantages by measuring incongruity as a continuous perception variable and using a within-subject design.

To examine the theory in relevant marketing settings, we used realistic materials differing in two dimensions (conventional vs. repurposed; natural vs. artificial). For example, bamboo (building material) is natural and repurposed for making t-shirts; polyester is an artificial and conventional material for t-shirts. Beyond hypothesizing that repurposed materials are more incongruent than conventional – possibly because of the number of processing steps needed to repurpose a material, we investigated underlying causes of incongruity. Existing research suggests that when evaluating an atypical product, consumers first tried to understand its function (Chitturi, Raghunathan, & Mahajan, 2007). Therefore, we proposed that consumers who fail to understand the material function, consider its use in products to be incongruent.

We thus predicted: (H1) repurposed materials are less congruent than conventional materials (all studies); (H2) an inverted u shape relation exists between incongruity and product evaluation (all studies); and (H3) incongruity is caused by lack of perceived functionality (Study 2 (exploratory), 3a and 3b (confirmatory)). Hypotheses, sample sizes and analysis plans were pre-registered on Open Science Framework before data collection (https://osf.io/w7c94/).

All studies were conducted online using Prolific. Different product categories and corresponding materials were used across studies (Study 1a: bags; 1b and 2: shoes; 3a and 3b: t-shirts). In Study 1a and 1b (N_{1a} = 165, N_{1b} = 161), each participant considered 8 products in a 2 (Natural: natural/artificial) x 2 (Repurpose: repurpose/convention) within-subject design, with two stimuli per condition to increase robustness. Participants first indicated how much they liked 8 products and 8 materials separately. Then 8 out of 64 possible combinations of product pictures with material information (e.g., "This backpack is made of pineapple leaves") were presented. Participants assessed perceived incongruity of the material and evaluated the product again. All scales ranged from 1 (not at all) to 100 (very much). Study 2 (N = 103) replicated Study 1b. Additionally, participants were asked to compare sturdiness of the materials for shoes; and how many steps it would take to prepare a material for use. Studies 3a and 3b (N_{1a} = 105, N_{1b} = 101) replicated Study 2 with different products (t-shirts), and instead of sturdiness, we included four t-shirt relevant functions (durable, soft, washable and breathable) for material comparisons.

We tested all hypotheses in Bayesian linear mixed models. If 95% credible intervals of slope coefficients do not include 0, we claim the corresponding effects exist. H1 was confirmed in all studies: repurposed materials were more incongruent than conventional (table 1).

To test inverted u shape relation between perceived incongruity and product evaluation (H2), we conducted interrupted linear regressions (Simonsohn, 2018). A breaking line separated the region from 1 (incongruity) to 100 (congruity) into two parts. The shape is an inverted u if on the left part the slope is positive, and on the right part the slope is negative. If the standard deviation of slopes is close to or includes 0, we claim that individual difference is too small to care (Miller & Schwarz, 2017). All studies showed a flat line (no relation) between perceived incongruity and product evaluation on both group level and individual level (table 2).

To examine whether lack of perceived functionality explained incongruity, we conducted mediation analysis on the effect of repurpose on incongruity. The results showed that in Study 2, the effect of repurpose on incongruity was mediated by lack of sturdiness (in shoes) (β = -6.81, 95%CI [-14.69, -0.91]), and in Study 3a and 3b, the effect was mediated by lack of softness (in t-shirts) (β_{3a} = -3.10, 95%CI [-7.02, -0.13]; β_{3b} = -3.50, 95%CI [-7.26, -0.73]). We considered the mediation effect from lack of perceived product relevant functionalities (sturdiness for shoes, softness for t-shirts) as strong evidence to confirm H3. Exploratory analysis showed processing steps of materials was also a mediator in Study 2 (β = -3.50, 95%CI [-8.07, -0.39]), but the effect did not replicate in Study 3a and 3b.

Two main findings stand out. First, repurposed materials were perceived more incongruent than conventional, and this can be explained by lack of perceived functionality. Marketers might counter this by emphasizing, for example, sturdiness of pineapple leaves bags. Second, no relation between incongruity and evaluation was found. This may imply the inverted u shape is not as strong as often assumed, or that incongruent stimuli for theory examination are class specific. Much previous research used products which are difficult to categorize, for example a low-price luxury car which fits either luxurious or low-price category. However, consumers may easily categorize bamboo t-shirts as t-shirts and nevertheless perceive incongruity because they consider bamboo as non-functional for t-shirt fabric. We recommend exploring potentially different classes of incongruity in the context of schema congruity theory.

REFERENCES

Alexander, D. L., Lynch Jr, J. G., & Wang, Q. (2008). As time goes by: Do cold feet follow warm intentions for really new versus incrementally new products? *Journal of Marketing Research*, *45*(3), 307–319.

Chitturi, R., Raghunathan, R., & Mahajan, V. (2007). Form versus function: How the intensities of specific emotions evoked in functional versus hedonic trade-offs mediate product preferences. *Journal of Marketing Research*, *44*(4), 702–714.

Jhang, J. H., Grant, S. J., & Campbell, M. C. (2012). Get It? Got It. Good! Enhancing New Product Acceptance by Facilitating Resolution of Extreme Incongruity. *Journal of Marketing Research*, *49*(2), 247–259. https://doi.org/10.1509/jmr.10.0428

Mandler, G. (1982). The Structure of Value: Accounting for Taste. *Affect and Cognition: The 17th Annual Carnegies Symposium on Cognition*, 3–36.

Meyers-Levy, J., & Tybout, A. M. (1989). Schema Congruity as a Basis for Product Evaluation. *Journal of Consumer Research*, *16*(1), 39. https://doi.org/10.1086/209192

Miller, J., & Schwarz, W. (2017). Implications of individual differences in on-average null effects. *Journal of Experimental Psychology: General*, *147*(3), 377–397. https://doi.org/10.1037/xge0000367

Noseworthy, T. J., Di Muro, F., & Murray, K. B. (2014). The Role of Arousal in Congruity-Based Product Evaluation. *Journal of Consumer Research*, *41*(4), 1108–1126. https://doi.org/10.1086/678301

Simonsohn, U. (2018). Two-Lines: A Valid Alternative to the Invalid Testing of U-Shaped Relationships with Quadratic Regressions. *Advances in Methods and Practices in Psychological Science*, *1*(4), 538–555. https://doi.org/10.2139/ssrn.3021690