

7-2014

More Evidence Challenging the Robustness and Usefulness of the Attraction Effect

Sybil Yang

San Francisco State University

Michael Lynn

Cornell University, wml3@cornell.edu

Follow this and additional works at: <http://scholarship.sha.cornell.edu/articles>

Recommended Citation

Yang, S., & Lynn, M. (2014). More evidence challenging the robustness and usefulness of the attraction effect. *Journal of Marketing Research*, 51(4), 508-513. Retrieved [insert date], from Cornell University, School of Hospitality Administration site: <http://scholarship.sha.cornell.edu/articles/585/>

This Article or Chapter is brought to you for free and open access by the School of Hotel Administration Collection at The Scholarly Commons. It has been accepted for inclusion in Articles and Chapters by an authorized administrator of The Scholarly Commons. For more information, please contact hlmdigital@cornell.edu.

More Evidence Challenging the Robustness and Usefulness of the Attraction Effect

Abstract

Ninety-one different attempts to produce an attraction effect (involving a total of 23 product classes and 73 different decoyed choice-sets) produced only 11 reliable effects – significantly fewer than expected given the statistical power of our studies. Cross-scenario analyses indicated that use of meaningful qualitative-verbal descriptions, as well as pictorial depictions, to differentiate choice options substantially reduced the size of those effects. In fact, attraction effects were found at only chance levels using these types of stimuli. The implications of these findings for both marketing practice and research are briefly discussed.

Keywords

attraction effect, consumer behavior, decision making, decoys, product positioning

Comments

Required Publisher Statement

© [American Marketing Association](#). Reprinted with permission. All rights reserved.

SYBIL YANG and MICHAEL LYNN*

Ninety-one attempts to produce an attraction effect (involving a total of 23 product classes and 73 different decoyed choice sets) produced only 11 reliable effects—significantly fewer than expected given the statistical power of the studies. Cross-scenario analyses indicated that the use of meaningful qualitative-verbal descriptions, as well as pictorial depictions, to differentiate choice options substantially reduced the size of those effects. Indeed, the authors found attraction effects at only chance levels using these types of stimuli. The article concludes with a brief discussion of the implications of these findings for both marketing practice and research.

Keywords: decoys, attraction effect, decision making, consumer behavior, product positioning

Online Supplement: <http://dx.doi.org/10.1509/jmr.14.0020>

More Evidence Challenging the Robustness and Usefulness of the Attraction Effect

Marketing research has touted introducing a decoy option that is similar but inferior to a firm's own product as a potentially powerful marketing tactic that can be used to increase market share at the expense of a given competitor (e.g., Dooley 2012; Hoyer and MacInnis 2010). However, the positive effects of such asymmetrically dominated decoys (i.e., attraction effects) proved elusive in a series of studies by Frederick, Lee, and Baskin (2014). Specifically, they report difficulty replicating attraction effects using naturalistic choice stimuli (even using stimuli from successful, published studies) and hypothesize that perceptual representations of choice options do not lend themselves to the sorts of comparisons and mental processes that underlie the effect. Consistent with this hypothesis, they report on several experiments and find attraction effects when choice options were described numerically but not when those same options and attributes were visually depicted. They conclude that the attraction effect is not as robust or useful as is widely believed because it is limited to highly abstract and numeric stimulus presentations that differ from those in real-world marketing contexts.

In this article, we present additional evidence from an independently conducted program of research on the attraction effect that supports Frederick, Lee, and Baskin's (2014) conclusions. Like them, we also experienced difficulty producing attraction effects, even when using previously successful stimuli from published research and sample sizes comparable to those typical in the literature. Analyses of our data across scenarios (using attraction effect test as the unit of analysis) conceptually replicate their experimental findings that pictorial information attenuates the attraction effect and demonstrates that meaningful qualitative verbal information differentiating choice options (e.g., brand names, protein type, beverage type) also attenuates the effect. We present details about our methods and findings herein along with a brief discussion of their implications for marketing practice and research.

EXPERIMENTAL METHODS

The current study comprises 11 experiments with multiple attraction effect choice scenarios in each (for a summary, see Table 1). Participants in Experiment 1 were a convenience sample of friends and acquaintances, those in Experiment 2 were undergraduate students, those in Experiment 4 were members of the public in an outdoor commons area of an upstate New York town, and those in the remaining experiments were recruited from Amazon.com's Mechanical Turk (MTurk). The experiments involved 91 attempts to produce the attraction effect using a total of 23 product classes under

*Sybil Yang is Assistant Professor, College of Business, San Francisco State University (e-mail: sybil@sfsu.edu). Michael Lynn is Burton M. Sack '61 Professor in Food and Beverage Management, School of Hotel Administration, Cornell University (e-mail: wml3@cornell.edu). Stephen Nowlis served as associate editor for this article.

Table 1
SUMMARY OF EXPERIMENTAL METHODS

Experiment	1	2	3	4	5	6	7	8	9	10	11
Format	Online Convenience	Online Undergraduate students	Online MTurk	Paper/pen General population	Online MTurk	Online MTurk	Online MTurk	Online MTurk	Online MTurk	Online MTurk	Online MTurk
Participant pool	REI (short) 7	REI (long) 10	None	None	CRT 6	CRT 2	CRT 5	CRT 6	CRT 2	None	None
Personality scale	14	20	3	12	12	3	10	12	2	1	1
Number of choice scenarios											
Number of decoy scenarios											
<i>Presentation Order</i>											
Scenarios	Randomized	Randomized	Fixed	Fixed	Randomized	Randomized	Randomized	Randomized	Randomized	Randomized	Randomized
Options	Randomized	Randomized	Fixed	Fixed	Randomized	Randomized	Randomized	Randomized	Randomized	Randomized	Randomized
<i>Random Assignment of Participants to Conditions by Scenario</i>											
Participant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Scenario	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	N.A.	N.A.
<i>Sample Size Range per Scenario Condition</i>											
Control	25-30	20-84	60	55-56	69-96	13-53	58-69	87-118	98-102	74	209
Treatment	26-37	18-95	58	56-60	65-126	16-47	51-75	81-120	100-102	83	212
Total sample size	90	232	118	116	227	100	192	263	373	157	421

Notes: REI = Rational-Experimental Inventory, CRT = Cognitive Reflection Test, and MTurk = Amazon Mechanical Turk. N.A. = not applicable.

73 different decoyed choice sets. We refined the stimuli used in each successive study to include choice scenarios that more closely mirrored those of previous successful experiments. Full reproductions of the stimuli are available in Web Appendix A, and the observed choice counts are available in Web Appendix B.

Each choice scenario had at least two test conditions: a two-option control condition and a three-option decoy condition in which one control condition option was positioned as an asymmetrically dominating target option. Most choice scenarios also administered a third test condition in which the remaining control condition option was positioned as the asymmetrically dominating target option. All experiments employed a between-subjects design with random assignment of participants to conditions. All but two experiments used separate randomization of treatment condition for each choice scenario as well as randomization of the choice scenarios themselves and the options within each scenario.

At minimum, two pieces of data were collected for each participant-choice scenario combination: the participant's experimental condition and the option he or she chose from the provided alternatives. Other data collected varied by experiment but typically included participant demographics and scores on measures of thinking styles/preferences.¹

RESULTS

We measured the existence and strength of an attraction effect for each choice scenario as the difference between the control condition and decoy condition choice shares for target X and competitor Y. We performed chi-square tests on each decoy scenario to determine whether the difference between control and decoy scenarios was statistically significant. Consistent with prior studies, we ignored decoy shares when calculating target and competitor shares. Table 2 summarizes choice probability and chi-square results from each experiment choice scenario.

Overall, we observed attraction effects across scenarios at a proportion greater than chance. Eleven of the 91 (12.1%) choice scenarios produced statistically significant attraction effects for the target (at $p < .05$), and no scenarios produced statistically significant effects for the competitor. The 12% of statistically significant attraction effects was reliably greater than the 5% that chance alone would predict (Binomial test $p < .003$). However, the percentage of significant attraction effects was significantly lower than the expected rate of 29.5% according to power analyses assuming a true effect size of an 11.4% share shift (Binomial test $p < .001$), which is the mean effect size reported in Heath and Chatterjee's (1995) meta-analysis.² Overall, we were able to create the attraction effect at better-than-chance rates, but the effect was not consistently reproducible across scenarios.

A total of 37 of our 91 scenarios involved only numeric descriptions of the attributes to differentiate choice options, while 54 involved either some pictorial depictions of the options ($n = 12$) or qualitative descriptions that meaning-

fully differentiated the options (e.g., brand name, protein type, beverage type; $n = 42$). Nine of the 37 scenarios with only numeric product descriptions (23.7%) produced significant attraction effects, whereas only 2 of the 54 scenarios with some qualitative description or pictorial depiction of the choice options (3.7%) produced significant attraction effects.³ This difference in rate of producing attraction effects was statistically significant ($\chi^2(1) = 8.79, p < .005$). The average effect size for scenarios with only numeric descriptions of the choice options was a share shift of 8.0% in favor of the target, and the average effect size for scenarios involving some meaningful nonnumeric description of the choice options was a significantly smaller share shift of 1.1% in favor of the target ($t(89) = 3.08, p < .005$). We obtained comparable results for separate comparisons of effect sizes for numeric versus pictorial representations ($M_{\text{numeric}} = 8.0\%$ vs. $M_{\text{pictorial}} = .88\%$; $t(47) = 1.89, p < .07$) and for numeric versus qualitative-verbal representations ($M_{\text{qualitative}} = 1.20\%$; $t(77) = 2.83, p < .007$). Pictorial and qualitative-verbal representations of choice options did not reliably differ in the size of the attraction effect they produced ($M_{\text{pictorial}} = .88\%$ vs. $M_{\text{qualitative}} = 1.20\%$; $t(52) = .10, n.s.$).⁴ These findings provide an independent conceptual replication of Frederick, Lee, and Baskin's (2014) experimental results and indicate that a broader array of nonnumeric representations of choice options than those used in their experiments attenuate the effect.

DISCUSSION

The results from this study join those of Frederick, Lee, and Baskin (2014) in suggesting that the attraction effect is less robust and useful than widely believed. Like them, we found the effect to be more difficult to replicate than expected given the statistical power of our studies. Consistent with their explanation for these replication problems, cross-scenario analyses of our data indicate that use of meaningful qualitative-verbal descriptions, as well as pictorial depictions, to differentiate choice options significantly reduced the size of our effects. Indeed, we found attraction effects only at chance levels using these types of stimuli, but the effects were produced at expected levels when we used only numeric representations of choice attributes. These findings are not promising for practitioners who hope to employ asymmetric decoy tactics as a way to increase market share for a targeted product because verbal descriptions and/or pictorial depictions of choice options are common in real-world marketing contexts. As such, these findings also highlight Meyer's (2013) point that academic marketing researchers face the key challenge of ensuring that research is both relevant and credible.

The prevalent use of highly abstract and unrealistic product depictions in the attraction effect literature suggests that academics have placed too little value on the ecological

¹Analyses of the potentially moderating effects of thinking style did not support expectations that intuitive thinkers would exhibit stronger attraction effects (see Web Appendix C).

²We calculated the power of detecting a difference in proportions for each scenario using the scenario's sample sizes in each condition, the target's share in the control condition as P_1 , $P_1 + .114$ as P_2 , and an alpha of .05.

³The success rate with only numeric stimuli seems low given a casual reading of the literature, but it is not reliably smaller than expected according to the power analyses described previously (for details, see Web Appendix D).

⁴Repeating these analyses while statistically controlling for experiment produced essentially the same results as those reported in the text.

Table 2
CONTINUED

Scenario ID Number	Product	Picture	All-Numeric Descriptor	Attribute A	Dimension B	Relative % Share				Effect Size	χ^2	p-Value
						Control		Decoy				
						C	T	C	T			
E4Q11Da	Fish entrée	No	No	Type and quality	Price	44.6%	55.4%	40.0%	60.0%	4.6%	.21	.65
E4Q12Db	Steak	No	No	Quality (cut)	Price	42.9%	57.1%	48.8%	51.2%	-6.0%	.35	.55
E5Q11Da	Beer (six-pack)	No	Yes	Price	Quality score	34.2%	65.8%	34.2%	65.8%	.1%	.00	.99
E5Q11Db	Beer (six-pack)	No	Yes	Price	Quality score	65.8%	34.2%	80.9%	19.1%	-15.1%	4.09	.04
E5Q2Da	Wine (bottle)	No	Yes	Price	Quality score	50.0%	50.0%	53.2%	46.8%	-3.2%	.14	.71
E5Q2Db	Wine (bottle)	No	Yes	Price	Quality score	50.0%	50.0%	29.8%	70.2%	20.2%	6.85	.01
E5Q3Da	Restaurant	No	Yes	Distance	Quality score	36.5%	63.5%	26.7%	73.3%	9.8%	1.66	.20
E5Q3Db	Restaurant	No	Yes	Distance	Quality score	63.5%	36.5%	45.1%	54.9%	18.4%	4.97	.03
E5Q4Da	Breakfast sandwich	Yes	No	Calories	Fat	47.9%	52.1%	48.1%	51.9%	-2%	.00	.97
E5Q4Db	Breakfast sandwich	Yes	No	Calories	Fat	52.1%	47.9%	53.7%	46.3%	-1.6%	.04	.83
E5Q5Da	Pastry	Yes	No	Type	Calories/fat	75.4%	24.6%	77.2%	22.8%	-1.8%	.06	.81
E5Q5Db	Pastry	Yes	No	Type	Calories/fat	24.6%	75.4%	18.8%	81.2%	5.8%	.68	.41
E5Q6Da	Soda	Yes	No	Calories	Sugars	20.8%	79.2%	18.5%	81.5%	2.3%	.12	.73
E5Q6Db	Soda	Yes	No	Calories	Sugars	79.2%	20.8%	83.5%	16.5%	-4.3%	.48	.49
E6Q11Da	Date prospect	Yes	No	Facials A	Facials B	84.6%	15.4%	56.3%	43.8%	28.4%	2.70	.10
E6Q11Db	Date prospect	Yes	No	Facials A	Facials B	15.4%	84.6%	20.0%	80.0%	-4.6%	.12	.73
E6Q2Db	The Economist	No	No	Price	Features	88.7%	11.3%	83.7%	16.3%	5.0%	.50	.48
E7Q11Da	Beer (six-pack)	No	Yes	Price	Quality score	76.8%	23.2%	62.1%	37.9%	14.7%	3.44	.06
E7Q11Db	Beer (six-pack)	No	Yes	Price	Quality score	23.2%	76.8%	11.3%	88.7%	11.9%	2.86	.09
E7Q2Da	Laptop	No	Yes	RAM	Battery life	25.9%	74.1%	14.9%	85.1%	10.9%	2.32	.13
E7Q2Db	Laptop	No	Yes	RAM	Battery life	74.1%	25.9%	69.5%	30.5%	4.6%	.31	.58
E7Q3Da	Wine (bottle)	No	Yes	Price	Quality score	51.6%	48.4%	20.7%	79.3%	30.9%	12.46	.00
E7Q3Db	Wine (bottle)	No	Yes	Price	Quality score	48.4%	51.6%	36.4%	63.6%	12.1%	1.94	.16
E7Q4Da	Restaurant	No	Yes	Distance	Quality score	46.7%	53.3%	23.2%	76.8%	23.5%	7.87	.01
E7Q4Db	Restaurant	No	Yes	Distance	Quality score	53.3%	46.7%	48.4%	51.6%	4.9%	.30	.58
E7Q5Da	Steak	No	No	Quality (cut)	Price	17.2%	82.8%	17.5%	82.5%	-3%	.00	.97
E7Q5Db	Steak	No	No	Quality (cut)	Price	82.8%	17.2%	87.9%	12.1%	-5.1%	.63	.43
E8Q11Da	Beer (six-pack)	No	Yes	Price	Quality score	84.9%	15.1%	55.8%	44.2%	29.2%	20.30	.00
E8Q11Db	Beer (six-pack)	No	Yes	Price	Quality score	15.1%	84.9%	9.4%	90.6%	5.6%	1.31	.25
E8Q2Da	Laptop	No	Yes	RAM	Battery life	28.0%	72.0%	12.8%	87.2%	15.1%	6.29	.01
E8Q2Db	Laptop	No	Yes	RAM	Battery life	72.0%	28.0%	76.0%	24.0%	-4.0%	.44	.51
E8Q3Da	Wine (bottle)	No	Yes	Price	Quality score	51.1%	48.9%	17.1%	82.9%	34.0%	22.03	.00
E8Q3Db	Wine (bottle)	No	Yes	Price	Quality score	48.9%	51.1%	40.3%	59.7%	8.6%	1.55	.21
E8Q4Da	Restaurant	No	Yes	Distance	Quality score	33.0%	67.0%	30.5%	69.5%	2.5%	.13	.72
E8Q4Db	Restaurant	No	Yes	Distance	Quality score	67.0%	33.0%	53.9%	46.1%	13.1%	3.50	.06
E8Q5Da	Steak	No	No	Quality (cut)	Price	20.7%	79.3%	7.6%	92.4%	13.1%	5.05	.02
E8Q5Db	Steak	No	No	Quality (cut)	Price	79.3%	20.7%	83.5%	16.5%	-4.2%	.52	.47
E8Q6Da	Soda	Yes	No	Quality (brand)	N.A.	64.4%	35.6%	61.4%	38.6%	3.0%	.18	.68
E8Q6Db	Soda	Yes	No	Quality (brand)	N.A.	35.6%	64.4%	41.4%	58.6%	-5.8%	.73	.39
E9Q11Da	Wine (bottle)	No	Yes	Price	Quality score	25.5%	74.5%	20.8%	79.2%	4.7%	.60	.44
E9Q2Da	Wine (bottle) labels	Yes	No	Price	Quality score	34.3%	65.7%	43.8%	56.2%	-9.5%	1.63	.20
E10Q1Da	Refrigerators	No	Yes	Operating cost	Freeze time	48.6%	51.4%	57.8%	42.2%	-9.2%	1.33	.25
E11Q1Da	Binoculars	No	Yes	Price	Power	58.7%	41.3%	49.6%	50.4%	9.1%	2.31	.13
E11Q2Da	Refrigerators	No	Yes	Operating cost	Freeze time	45.5%	54.5%	36.4%	63.6%	9.1%	1.02	.31

Notes: N.A. = not applicable. Choice scenarios are labeled in the following format: Experiment (E), Question (Q), and Decoy Version (D). For example, the decoy version targeting the first option in the second question of the fifth survey is expressed as (E5Q2D1). For the observed choice counts, see Web Appendix B.

validity and practical utility of findings in this area.⁵ To enhance its relevance to marketing practice, further research on the attraction effect should use more ecologically valid stimuli. Although we found significant attraction effects at only chance rates when using qualitative and pictorial information about the choice options, it remains possible that some circumstances exist in which the effect can be reliably produced with these stimuli. Indeed, there are numerous published findings of attraction effects using nonnumeric descriptions/depictions of the choice options in addition to those that we and Frederick, Lee, and Baskin (2014) failed to replicate (see Choplin and Hummel 2005; Chuang and Yen 2007; Fasolo et al. 2006; Pan, O'Curry, and Pitts 1995; Shafir, Waite, and Smith 2002; Slaughter, Bagger, and Li 2006; Slaughter, Sinar, and Highhouse 1999). Thus, further research exploring the conditions under which these stimuli produce the effect is worth pursuing. More generally, academic marketing researchers should observe from this body of literature how easy it is to generate a theory–practice gap (Meyer 2013) and should remain vigilant to ensure that marketing research is not only scientifically credible but also relevant to marketing practice.

REFERENCES

- Choplin, Jessica and John Hummel (2005), "Comparison-Induced Decoy Effects," *Memory & Cognition*, 33 (2), 332–43.
- Chuang, Shih-Chieh and HsiuJu Rebecca Yen (2007), "The Impact of a Product's Country-of-Origin on Compromise and Attraction Effects," *Marketing Letters*, 18 (4), 279–91.
- Dooley, Roger (2012), *Brainfluence: 100 Ways to Persuade and Convince Consumers with Neuromarketing*. Hoboken, NJ: John Wiley & Sons.
- Fasolo, Barbara, Raffaella Misuraca, Gary H. McClelland, and Maurizio Cardaci (2006), "Animation Attracts: The Attraction Effect in an On-Line Shopping Environment," *Psychology & Marketing*, 23 (10), 799–811.
- Frederick, Shane, Leonard Lee, and Ernst Baskin (2014), "The Limits of Attraction," *Journal of Marketing Research*, 51 (August), 487–507.
- Heath, Timothy B. and Subimal Chatterjee (1995), "Asymmetric Decoy Effects on Lower-Quality Versus Higher-Quality Brands: Meta-Analytic and Experimental Evidence," *Journal of Consumer Research*, 22 (3), 268–84.
- Hoyer, Wayne D. and Deborah MacInnis (2010), *Consumer Behavior*, 5th ed. Mason, OH: South-Western Cengage.
- Meyer, Robert (2013), "Paul Green," *Journal of Marketing Research*, and the Challenges Facing Marketing," *Journal of Marketing Research*, 50 (February), 1–2.
- Pan, Yigang, Sue O'Curry, and Robert Pitts (1995), "The Attraction Effect and Political Choice in Two Elections," *Journal of Consumer Psychology*, 4 (1), 85–101.
- Shafir, Sharoni, Tom A. Waite, and Brian H. Smith (2002), "Context-Dependent Violations of Rational Choice in Honeybees (*Apis Mellifera*) and Gray Jays (*Perisoreus Canadensis*)," *Behavioral Ecology and Sociobiology*, 51 (2), 180–87.
- Slaughter, Jerel E., Jessica Bagger, and Andrew Li (2006), "Context Effects on Group-Based Employee Selection Decisions," *Organizational Behavior and Human Decision Processes*, 100 (1), 47–59.
- , Evan F. Sinar, and Scott Highhouse (1999), "Decoy Effects and Attribute-Level Inferences," *Journal of Applied Psychology*, 84 (5), 823–28.

⁵The same is true of the widespread practice of comparing the target-decoy share (from set {T, C, D_T}) with the target's share in a competitor-decoy scenario (from set {T, C, D_C}). For details, see Web Appendix D.

Copyright of Journal of Marketing Research (JMR) is the property of American Marketing Association and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.