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## **Brand Exposure Makes Decisions Easier**

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The most consequential use of brands by consumers occurs during decision making episodes. We propose that this causes consumers to initiate a cognitive readiness for decision making when merely exposed to brands. Such readiness subsequently makes unrelated decisions (e.g., “What should I do during an hour of free time?”) easier.

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# Show Me What You Can Do: Emerging Research on the Roles of Brands

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## Paper #1: Brand Exposure Makes Decisions Easier

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## Paper #2: Sex and Status Sell to Monkeys: Social Advertising Creates Brand Preferences in Rhesus Macaques

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## Paper #3: Symbolic Brand Synergy: When 1 is Greater Than 2

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## Paper #4: Performance Brand Placebos: How Brands Improve Performance and Consumers Take the Credit

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### SESSION OVERVIEW

Brands serve many roles in the modern marketplace. They function as indicators of products' manufacturers, containers of associations, signals of quality, and cues of compatibility, among others. The papers in this session advance knowledge on brand roles by focusing on the capabilities of brands, the underlying processes that enable them, and the unintended consequences that emerge from their typical usage in today's world. In doing so, the papers answer fundamental questions such as: "What does it mean to be a brand?" and "What do brands do for us?" Our answers bear consequence not only for the theory of brands, but also for consumers engaging in daily interaction with brands, firms building and managing brands, and policy makers regulating brand activities.

In the first paper, Rahinel, Otto, Clarkson, and Grossman study how decision making is affected by the presence of brands. Specifically, they find that brand exposure makes subsequent decisions easier. Process evidence shows that brand exposure cues a cognitive readiness for decision making, which leads to greater ease in decision making.

In the second paper, Acikalin, Watson, Fitzsimons, and Platt study brand preferences in rhesus monkeys. They find that pairing brand logos with sex- and status-based images builds brand preferences consistent with evolutionary principles. Thus, although though more elaborate cognitive systems in humans allow sophisticated rationalizations for brand preferences, those preferences may in fact simply result from associative conditioning.

In the third paper, Coary examines the effect of brand labels in symbolic complementary settings where a consumed product (e.g., beer) is paired with a supporting product (e.g., glass). He finds that enjoyment of the consumed product is heightened when its brand matches that of the supporting product. Process evidence supports brand involvement as an underlying process for the effect.

In the fourth paper, Garvey, Germann, and Bolton examine the underlying processes and consequences of brand placebo effects. They find that performance brands heighten the self-concept, which lowers state anxiety, and subsequently improves performance. Furthermore, consumers attributed enhanced performance to themselves, apparently ignoring the role of brand in this process.

These projects, all in advanced stages, offer new insights into general capabilities that extend across all brands. Notably, they also appeal to a broad audience, as they not only intersect with but also tackle central questions in variety of other popular areas in consumer behavior such as decision making, evolutionary behavior, performance outcomes, and consumption enjoyment. Finally, the novel methodologies, interesting outcomes, and fresh perspectives on the topic promise to facilitate dialogue amongst session attendees and ultimately advance connections.

## Brand Exposure Makes Decisions Easier

### EXTENDED ABSTRACT

Brand exposure has profound impacts on behavior. Subliminal exposure to thrift brands like Wal-Mart makes people choose thriftier options (Chartrand, Huber, Shiv, and Tanner 2008), exposure to the Apple (vs. IBM) brand logo makes people generate more creative ideas (Fitzsimons, Chartrand, and Fitzsimons 2008), and finally, using a Red Bull car in a video game makes players race more aggressively and recklessly (Brasel and Gips 2011). Brands apparently cue behavior in line with their core associations.

In the current work, we broaden this line of inquiry by studying brand exposure effects of a general nature. That is, we ask the question: "What are the consequences of exposure to brands of *any kind*?" Our point of departure from this question comes from the simple notion that the most consequential use and consideration of brands by consumers occurs during decision making episodes, such as product choice (Jacoby, Speller, and Kohn 1974; Jacoby, Szybillo, Busato-Schach 1977; Mela, Gupta, and Lehmann 1997). We propose that, akin to classical conditioning processes (Pavlov 1927; Rescorla 1988), such pairing leads brand exposure to prompt a cognitive readiness for decision making. Although this is the first work to instantiate the notion of decision readiness, its conceptualization draws from other forms of cognitive preparation in the domains of task performance (Carlson and Lundy 1992; Monsell 2003; Sohn and Carlson 1998), behavior anticipation (Hull 1951; Spence 1937), and motor control (Haggard and Eimer 1999; Libet et al., 1983; Wohlert 1993). Consistent with the findings in such literatures, we further propose that decision readiness makes the experience of subsequent decision making easier. That is, brand exposure makes decisions easier by cueing a cognitive readiness for decision making. We test this framework in a series of three studies.

The objective of study 1 was to conduct a test of the basic effect with real brands. Participants completed a 15 item quiz about either brand logos or driving signs (in the control condition). There were two forms of each quiz to counteract any effects produced by the specific brands or driving signs chosen. We then told participants that we sometimes give away small gifts instead of course credits in exchange for completing their studies, and that we were interested in determining students' preferences these types of gifts. Participants indicated which of six small, non-branded gifts they would choose. We measured several constructs: option similarity, decision ease, decision confidence, and decision deliberation. We also measured the subjective difficulty of the quiz, as well as demographic information, including age. We measure subjective difficulty of the manipulation as well as participant age (which may co-vary with both readiness and ease) at the end of each study, and control for them in all analyses. Preliminary results demonstrated

that there were no differences between forms within each condition, so we collapsed them within condition. There was no effect of exposure condition on the particular option chosen, perceived option similarity, decision confidence, or decision deliberation. However, there was the predicted effect of brand (vs. driving signs) exposure on decision ease, with those exposed to brands (vs. driving signs) expressing greater ease in their product decision.

In study 2, we sought to replicate the effect using a different manipulation and provide evidence for the underlying mechanism via mediation. In the brand condition, participants evaluated 30 designs which we told them were potentially new brand logos for brands about to enter the mainstream market. Each “logo” was rated on a scale from 1 = terrible brand logo to 7 = excellent brand logo. In the control condition, participants evaluated the same 30 designs as in the brand condition, but were instead told that the designs were abstract art designs by local college students. Each art design was rated on a scale from 1 = terrible art piece to 7 = excellent art piece. After the exposure manipulation, participants saw the same choice set and cover story as in study 1. We measured decision ease and decision readiness (e.g., “I felt prepared to make a choice”). We also sought to rule out rival mechanisms by measuring other constructs: number of attributes considered, comparative processing, random choice, and choice satisficing. Results replicated the core effect from study 1, and the same pattern of data held for the decision readiness measure. Furthermore, a mediation analysis showed that the effect of brand (vs. art) exposure framing on decision ease was mediated by decision readiness. Alternative mechanisms did not mediate the effect.

In study 3, we aimed to conceptually replicate the effect using a different choice set and provide more evidence for the underlying mechanism via moderation. Participants completed the same brand exposure manipulation as in study 2. They were then told to imagine that they had an hour of free time, and to choose one of six activities (e.g., take a walk, take a nap) to do during that time. Decision ease was measured using the same items as in studies 1 and 2. We then measured decision readiness as a dispositional variable using four items (e.g., “I am always prepared to make decisions”). We tested our core hypothesis by regressing decision ease on brand exposure, chronic decision readiness, their interaction, and control measures. There were positive main effects of both decision readiness and brand exposure. More importantly, there was a significant interaction such that brand exposure strongly increased decision ease for those chronically low in decision readiness, whereas there was no effect of brand exposure for those high in decision readiness, who all experienced relatively high decision ease. Looking at the interaction another way, there was a significantly positive effect of decision readiness for those in the control exposure condition, whereas there was no significant effect of decision readiness for those in the brand exposure condition, since brand exposure presumably increased readiness for participants anyway. Overall, these results document an important general effect of brand exposure and highlight readiness as a key consideration in the study of decision making.

### **Sex and Status Sell to Monkeys: Social Advertising Creates Brand Preferences in Rhesus Macaques**

#### **EXTENDED ABSTRACT**

Over the course of human evolution, natural selection shaped psychological tendencies that promote survival and reproduction within an intensely social context (Kenrick et al., 1994). Today, these cognitive biases continue to influence behavior, including virtually all consumer settings. Social rewards, including depictions

of sex and social status, reliably elicit innate motivational drives, and their use in motivating behavior is a favored strategy in advertising. Consumers respond more favorably to attractive ads with models from the opposite gender (Baker and Churchill, 1977), and physiological studies in humans find that nudity in advertising indeed elicits strong physiological responses (Belch et al., 1982). Association of products with an individual of high social status is another common advertising strategy. In some cultures, more than half of all advertisements feature celebrities (Choi, 2005). Notably, sexuality and celebrity endorsements in advertisements are appealing across cultures, suggesting these strategies tap into universal human characteristics (Paliwoda, 2009; Praet, 2001). This observation suggests that the psychology underlying the formation of advertising-driven brand preferences could have deep evolutionary roots.

Exactly why and how sex and social status in advertising influences consumer behavior remains unknown. Some theories rely on high-level cognition of the consumer, such as the attribution of beliefs of a celebrity spokesperson about the desirability of the product (Silvera and Austad, 2004; see Erdogan, 1999 for review). Conversely, a simple association between a product, a social reward, and the cognitive and physiological state this reward induces in the consumer, may be adequate to bias preferences toward the product.

Visual depictions of sex and status influence preferences in monkeys, suggesting that social rewards could be used to alter preferences for objects paired with them (Deaner et al., 2005; Watson and Platt, 2008). Because old world monkeys and humans diverged 25 million years ago, the presence of a cognitive bias in both families suggests evolutionarily ancient origins. Shared brain circuits mediating social perception and valuation in rhesus macaques and humans provide a mechanism by which this bias may be translated into preferences for brands associated with sex and status (Chang et al., 2013; Pearson et al., 2014). Here we experimentally test whether a sex- and status- based ad campaign can elicit brand preferences in adult rhesus monkeys.

Three stimulus sets were used as *models* in an ad campaign in which social images (female *perinea*, *dominant* male faces, and *subordinate* male faces) or their corresponding control images were paired with brand logos.

Monkeys were exposed to a series of *advertisement trials* interleaved with *decision trials* that allowed assessment of logo preference. During a decision trial, monkeys had to tap on a central fixation square, and then tap on a brand logo image of their choice. Advertisement and decision trials were randomly interleaved. The orders of presentation for the three different ad campaigns and for the two logos for each campaign (Social vs. Control image) were drawn randomly with replacement. Each session consisted of seventy ad trials and thirty decision trials. Each monkey (n=5 males and n= 5 females) completed 100 *baseline* decision trials prior to the beginning of the experiment, and demonstrated no pre-existing preference for any logo before exposure to the ad campaign ( $p>0.7$ ).

Because ads are known to lose impact over repeated viewings (Campbell and Keller, 2003; see Pechmann and Stewart, 1988 for review), the efficacy of each ad campaign was evaluated during the initial phase (trials 1-20 for each ad) of the experiment. Specifically, analysis in Study 1 was restricted to decisions made up until each monkey had seen 10 control and 10 social advertisements from each stimulus set (dominant, subordinate, perinea).

A logistic regression analyzing decision outcome as a function of ad campaign category (*SPORTperinea*, *CARDominant*, or *PIZZASubordinate*) and sex of the monkey subject revealed a significant interaction between ad campaign category and sex. Specifically, male monkeys, but not female monkeys, were more

likely to choose *SPORTperinea* over *SPORTcontrol* while, female monkeys, but not male monkeys, were more likely to choose *CARDominant* over *CARcontrol*. These findings show that male monkeys develop an advertising-induced bias (AIB) for brand logos paired with sexual images of female monkeys, and that female monkeys develop a preference for brand logos paired with faces of dominant male macaques. To determine how advertising efficacy changed over repeated exposures to ads, we next regressed the cumulative AIB over the number of relevant non-scrambled advertisements seen for each category, with the intercepts fixed to zero based on our baseline results. These results show that male monkey preferences for the *SPORT* logo paired with sexual images increases with repeated ad exposure, and that female monkey preferences for the *CAR* logo paired with high status images increases over repeated ad exposure. These findings also show that female monkeys show decreased preference for the *PIZZA* logo repeatedly paired with low status images, while male monkeys show an increased preference for the *PIZZA* logo paired with low status images with repeated exposure.

Here we show that monkeys develop preferences for logos after social advertising campaigns. Female sexual images increase brand preference in male monkeys, and high status male faces increase brand preference for female monkeys. Finally, pairing images of subordinate males with logos decreases brand preference for females and increased brand preference for male monkeys across our trials. In the context of human marketing and advertising research, our findings endorse the idea that innate, evolutionarily ancient mechanisms mediate socially induced brand preferences.

### Symbolic Brand Synergy: When 1 is Greater Than 2

#### EXTENDED ABSTRACT

Consumers are often exposed to multiple branded products during their consumption experiences. Sometimes these products are consumed together in a functional fashion (e.g., cake and frosting) while other times only one is consumed while the other plays a symbolic role (e.g., drinking a beer out of a branded glass). In a functional setting, Rahinel and Redden (2013) found that consumers enjoyed the experience more when the products' brands matched (vs. mismatched), since matching brands cued inferences that the products were designed for each other. This research studies whether such an effect might occur in a symbolic consumption setting, where inferences of product coordination are likely to be muted.

I posit that brand matching in symbolic complementarity setups indeed leads to greater utility for the consumed product under specific circumstances. Specifically, people with a high need for internal consistency may receive utility from brand matching, as these consumers prefer consistency in their lives, including their consumption experiences. Furthermore, I hypothesize that the effect is also bounded to brands high in perceived quality, as the brand matching of the second product can reinforce the quality of the primary product that is being consumed. Such reinforcement of the brand through a secondary product increases a consumer's brand involvement, which subsequently leads to a better consumption experience. I tested this framework in a series of three studies.

The goal of Study 1 is twofold: to demonstrate that the effects of brand synergy extend beyond functional complementarity to symbolic complementarity and to investigate one's need for internal consistency as a moderator for these effects. A one-way two level between subjects design was utilized. Brand synergy was manipulated by having participants drink Coca-Cola out of a Coca-Cola branded cup or a Solo cup. Results reveal that symbolic

brand synergy has a significant effect on attitudes towards the soda, consumers' interest in drinking more, and their likelihood to purchase. These effects are moderated by an individual's need for consistency, where consumers with a high need for consistency have higher attitudes and behavioral intentions for brand synergy than those with low need for consistency.

Study 2 investigates the quality of the brands as a potential moderator for the effects of symbolic brand synergy. To further test the strength of symbolic brand synergy, water was utilized as the experimental product. Consumers have a difficulty in evaluating the quality of the actual water and rely solely on the brand name for perceived quality. A pretest confirms the quality (1-9 scale) manipulation of the two brands utilized, (Fiji High Quality vs. Arrowhead Low Quality). The experimental procedure was similar to that utilized in Study 1. To further investigate the effects of brand synergy, the amount of water consumed was measured as the dependent variable. Regression results reveal a significant main effect for brand synergy, a significant main effect for quality, and a significant interaction. There was a significant difference in the amount of water consumed for the high quality brand, but no significant difference in the amount of water drank for the low quality brand. These results suggest that only high quality brands are significantly affected by symbolic brand synergy.

The purpose of Study 3 is to investigate the underlying process driving the effects of brand synergy and investigate the effects in another product category, thus expanding its generalizability. A one-way three level design was utilized manipulating brand synergy. Dunkin Donuts were utilized with a Dunkin Donut napkin, Starbucks napkin, or control (plain white) napkin. Comparing the Dunkin Donuts vs. Starbucks first; results demonstrate a significant main effect for brand synergy on attitudes towards the food and on taste evaluations. To investigate the proposed mediating mechanism (brand involvement) for brand synergy on attitudes towards the food, Hayes's (2013) PROCESS procedure was utilized, and it was demonstrated that brand involvement significantly mediated the effect. Similar results occur between the Dunkin Donuts and control (plain white napkin) condition.

Three studies demonstrate that the effects of brand synergy occur during symbolic complementarity products not just functional products as found in previous research. These studies suggest that brands can benefit from increased attitudes and increased consumption by providing their consumers with a secondary branded product (glass, napkin, plate, wristband, etc.) during consumption of the primary product.

### Performance Brand Placebos: How Brands Improve Performance and Consumers Take the Credit

#### EXTENDED ABSTRACT

Firms frequently promise consumers that use of their brands will improve performance outcomes. Claims of superior materials, craftsmanship, design, or other components can be quite convincing, and certainly true in some instances. However, when products or services are functionally homogenous, could the simple belief that a particular brand is effective at enhancing performance actually improve objective performance? To answer this question, we develop and test a framework for performance brand consumption by drawing on the literatures on placebo effects (Plassmann et al. 2008; Shiv, Carmon, and Ariely 2005; Waber et al. 2008), performance anxiety and stress responses (Crum, Salovey, and Achor 2013; Eysenck et al. 2007), and self-attributions (Malle 2006). In doing so, our

research increases knowledge at the intersection between branded consumption and consumer performance outcomes.

Our research focuses upon the implications of performance brand consumption for the consumer's mental and emotional state in influencing task outcomes. We demonstrate that performance brand consumption has objectively measurable effects upon performance due to purely perceived and illusory (i.e. immaterial) brand differences, consistent with a placebo effect (Shiv et al. 2005). Paradoxically, although this performance brand placebo emerges most strongly when consumers believe the branded offering impacts performance, consumers tend to credit any positive gains to the self, rather than the brand. We provide evidence for the psychological mechanisms through which both effects upon performance and attribution emerge. Specifically, we propose that consumption of a performance branded product serves to reduce the experience of state anxiety as the result of a bolstered self-concept. The experience of state anxiety has been demonstrated to redirect attention and cognitive resources away from consciously pursued outcomes (Eysenck et al. 2007), and to increase ruminative thought (Carver and Scheier 1988), thereby interfering with performance in achieving those outcomes. Consumption of a performance branded product will serve to reduce such debilitating state anxiety, thereby improving performance. This effect emerges through the impact of brand consumption upon the self-concept. To the extent that the brand is congruent with an idealized self, it should re-enforce that positive self-view and accordingly bolster the self-concept (Berger and Ward 2010; Fournier 1998; Muniz and O'Guinn 2001). A bolstered self-concept will in turn reduce task induced anxiety (Baumeister et al. 2003; Koivula et al. 2002; Langendörfer et al. 2006), thereby improving performance. Furthermore, a bolstered self-concept should increase attributions for improved performance to the self, rather than the performance brand.

Support for a performance brand placebo is observed in four studies across a variety of brands, product categories, and athletic and cognitive performance contexts. Study 1 was a field experiment that utilized an athletic context and examined how the salience of performance brands alters exercise behavior, as well as downstream attributions for athletic performance. A two-group between subjects design manipulated the salience of performance brands worn by members of a health club. Participants in the salient performance brand condition performed their workouts significantly longer than those in the control condition. Furthermore, salient performance brands increased attributions for workout performance to the self.

Study 2 replicated these effects in a golfing context while exploring the underlying process role of experienced anxiety. Participants were members of a health club that agreed to help test a golf putter by performing a series of actual golf putts. The putter was manipulated to be either a strong (Nike) or weak (Starter) performance brand. Participants who used the strong performance brand required fewer strokes to successfully complete a putt. Mediation analysis revealed that participants using the strong performance branded experienced less state anxiety while putting, thereby requiring fewer putts to succeed.

Study 3 demonstrated the performance brand placebo in a cognitive performance context. A three-group design was employed that included a performance brand salience condition (participants described worn brands and reflected upon implications for performance), non-performance brand salience condition (participants described worn brands), and control condition. Participants in the performance brand salience condition demonstrated higher scores on a test of five questions (Frederick 2005) versus those in the non-performance brand salience and control conditions. Serial mediation analysis revealed that performance brand salience heightened the self-

concept, which in turned lowered state anxiety, thereby improving cognitive performance. The heightened self-concept simultaneously increased attributions to the self rather than the performance brand. Notably, the performance brand placebo emerges only when brands relevant to performance are made salient. Finally, study 4 (details omitted for brevity's sake) further explicated the role of state anxiety by examining stress mindset (Crum et al. 2013) as a theoretically relevant boundary condition for a performance brand placebo.

In summary, this research expands upon the literatures examining placebo effects, performance anxiety and stress responses, and self-attributions to explain how branded offerings systematically improve (or undermine) consumer outcomes in a variety of cognitive and athletic contexts. Whereas prior work examining placebo effects has developed theory concerning subjective outcomes (e.g., perceived pain reduction), with limited findings for objective performance outcomes, our work explains how objective outcomes are systematically improved or harmed by performance brand consumption, and through mechanisms distinct from traditional, subjective placebo effects. We shed insight into the psychological underpinnings of this performance enhancing effect by proposing and providing empirical support for an anxiety-reduction mechanism, which is driven by a bolstered self-concept. Furthermore, we reveal how consumers tend to credit themselves, rather than brands, for performance gains. Thus whereas prior research has demonstrated that branded consumption that bolsters the self-concept improves consumer-brand connections, we find that consumers do not acknowledge the role of performance brands in determining outcomes.

## REFERENCES

- Alexander, M. Wayne, and Judd, Ben (1978), "Do Nudes in Advertisements Enhance Brand Recall?" *Journal of Advertising Research*, 18, (1), pp. 47-50.
- Ariely, Dan, and Berns, Gregory S. (2010), "Neuromarketing: The Hope and Hype of Neuroimaging in Business," *Nature Reviews Neuroscience*, 11(4), 284-292. Nature Publishing Group.
- Baker, Michael J., and Churchill Jr, Gilbert A. (1977), "The Impact of Physically Attractive Models on Advertising Evaluations," *Journal of Marketing Research*, 538-55.
- Baumeister, Roy F., Jennifer D. Campbell, Joachim I. Krueger, and Kathleen D. Vohs (2003), "Does High Self-esteem cause Better Performance, Interpersonal Success, Happiness, or Healthier Lifestyles?" *Psychological Science in the Public Interest*, 4 (May), 1-44.
- Belch, Michael A., Holgerson, Barbro E., Belch, George E., and Koppman, Jerry (1982), "Psychophysiological and cognitive responses to sex in advertising," *Advances in Consumer Research*, 9(1), 424-27.
- Berger, Jonah, and Morgan Ward (2010), "Subtle Signals of Inconspicuous Consumption," *Journal of Consumer Research*, 37 (December), 555-69.
- Blood, Anne J. and Zatorre, Robert J. (2001), "Intensely Pleasurable Responses to Music Correlate with Activity in Brain Regions Implicated in Reward and Emotion," *Proceedings of the National Academy of Sciences* 98, 818-23. (doi:10.1073/pnas.191355898)
- Brainard, David H. (1997), "The Psychophysics Toolbox," *Spatial Vision* 10:433-36.

- Brasel, S. Adam, and Gips, James (2011), "Red Bull 'Gives You Wings' for Better or Worse: A Double-Edged Impact of Brand Exposure on Consumer Performance," *Journal of Consumer Psychology*, 21(1), 57-64.
- Bray, Signe and O'Doherty, John (2007), "Neural Coding of Reward- Prediction Error Signals During Classical Conditioning with Attractive Faces," *Journal of Neurophysiology*, 97, 3036-45. (doi:10.1152/jn.01211.2006)
- Campbell, Margaret C. and Keller, Kevin L. (2003), "Brand Familiarity and Advertising Repetition Effects," *Journal of Consumer Research*, 30(2), 292-304.
- Carlson, Richard A., and Lundy, David H. (1992), "Consistency and Restructuring in Learning Cognitive Procedural Sequences," *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 18(1), 127.
- Carver, Charles S., and Michael F. Scheier (1988), "A Control-process Perspective on Anxiety," *Anxiety Research*, 1, 17-22.
- Chang, Steve W., Gariépy, Jean-François, and Platt, Michael L. (2013), "Neuronal Reference Frames for Social Decisions in Primate Frontal Cortex," *Nature Neuroscience*, 16(2), 243-50.
- Chartrand, Tanya L., Huber, Joel, Shiv, Baba, and Tanner, Robin J. (2008), "Nonconscious Goals and Consumer Choice," *Journal of Consumer Research*, 35(2), 189-201.
- Chen, M. Keith, Lakshminarayanan, Venkat, and Santos, Laurie R. (2006), "How Basic Are Behavioral Biases? Evidence from Capuchin Monkey Trading Behavior," *Journal of Political Economy*, 114(3), 517-37. The University of Chicago Press.
- Cheney, Dorothy L. and Seyfarth, Robert M. (1990), "How Monkeys See the World," Chicago, IL: University of Chicago Press.
- Chestnut, Robert W., LaChance, Charles. C., and Lubitz, Amy (1977), "The Decorative Female Model: Sexual Stimuli and Recognition of Advertisements," *Journal of Advertising*, 6(3), 11-14.
- Choi, Sejung M., Lee, Wei-Na., and Kim, Hee-Jung. (2005), "Lessons from the Rich and Famous: A Cross-Cultural Comparison of Celebrity Endorsement in Advertising," *Journal of Advertising*, 34(2), 85-98.
- Crum, Alia J., Peter Salovey, and Shawn Achor (2013), "Rethinking Stress: The Role of Mindsets in Determining the Stress Response," *Journal of Personality and Social Psychology*, 104 (April), 716-33.
- Deaner, Robert O., Khera, Amit V., and Platt, Michael L. (2005), "Monkeys Pay Per View: Adaptive Valuation of Social Images by Rhesus Macaques," *Current Biology*, 15(6), 543-48.
- Domb, Leah G. and Pagel, Mark (2001), "Sexual Swellings Advertise Female Quality in Wild Baboons," *Nature* 410, 204-206. (doi:10.1038/35065597)
- Erdem, Tulin (1998), "An Empirical Analysis of Umbrella Branding," *Journal of Marketing Research*, 35 (August), 339-51.
- Erdogan, B. Zafer (1999), "Celebrity Endorsement: A Literature Review," *Journal of Marketing Management*.
- Eysenck, Michael W., Nazanin Derakshan, Rita Santos, and Manuel G. Calvo (2007), "Anxiety and Cognitive Performance: Attentional Control Theory," *Emotion*, 7 (2), 336.
- Fitzsimons, Gráinne M., Chartrand, Tanya L., and Fitzsimons, Gavan J. (2008) "Automatic Effects of Brand Exposure on Motivated Behavior: How Apple Makes You "Think Different", " *Journal of Consumer Research*, 35, 21 - 35.
- Fournier, Susan (1998), "Consumers and Their Brands: Developing Relationship Theory in Consumer Research," *Journal of Consumer Research*, 24 (March), 343-73.
- Frederick, Shane (2005) "Cognitive Reflection and Decision Making," *Journal of Economic Perspectives*, 19 (Fall), 25-42.
- Ghazanfar, Asif A. and Santos, Laurie R. (2004), "Primate Brains in the Wild: The Sensory Bases for Social Interactions," *Nature Reviews Neuroscience* 5, 603-16. (doi:10.1038/nrn1473)
- Hadland, K. A., Rushworth, Matthew F. S., Gaffan, D, and Passingham, R. E. (2003), "The Effect of Cingulate Lesions on Social Behaviour and Emotion," *Neuropsychologia* 41, 919-31. (doi:10.1016/S0028-3932(02)00325-1)
- Haggard, Patrick, and Eimer, Martin (1999), "On the Relation Between Brain Potentials and the Awareness of Voluntary Movements," *Experimental Brain Research*, 126(1), 128-33.
- Harris, Judy, and Edward A. Blair (2006), "Functional Compatibility Risk and Consumer Preference for Product Bundles," *Journal of the Academy of Marketing Science*, 34 (1), 19-26.
- Hrdy, Sarah B. and Whitten, P. L. (1987), "The Patterning of Sexual Activity Among Primates. In *Primate Societies*," (eds B. Smuts, D. L. Cheney, R. M. Seyfarth, R. Wrangham & T. Struhsaker), 370-84. Chicago, IL: University of Chicago Press.
- Hull, Clark L. (1951), "Essentials of Behavior," New Haven, CT: Yale University Press.
- Jacoby, Jacob, Speller, Donald E., & Kohn, Carol A. (1974). "Brand Choice Behavior as a Function of Information Load," *Journal of Marketing Research*, 63-69.
- Jacoby, Jacob, Szybillo, George J., and Busato-Schach, Jacqueline (1977), "Information Acquisition Behavior in Brand Choice Situations," *Journal of Consumer Research*, 209-16.
- Janiszewski, Chris, and Warlop, Luk (1993), "The Influence of Classical Conditioning Procedures on Subsequent Attention to the Conditioned Brand," *Journal of Consumer Research*, 20(2), 171-89. The University of Chicago Press.
- Kenrick, Douglas T., Neuberg, Steven L., Zierk, Kristin L., and Krones, Jacquelyn M. (1994), "Evolution and Social Cognition: Contrast Effects as a Function of Sex, Dominance, and Physical Attractiveness," *Personality and Social Psychology Bulletin*, 20(2), 210-17.
- Klein, Jeffrey T., Deaner, Robert O. and Platt, Michael L. (2008), "Neural Correlates of Social Target Value in Macaque Parietal Cortex," *Current Biology* 18, 419-424. (doi:10.1016/j.cub.2008.02.047)
- Kleiner Mario, Brainard David, and Pelli Denis, (2007), "What's New in Psychtoolbox-3?" *Perception* 36 ECV Abstract Supplement.
- Koivula, Nathalie, Hassmen, Peter, and Fallby Johan (2002), "Self-esteem and Perfectionism in Elite Athletes: Effects on Competitive Anxiety and Self-confidence," *Personality and Individual Differences*, 32 (5), 865-75.
- Langendörfer, Franziska, Hodapp, Volker, Kreutz, Gunter, and Bongard, Stephan (2006), "Personality and Performance Anxiety among Professional Orchestra Musicians," *Journal of Individual Differences*, 27 (3), 162-71.
- Lee, Nick, Broderick, Amanda J., and Chamberlain, Laura (2007), "What is 'Neuromarketing'? A Discussion and Agenda for Future Research," *International Journal of Psychophysiology*, 63(2), 199-204.

- Libet, Benjamin, Gleason, Curtis A., Wright, Elwood W., and Pearl, Dennis K. (1983), "Time of Conscious Intention to Act in Relation to Onset of Cerebral Activity (Readiness-Potential)," *Brain*, 106(3), 623-42.
- Malle, Bertram F (2006), "The Actor-observer Asymmetry in Attribution: a (Surprising) Meta-analysis," *Psychological Bulletin*, 132 (6), 895-919.
- MATLAB and Statistics Toolbox Release 2012b, The MathWorks, Inc., Natick, Massachusetts, United States.
- Mela, Carl F., Gupta, Sunil, and Lehmann, Donald R. (1997), "The Long-Term Impact of Promotion and Advertising on Consumer Brand Choice," *Journal of Marketing Research*, 248-61.
- Mobbs, Dean, Greicius, Michael D., Abdel-Azim, Eiman, Menon, Vinod, & Reiss, Allan. L. (2003), "Humor Modulates the Mesolimbic Reward Centers," *Neuron* 40, 1041-1048. (doi:10.1016/S0896-6273(03)00751-7)
- Monsell, Stephen (2003), "Task Switching," *Trends in Cognitive Sciences*, 7(3), 134-40.
- Morrison, Bruce J., and Sherman, Richard C. (1972), "Who Responds to Sex in Advertising?" *Journal of Advertising Research*, 12, (2), 15-19.
- Muniz, Albert M., Jr., and O'Guinn, Thomas C. (2001), "Brand Community," *Journal of Consumer Research*, 27 (March), 412-32.
- Paliwoda, S.J., Slater, S., Liu, Fang, Cheng, Hong, and Li, Jianyao (2009), "Consumer Responses to Sex Appeal Advertising: A Cross-Cultural Study," *International Marketing Review*, 26(4/5), 501-20.
- Pavlov, Ivan P. (1927), "Conditioned Reflexes: An Investigation of the Physiological Activity of the Cerebral Cortex," G. V. Anrep (Ed.).
- Pearson, John M., Watson, Karli K., & Platt, Michael L. (2014). "Decision Making: The Neuroethological Turn," *Neuron*, 82(5), 950-65.
- Pechmann, Cornelia and Stewart, David W. (1988), "Advertising Repetition: A Critical Review of Wearin and Wearout," *Current Issues and Research in Advertising*, 11(1-2), 285-329.
- Pelli, Denis G. (1997), "The VideoToolbox Software for Visual Psychophysics: Transforming Numbers into Movies," *Spatial Vision* 10:437-42.
- Peter, J. P., and Olsen, Jerry C. (1987), "Consumer Behavior: Marketing Strategy Perspectives," Homewood, IL: Irwin.
- Philosophical transactions of the Royal Society of London. Series B, Biological sciences, 363(1511), 3825-35. doi:10.1098/rstb.2008.0159
- Plassmann, Hilke, John O'Doherty, Baba Shiv, and Antonio Rangel (2008), "Marketing Actions can Modulate Neural Representations of Experienced Pleasantness," *Proceedings of the National Academy of Sciences*, 105 (January), 1050-4.
- Praet, Carolous (2001), "Japanese Advertising, the World's Number One Celebrity Showcase? A Cross-Cultural Comparison of the Frequency of Celebrity Appearances in TV Advertising," In *Proceedings of the 2001 SpecialAsia-Pacific Conference of the American Academy of Advertising*, M. Roberts and RL King, eds. *Japan: Kisarazu* (6-13).
- Rahinel, Ryan and Redden, Joseph (2013), "Brands As Product Coordinators: Matching Brands Make Joint Consumption Experiences More Enjoyable," *Journal of Consumer Research*, 40 (June), 1290-1300.
- Reichert, Tom (2002), "Sex in Advertising Research: A Review of Content, Effects, and Functions of Sexual Information in Consumer Advertising," *Annual Review of Sex Research*, 13(1), 241-73.
- Reichert, Tom, Heckler, Susan E., and Jackson, Sally (2001), "The effects of sexual social marketing appeals on cognitive processing and persuasion," *Journal of Advertising*, 30(1), 13-27.
- Rescorla, Robert A. (1988), "Pavlovian Conditioning: It's Not What you think it is," *American Psychologist*, 43(3), 151.
- Rudebeck, Peter. H., Buckley, Mark J., Walton, M. E., and Rushworth, Matthew F. S. (2006), "A Role for the Macaque Anterior Cingulate Gyrus in Social Valuation," *Science* 313, 1310-12. (doi:10.1126/science.1128197)
- Schmidt, Gunter. (1975), "Male-Female Differences In Sexual Arousal And Behavior During And After Exposure To Sexually Explicit Stimuli," *Archives of Sexual Behavior*, 4, 353-64.
- Severn, Jessica, Belch, George E., and Belch, Michael A. (1990), "The Effects of Sexual and Non-Sexual Advertising Appeals and Information Level on Cognitive Processing and Communication Effectiveness," *Journal of Advertising*, 14-22.
- Shiv, Baba, Ziv Carmon, and Dan Ariely (2005), "Placebo Effects of Marketing Actions: Consumers May Get What They Pay For," *Journal of Marketing Research*, 42 (November), 383-93.
- Silvera, David H., and Austad, Benedikte (2004), "Factors Predicting the Effectiveness of Celebrity Endorsement Advertisements," *European Journal of Marketing*, 38(11/12), 1509-26.
- Small, Dana M., Zatorre, Robert J., Dagher, Alain, Evans, Alan C., and Jones-Gotman, Marilyn (2001), "Changes in Brain Activity Related to Eating Chocolate—from Pleasure to Aversion," *Brain* 124, 1720-33. (doi:10.1093/brain/124.9.1720)
- Sohn, Myeong-Ho, and Carlson, Richard A. (2000), "Effects of Repetition and Foreknowledge in Task-set Reconfiguration," *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 26(6), 1445.
- Spence, Kenneth W. (1937), "The Differential Response in Animals to Stimuli Varying within a Single Dimension," *Psychological Review*, 44(5), 430.
- Steadman, Major (1969), "How Sexy Illustrations Affect Brand Recall," *Journal of Advertising Research*, 9, (1), 15-19.
- Van Hoof, J. A. R. A. M. (1967), "The Facial Displays of the Catarrhine Monkeys and Apes. In *Primate Ethology*," (ed. D. Morris), 7-68. Chicago, IL: Aldine.
- Waber, Rebecca L., Baba Shiv, Ziv Carmon, and Dan Ariely (2008), "Commercial Features of Placebo and Therapeutic Efficacy," *Journal of the American Medical Association*, 299 (9), 1016-7.
- Waite, Corrie, Little, Anthony C., Wolfensohn, Sarah, Honess, Paul, Brown, Anthony P., Buchanan-Smith, Hannah M., and Perret, David I. (2003), "Evidence from Rhesus Macaques Suggests that Male Coloration Plays a Role in Female Primate Mate Choice," *Proceedings of the Royal Society of London B: Biological Sciences*, 270, S144-46. (doi:10.1098/rsbl.2003.0065)
- Watson, Karli K., and Platt, Michael L. (2008), "Neuroethology of Reward and Decision Making," *Philosophical Transactions of the Royal Society B: Biological Sciences*, 3825-35

- Watson, Karli K., Matthews, Benjamin J., and Allman, John M. (2007), "Brain Activation During Sight Gags and Language-Dependent Humor," *Cerebral Cortex* 17, 314-24. (doi:10.1093/cercor/bhj149)
- Wilson R. Dale and Moore Noreen K. (1979), "The Role of Sexually-Oriented Stimuli in Advertising: Theory and Literature Review," in NA - Advances in Consumer Research Volume 06, eds. William L. Wilkie, Ann Arbor, MI : *Association for Consumer Research*, 55-61.
- Wise, Gordon L., Ring, Alan L., and Merenski, J. Paul (1974), "Reactions To Sexy Ads Vary With Age," *Journal of Advertising Research*, 14, (4),11-16.
- Wohlert, Amy B. (1993), "Event-Related Brain Potentials Preceding Speech and Nonspeech Oral Movements of Varying Complexity," *Journal of Speech, Language, and Hearing Research*, 36(5), 897-905.