



Non-Conscious Influences on Consumer Choice

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Accepted February 7, 2002

Abstract

While consumer choice research has dedicated considerable research attention to aspects of choice that are deliberative and conscious, only limited attention has been paid to aspects of choice that occur outside of conscious awareness. We review relevant research that suggests that consumer choice is a mix of conscious and nonconscious influences, and argue that the degree to which nonconscious influences affect choice is much greater than many choice researchers believe. Across a series of research domains, these influences are found to

include stimulus that are not consciously perceived by the consumer, nonconscious downstream effects of a consciously perceived stimuli or thought process, and decision processes that occur entirely outside of awareness.

Key words: non-conscious choice, implicit effects on attitude, memory and behaviour

Consumer choice is traditionally assumed to be a conscious, deliberative process. Increasingly, however, research has shown that a large part of consumer decision making occurs outside of conscious awareness or is influenced by factors unrecognized by the decision maker. Based on a review of this research, we argue that all decisions consist of a mix of conscious and nonconscious processes, and that the degree to which nonconscious processes influence the consumer choice process is much greater than most choice researchers believe. The areas covered in this review include attention and perception, goal activation and pursuit, learning and memory, attitudes and preferences, affect, and choice.

1. Attention and Perception

1.1. *The Effect of Attention on Nonconscious Processing*

Attention is no longer viewed as a bottom-up process that proceeds from an automatic sensory perception, to preconscious processing, and then to selection for conscious awareness. Conscious goals and rules can affect attentional mechanisms (Corbetta et al. 1991; Posner and Snyder 1975). Long-term memory can affect the preconscious analysis of information (Greenwald 1992). Perception may even be a preparatory process that “looks” for features to “support” expectations (Marcel 1983).

Attention also plays a critical role in learning. Mere spatial-temporal contiguity is not sufficient for Pavlovian learning in humans, and “demand awareness” can mediate preparatory conditioning (Miller et al. 1995). A matter of current debate is whether evaluative conditioning requires that participants have some minimum awareness of the prime (Field 2000) or whether a neutral object can acquire evaluative significance without conscious awareness (Baeyens et al. 1998). A perceiver’s goals and motivations may indeed moderate this process. Low-effort learning may be merely associative, whereas high-effort motivated learning may be forward looking and expectancy based (van Osselaer and Janiszewski 2001).

1.2. *Perceptual Biases in Spatial Judgments*

The perception of visual cues does not require higher-order cognitive processing. Salient visual cues can strongly influence many decisions ranging from route choice to package choice. For example, Raghubir and Krishna (1996) revealed a *direct distance bias* in a map-based judgment task wherein individuals use the direct distance between the end points of a path as an initial input into a distance judgment and then correct for path configuration. In a multi-dimensional spatial judgment, the most salient dimension is used

as the starting anchor, without individuals being able to articulate its effect on their judgments (Krider et al. 2001; Raghurir and Krishna 1999). The pattern of results shows that the use of visual cues may be hard-wired, inasmuch as the effect is not eliminated by efforts to motivate or de-bias the perceiver. Indeed, increases in attention to the stimuli, whether through contextual presentation formats, experimental instructions, or individual differences, exacerbates the bias—suggesting that the bias is automatic.

2. Goal Activation and Pursuit

What sets goal pursuit into motion? Perhaps the most intuitively appealing and compelling answer is that our conscious will does. We decide to pursue a particular goal in a particular consumption situation, determine which strategies will best serve us in attaining the goal, engage in goal-directed behavior and plans of action, and evaluate our progress made toward the goal (e.g., Gollwitzer 1990). However, goal pursuit does not always involve deliberate direction of goal-driven behavior. Sometimes it occurs outside of awareness, intent, and even control. Environments automatically activate goals frequently associated with them in the past, and these goals then operate to guide information processing and behavior without conscious intervention (Chartrand and Bargh, 2002). Recent evidence has shown that the environment automatically (i.e., without conscious awareness) activates associated goals and motives (Bargh, Raymond, Pryor, and Strack 1995; Gollwitzer 1999), that individuals pursue goals they are not aware of having (Chartrand and Bargh 1996), and that individuals succeed and fail at nonconsciously-pursued goals, and this has downstream consequences for mood, self-enhancement, and performance (Chartrand 2001).

3. Learning and Memory

3.1. Accessibility, Diagnosticity and Automaticity

Feldman and Lynch (1988) define accessibility as the ease with which something can be retrieved from memory and diagnosticity as the sufficiency of that input for the judgment task at hand. They propose that the use of one input versus another in making judgments is a function of each input's relative accessibility and diagnosticity. This framework can explain the use of competing memory inputs and the use of memory versus contextual information in judgment (e.g., Menon, Raghurir, and Schwarz 1995).

More recent work by Menon and Raghurir (2001) suggests that this two-factor framework may reduce to a single-construct “accessibility framework” when information is automatically retrieved. They show that accessibility and diagnosticity may not be independent or orthogonal constructs. The ease with which information is retrieved from memory (i.e., accessibility) may itself be used as an input in judgment, implying that the relationship between these two constructs may be multiplicative rather than additive. When people are made aware of using retrievability as an input to judgment, discrediting its diagnosticity relative to other more diagnostic sources of information, its use diminishes.

However, if it is discredited after being experienced, it continues to affect judgments. Menon and Raghurir demonstrate that this is because people are not aware of using accessibility as an input to judgment, and are unable to stop using it once it has been activated (cf. Bargh 1989; Bargh and Chartrand 1999).

3.2. Measuring Automatic Effects on Memory

One of the most powerful and useful tools for studying automatic processes in judgment and choice is response-latency analysis. This approach has been used to measure judgment strength (Fazio 1989), measure automatic judgment activation (Fazio, Sanbonmatsu, Powell, and Kardes 1986), and to distinguish between “real” previously-formed judgments stored in memory versus “artificial” measurement-induced or constructed judgments (Fazio, Lenn, and Effrein 1984). Response-latency measures are superior to commonly used paper-and-pencil measures in many respects. They are less reactive, less obtrusive, less susceptible to demand effects, and better predict persistence and resistance (see Bassili 1996). Because the results of thinking rather than the processes of thinking are open to conscious awareness (Nisbett and Wilson 1977), no one has attempted to use standard paper-and-pencil measures to assess automatic judgment activation.

Strong attitudes are highly accessible from memory, can be retrieved relatively quickly, and are also activated automatically upon mere exposure to the attitude object. Automatic activation can be investigated using an evaluative priming paradigm (evaluatively consistent primes and targets result in faster target response times; Fazio et al. 1986) or an implicit association test (Greenwald, McGhee, and Schwartz 1998). Previously formed judgments are retrieved relatively quickly regardless of whether paper-and-pencil measures or response-latency measures are administered first, whereas robust order effects are observed for constructed judgments (Kardes 1988).

3.3. Non-Conscious Learning

Over the past 25 years strong evidence has accumulated that learning can occur without intention or any awareness that it is occurring. This phenomenon is usually called “implicit,” “unconscious,” or “incidental” learning. Concept formation paradigms have typically examined the acquisition of simple multi-attribute rules and found that incidental learning (i.e., the “training” task was unrelated to the concept but exposed subjects to information that was sufficient for learning) results in a level of performance that is moderately high (e.g., 70%–85% correct), but never approaches the near perfect learning that it often obtained when learning is intentional (e.g., see Jacoby and Brooks 1984 and Wattenmaker 1991). Hutchinson and Alba (1991) have examined this paradigm in consumer situations. The terms implicit or unconscious learning have typically been used in paradigms where a complex rule or sequence of events is to be learned. Performance on these tasks is typically poor (e.g., 50% to 70% correct) and, surprisingly, incidental learning is often more effective than intentional learning (e.g., see Berry 1994).

When tested on the learned concepts subjects frequently believe they are just guessing and are skeptical of their own knowledge.

Although the phenomena are certainly real, the dichotomous distinction between implicit and explicit learning is misleading. Whittlesea and Wright (1997) argue that learning has a variety of components, each of which the learner could separately be aware or unaware. They summarize current empirical results as support for the conclusion that people are “massively unaware” of both past influences on current performance and the consequences of current stimuli and decisions on future performance. We concur.

4. Attitudes and Preferences

4.1. Predecisional Distortion

When one alternative emerges as the tentative leader during the choice process, there is a tendency for new information to be biased in favor of that alternative. This phenomenon has been observed in consumer choices (Russo, Meloy, and Medvec 1998), professional decisions (Russo, Meloy and Wilks 2000) and mock trials (Carlson and Russo 2001). The issue is whether decision makers are aware of this distortion of new information. After having made their choice, auditors’ reported their certainty that they “might be ‘seeing’ new information as favoring the alternative believed to be leading,” Russo et al. (2000). This perceived distortion correlated only 0.05 with actual distortion. In the same study, sales representatives who claimed with greater certainty that they did not notice distorting information actually distorted significantly more ($r = -0.21$). In sum, stated awareness of distortion seems invalid. There seems to be little or no recognition of this bias as it occurs.

4.2. Nonconscious Processing and Metacognition

In the present context, metacognition concerns the level of insight consumers or managers have regarding the source, cause, and—in some cases—existence of their knowledge, attitudes, and preferences. Metacognition should be poor when an individual’s responses are driven by stimuli (e.g., Janiszewski 1988) or processes (Seger 1994) that occur below the level of conscious awareness. Although true, this classic view of nonconscious processing is restrictive and understates the degree of metacognitive error.

Conscious awareness is brought into question whenever individuals misidentify the cause or source of their cognitive and affective states. For example, consumers may confuse the true nature of a product experience with a subsequent ad-induced description of it (Braun 1999). Such misinformation can alter beliefs without producing a conscious sense of confusion. Unrecognized biases can result in exaggerated recollection of the differences between chosen and rejected alternatives (Svenson and Benthorn 1992), unintentional overestimation of one’s prior knowledge (see Hawkins and Hastie 1990), and delusions about the consistency of one’s attitudes (Levine 1997). Perception itself can be colored by illusory correlations among product features (Broniarczyk and Alba 1994),

and perceived quality can be driven by expectations rather than performance (Hoch and Ha 1986). Indeed, many “framing” effects reflect non-conscious influences (e.g., Levin and Gaeth 1988). It is also seems safe to argue that people are not consciously aware of the influence that mere perceptual fluency and the misattribution of familiarity can have on their attitudes, confidence, perceptions of truth, and forecasts (see Alba and Hutchinson 2000). Finally, it is doubtful that people are aware of the influence that conditioning and genetics have on everyday behavior (Alba 2000).

5. Affect and Non-Conscious Processes

Researchers have typically distinguished between three types of affect: evaluations (i.e., simple valenced reactions to specific stimuli), moods (i.e., more generalized feeling states that are typically mild and relatively long-lasting), and emotions (i.e., relatively intense feeling states). There is considerable evidence of non-conscious processes within each of these main categories of affective responses.

In the domain of evaluations, a variety of automatic effects have been hypothesized. For example, theories of category-based (or schema-triggered) affect suggest that affective responses to stimuli can be a direct, automatic consequence of the act of categorization (Fiske 1982). When the category is accessed, so too is the related affect which is then transferred automatically to the stimulus. In addition, research on attitude accessibility has demonstrated that strong attitudes speed up responses, suggesting the automatic activation of affect (Fazio, Sanbonmatsu, Powell and Kardes 1986). For very strong attitudes, the mere perception of the attitude object is often sufficient to automatically activate the attitude. Work on mere exposure effects (Zajonc 1968) also suggests that evaluations can be based upon implicit memory for stimuli, again leading to evaluations that occur non-consciously. Recently a number of researchers have focused on the degree to which attitude constructs can operate non-consciously or implicitly to impact behaviors in ways not recognized by conscious processing (i.e., Greenwald and Banaji 1995).

A variety of non-conscious mood effects have also been identified. Previous research has focused on mood congruent memory, such as when enhanced memory for positive material occurs among individuals in a positive mood (Isen 1984), and mood dependent memory, wherein activation of an emotion at the time of encoding later aids in the retrieval of those items when the same emotion is reinstated. In several papers, Eich and colleagues (i.e., Eich 1995; Macaulay, Ryan and Eich 1993) have found both effects to be more reliable and consistent when assessed via implicit rather than explicit memory measures, consistent with the automatic activation of associations between emotions and stimuli. Finally, research in the “affect as information” stream has suggested that mood can impact judgments of such things as happiness (i.e., Clore, Schwarz and Conway 1994), at least when mood effects are not made salient, and thus are more likely to occur in an automatic, non-conscious fashion.

In the domain of emotions, the evidence for non-conscious effects is more mixed, with a number of authors arguing that while emotional appraisal often occurs rapidly and automatically (Smith and Ellsworth 1985), an emotion must be conscious to be felt.

However, research suggests that emotional disorders may often perpetuate themselves in non-conscious ways. For example, depressed subjects exhibit automatic processing of depression-related concepts (Gottlib and McCann 1984) and link such concepts automatically with their self-concepts (Bargh and Tota 1987). Similarly a significant research stream has found that emotion can serve as a perceptual cue that focuses attention on stimuli that are consistent with their current emotional states (Niedenthal 1990).

6. Neuroscience and the Unconscious

Evidence supporting the existence of unconscious mental functioning has been growing in the neuroscience literature as well, particularly from lesion-based neuropsychological studies. Studies conducted on patients suffering from a condition called blindsight provide compelling evidence for subliminal perception and for unconscious processes associated with priming effects. In this condition, patients suffer lesions in either the right or the left visual cortex, resulting in complete blindness to one half of the world. Early studies with such patients found that despite being completely unaware of objects placed in their "blind" hemifields, the patients are able to guess at beyond chance levels the presence of stimuli, the location of stimuli in space, the orientation of lines, the direction of movement of a spot of light, and the color of light (see Weiskrantz 2000). Recently the reports have extended to the semantic biasing by words presented in the blind hemifield (Marcel 1998). The importance of this work is to demonstrate the existence of separate, non-cortical (and non-conscious) information pathways that can affect perception and decision making.

7. Non-Conscious Processes in Choice

It is particularly appropriate to investigate nonconscious influences in choice. Inasmuch as choice pits alternatives against one another, one of the primary influences on choice is reference dependence. Unlike the immediate assimilation effects noted in social judgment theory, this effect of contrast in the evaluation of choice information is automatic (see Petty and Wegener 1993). For example, how one feels about an attribute level (say 35 mpg) depends critically on the competing level of the other alternatives (say, 30 or 40 mpg). We consider two ways that this reference dependence distorts choice. First, in choices, continuous attributes are biased upward compared with categorical attributes (Nowlis and Simonson 1997). Second, the impact of adding a nearly or totally dominated decoy to a choice set results in distortion of choices that can only be partially accounted for by perceptual shifts (Pettibone and Wedell 2000). From the perspective of nonconscious effects on choice, it is noteworthy that both forms of distortion become greater with effort or practice.

With respect to context effects, Simonson (1989) has shown that the attraction effect becomes stronger when respondents are required to justify their results. Had the bias been conscious, it would have been expected to moderate under the high processing condition. Similar results are obtained in research examining the impact of asking questions on

subsequent behavior. For example, Fitzsimons and Shiv (2001) found that when consumers responded to hypothetical questions, the content of the question had a substantial impact on subsequent behavior despite the fact respondents were clearly aware it was purely hypothetical. Further, an increase in cognitive elaboration increased the contaminative effects of hypothetical questions, suggesting a non-conscious mechanism.

Several recent papers have examined the role of subliminal primes on actual consumption behavior and found substantial effects. Winkielman, Berridge and Wilbarger (2001), for example, explored the role of subliminal affective primes on consumption and evaluations of a drink. Subliminal exposure to happy facial expressions caused thirsty participants to pour and consume more of the beverage and to have a higher willingness to pay for the drink, whereas subliminal exposure to angry faces led to decreases in consumption and willingness to pay. Strahan, Spencer and Zanna (2001) found similar increases in drink consumption using both facial expressions and semantic thirst-related primes. Interestingly, in both papers the impact on behavior was observed despite the fact that participants were unaware both that they were exposed to the facial expressions or thirst-related words and that they had unconscious affective reactions to the subliminal primes.

Conclusion

We have briefly reviewed some of the mounting evidence in support of non-conscious influences on many aspects of the consumer choice process. Evidence continues to accumulate regarding stimulus that are not consciously perceived by the consumer, nonconscious downstream effects of a consciously perceived stimuli or thought process, and decision processes that occur entirely outside of awareness. Each of these non-conscious components of consumer choice has important implications for researchers studying consumer decision making, particularly because consumer choice contexts exhibit many of the conditions that lead to automatic processing.

References

- Alba, Joseph W. (2000). "Dimensions of Consumer Expertise . . . Or Lack Thereof." In Stephen J. Hoch and Robert J. Meyer, (eds.), *Advances in Consumer Research*, Vol. 27, Provo, UT: Association for Consumer Research, 1–9.
- Alba, Joseph W., and J. Wesley Hutchinson. (2000). "Knowledge Calibration: What Consumers Know and What They Think They Know," *Journal of Consumer Research*, 27 (September), 123–156.
- Baeyens, Frank, Jan De Houwer, Deb Vansteenwegen, and Paul Eelen. (1998). Evaluative conditioning is a form of associative learning: On the artifactual nature of Field and Davey's (1997) artifactual account of evaluative learning. *Learning and Motivation*, 29, 461–474.
- Bargh, John A. (1989). "Conditional Automaticity: Varieties of Automatic Influence in Social Perception and Cognition" in *Unintended Thought*, Editors, James S. Uleman, and John A. Bargh, New York, NY: Guilford Press, 3–51.
- Bargh, John A., and Tanya L. Chartrand. (1999). "The Unbearable Automaticity of Being," *American Psychologist*, 54(7), 462–479.

- Bargh, J. A., P. Raymond, J. Pryor, and F. Strack. (1995). Attractiveness of the underling: An automatic power sex association and its consequences for sexual harassment and aggression. *Journal of Personality and Social Psychology*, 68, 768–781.
- Bargh, John A., and M. E. Tota. (1988). "Individual Construct Accessibility and Perceptual Selection," *Journal of Experimental Social Psychology*, 22, 293–311.
- Bassili, John N. (1996). "Meta-Judgmental Versus Operative Indexes of Psychological Attributes: The Case of Measures of Attitude Strength," *Journal of Personality and Social Psychology*, 71, 637–653.
- Berry, Diane C. (1994). "Implicit Learning: Twenty-Five Years on." In Carlo Umiltà and Morris Moscovitch (eds.), *Attention and Performance XV, Conscious and Non-Conscious Information Processing*, Cambridge, MA: MIT Press.
- Braun, Kathryn A. (1999). "Postexperience Advertising Effects on Consumer Memory," *Journal of Consumer Research*, 25 (March), 319–334.
- Broniarczyk, Susan M., and Joseph W. Alba. (1994). "Theory Versus Data in Prediction and Correlation Tasks," *Organizational Behavior and Human Decision Processes*, 57 (January), 117–139.
- Carlson, Kurt A., and J. Edward Russo. (2001). "Biased Interpretation of Evidence by Mock Jurors JEP: A," *Journal of Experimental Psychology: Applied* vol. 7(2), 91–103.
- Chartrand, T. L. (2001). *Mystery Moods and Perplexing Performance: Consequences of Succeeding and Failing at a Nonconscious Goal*. Manuscript submitted for publication.
- Chartrand, T. L., and J. A. Bargh. (1996). "Automatic activation of impression formation and memorization goals: Nonconscious goal priming reproduces effects of explicit task instructions," *Journal of Personality and Social Psychology*, 71, 464–478.
- Chartrand, T. L., and J. A. Bargh. (2002). Nonconscious motivations: Their activation, operation, and consequences. In A. Tesser, D. Stapel, and J. Wood (eds.), *Self-Motivation: Emerging Psychological Perspectives*, Vol. 2, Washington, D.C.: American Psychological Association Press, pp. 13–41.
- Corbetta, M., F. M. Miezin, S. Dobmeyer, G. L. Shulman, and S. E. Petersen. (1991). Selective attention during visual discriminations of shape, color, and speed: Functional anatomy by Positron Emission Tomography. *The Journal of Neuroscience*, 11(8), 2382–2402.
- Eich, Eric. (1995). "Searching for Mood Dependent Memory," *Psychological Science*, 6(2), 67–75.
- Fazio, Russell H. (1989). "On the Power and Functionality of Attitudes: The Role of Attitude Accessibility." In Anthony R. Pratkanis, Steven J. Breckler, and Anthony G. Greenwald (eds.), *Attitude Structure and Function*, Hillsdale, NJ: Erlbaum.
- Fazio, Russell H., Tracy M. Lenn, and Edwin A. Effrein. (1984). "Spontaneous Attitude Formation," *Social Cognition*, 2, 217–234.
- Fazio, Russell H., David M. Sanbonmatsu, Martha C. Powell, and Frank R. Kardes. (1986). "On the Automatic Activation of Attitudes," *Journal of Personality and Social Psychology*, 50, 229–238.
- Feldman, Jack M., and John G. Lynch, Jr. (1988). "Self-Generated Validity and Other Effects of Measurement on Belief, Attitude, Intention and Behavior," *Journal of Applied Psychology*, 73 (August), 421–435.
- Field, Andy P. (2000). I like it, but I'm not sure why: Can evaluative conditioning occur without conscious awareness? *Consciousness and Cognition*, 9, 13–16.
- Fiske, S. T. (1982). "Schema-triggered affect: Applications to Social Perception." In M. S. Clar, and S. T. Fiske (eds.), *Affect and Cognition: The Seventeenth Annual Carnegie Symposium on Cognition*, Hillsdale, NJ: Erlbaum, pp. 55–76.
- Fitzsimons, Gavan J., and Baba Shiv (2001). "Nonconscious and Contaminative Effects of Hypothetical Questions on Decision Making," *Journal of Consumer Research*, 28(2), 224–238.
- Gollwitzer, P. M. (1990). "Action phases and mind-sets." In E. T. Higgins, and R. M. Sorrentino, *Handbook of Motivation and Cognition*, New York: Guilford Press, pp. 53–92.
- Gollwitzer, P. M. (1999). Implementation intentions: Strong effects of simple plans. *American Psychologist*, 54, 493–503.
- Gottlib, I. H., and C. D. McCann. (1984). "Construct Accessibility and Depression: An Examination of Cognitive and Affective Factors," *Journal of Personality and Social Psychology*, 47, 427–439.
- Greenwald, Anthony G. (1992). Unconscious Cognition Reclaimed. *American Psychologist*, 47(7), 766–779.

- Greenwald, Anthony G., and Mahzarin R. Banaji. (1995). "Implicit Social Cognition: Attitudes, Self-Esteem and Stereotypes," *Psychological Review*, 102(1), 4–27.
- Greenwald, A. G., D. E. McGhee, and J. L. K. Schwartz. (1998). "Measuring Individual Differences in Implicit Cognition: The Implicit Association Test," *Journal of Personality and Social Psychology*, 74, 1464–1480.
- Hawkins, Scott A., and Reid Hastie. (1990). "Hindsight: Biased Judgments of Past Events After the Outcomes Are Known," *Psychological Bulletin*, 107 (May), 311–327.
- Hoch, Stephen J., and Young-Won Ha. (1986). "Consumer Learning: Advertising and the Ambiguity of Product Experience," *Journal of Consumer Research*, 13 (September), 221–233.
- Hutchinson, J. Wesley, and Joseph W. Alba. (1991). "Ignoring Irrelevant Information: Situational Determinants of Consumer Learning," *Journal of Consumer Research*, 18 (December), 325–346.
- Isen, Alice M. (1984), "Toward Understanding the Role of Affect in Cognition," In R. S. Wyer, Jr. and T. K. Srull (eds.), *Handbook of Social Cognition*, Vol. 3, Hillsdale, NJ: Erlbaum, pp. 179–236.
- Jacoby, L. L., and L. R. Brooks. (1984). "Nonanalytic cognition: Memory, perception, and concept learning," In G. Bower (ed.), *The psychology of learning and motivation: Advances in research and theory*, Volume 18, San Diego, CA: Academic Press, pp. 47–91.
- Janiszewski, Chris. (1988). "Preconscious Processing Effects: The Independence of Attitude Formation and Conscious Thought," *Journal of Consumer Research*, 15 (September), 199–209.
- Kardes, Frank R. (1988). "Spontaneous Inference Processes in Advertising: The Effects of Conclusion Omission and Involvement on Persuasion," *Journal of Consumer Research*, 15, 225–233.
- Krider, Robert E., Priya Raghurir, and Aradhna Krishna. (2001). "Pizzas: π or Square? Psychophysical Biases in Area Comparisons," *Marketing Science*, 20 (4), 405–425.
- Levin, Irwin P., and Gary J. Gaeth. (1988). "How Consumers Are Affected by the Framing of Attribute Information Before and After Consuming the Product," *Journal of Consumer Research*, 15 (December), 374–378.
- Levine, Linda J. (1997). "Reconstructing Memory for Emotions," *Journal of Experimental Psychology: General*, 126 (June), 165–177.
- Macaulay, Dawn, Lee Ryan, and Eric Eich. (1993). "Mood Dependence in Implicit and Explicit Memory." In P. Graf and M. E. J. Masson (eds.), *Implicit Memory: New Directions in Cognition, Development and Neuropsychology*, Hillsdale, NJ: Erlbaum, pp. 75–94.
- Marcel, Anthony. (1983). "Conscious and unconscious perception: An approach to the relations between phenomenal experience and perceptual processes".
- Marcel, Anthony J. (1998). "Blindsight and Shape Perception: Deficit of Visual Consciousness or of Visual Function?" *Brain*, 121(8) (August), 1565–1588.
- Menon, Geeta, Priya Raghurir, and Norbert Schwarz. (1995). "Behavioral Frequency Judgments: An Accessibility-Diagnosticity Framework," *Journal of Consumer Research*, 22 (September), 212–228.
- Menon, Geeta, and Priya Raghurir. (2001). "When Automatic Accessibility meets Conscious Content: Implications for the Accessibility-Diagnosticity Framework," New York University Working Paper.
- Nidenthal, Paula M. (1990). "Implicit Perception of Affective Information," *Journal of Experimental Social Psychology*, 26, 505–527.
- Nisbett, Richard E., and Timothy DeCamp Wilson. (1977). "Telling More than We Can Know: Verbal Reports on Mental Processes," *Psychological Review*, 84 (May), 231–259.
- Nowlis, Steven M., and Itamar Simonson. (1997). "Attribute-task Compatibility as a Determinant of Consumer Preference Reversals," *Journal of Marketing Research*, 34, 205–218.
- Pettibone, Jonathan C., and Douglas H. Wedell. (2000). "Examining Models of Nondominated Effects Across Judgment and Choice," *Organizational Behavior and Human Decision Processes*, 81.2 (March) 300–328.
- Raghurir, Priya, and Aradhna Krishna. (1999). "Vital Dimensions: Biases in Volume Estimates," *Journal of Marketing Research*, Volume XXXVI (August), 313–326.
- Raghurir, Priya, and Aradhna Krishna. (1996). "As the Crow Flies: Bias in Consumers' Map-Based Distance Judgments," *Journal of Consumer Research*, 23(1), 26–39.
- Russo, J. Edward, Margaret G. Meloy, and Victoria Husted Medvec. (1998). "The Distortion of Product Information During Brand Choice," *Journal of Marketing Research*, 35(4), 438–452.

- Russo, J. Edward, Margaret G. Meloy, and T. Jeffrey Wilks. (2000). "Predecisional Distortion of Information by Auditors and Salespersons," *Management Science*, 46(1), 13–27.
- Seger, Carol Augart. (1994). "Implicit Learning," *Psychological Bulletin*, 115 (March), 163–196.
- Simonson, Itamar. (1989). "Choice Based On Reasons: The Case of Attraction and Compromise Effects," *Journal of Consumer Research*, 16 (September), 158–174.
- Smith, Craig A., and Phoebe C. Ellsworth. (1985). "Patterns of Cognitive Appraisal in Emotion," *Journal of Personality and Social Psychology*, 48 (April), 813–838.
- Strahan, Erin A., Steven J. Spencer, and Mark P. Zanna. (2001). *Subliminal Priming and Persuasion: Striking While the Iron is Hot*. University of Waterloo Psychology Department Working Paper.
- Svenson, Ola, and Lars J. Benthorn. (1992). "Consolidation Processes in Decision Making: Post-Decision Changes in Attractiveness of Alternatives," *Journal of Economic Psychology*, 13 (June), 315–327.
- van Osselaer, Stijn M. J., and Chris Janiszewski. (2001). *Learning to value and learning to recall: Two ways of learning brand associations*. Working Paper.
- Wattenmaker, William D. (1991). "Learning modes, feature correlations, and memory-based categorization," *Journal of Experimental Psychology: Learning, Memory, & Cognition*, 17(5), 908–923.
- Weiskrantz, Lawrence. (2000). "To Have but not to Hold." In Johan J. Bolhuis (ed.), *Brain, Perception, and Memory: Advances in Cognitive Neuroscience*, New York, NY: Oxford University Press, pp. 311–325.
- Winkielman, Piotr, Kent C. Berridge, and Julia Wilbarger. (2001). *Doing Without Feeling: Unconscious Affect Controls Human Consumption*. University of Denver Psychology Department Working Paper.
- Whittlesea, Bruce W. A., Wright, Richard L. (1997). Implicit (and Explicit) Learning: Acting Adaptively Without Knowing the Consequences. *Journal of Experimental Psychology: Learning, Memory, & Cognition*, 23(1), 181–200.
- Zajonc, Robert B. (1968). "Attitudinal Effects of Mere Exposure," *Journal of Personality and Social Psychology*, 9(2), pt 2.