Counting Every Thought: Implicit Measures of Cognitive Responses to Advertising

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Prior methods of measuring cognitive responses to advertisements have almost exclusively used thought-listing. Our research explores indirect measures of cognitive responses. In four experiments, we demonstrate that consumers’ thoughts during exposure to persuasive messages can be assessed by thought recognition (a direct memory) and belief verification (an indirect memory task). We also show that performance on these tasks (i.e., jointly observed responses, latencies, and confidence ratings) can be modeled as Poisson counting processes. Finally, two experiments illustrate the effectiveness of these measures in predicting consumers’ attitudes toward the advertised brands.

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SESSION OVERVIEW

Consumer confidence in their knowledge is an emerging issue in consumer research (Alba & Hutchinson 2000). The central issues that unite the three papers in this session are (1) the measurement of consumer confidence in their own beliefs about the costs and benefits of products, (2) how advertising and other persuasive messages affect belief confidence, and (3) the role that belief confidence plays in determining attitudes and behavior. Although each paper addresses the construct of belief confidence, each does so from a distinctively different perspective. The Albarracin paper treats belief confidence as an individual difference variable and shows that people who are high in confidence are more willing to expose themselves to counter-attitudinal information. She reports the results of lab and field studies on information seeking behaviors concerning HIV-prevention (see also Albarracin et al. 2005). The methodological perspective of this paper is that of attitude research. The Huang and Hutchinson paper treats belief confidence as an indicator of the elaboration of an idea during exposure to an advertisement. They observe response, reaction times, and confidence ratings for specific beliefs and show that they can be reliably connected to the contents of advertising and (therefore) the likely cognitive responses experienced during ad exposure. The methodological perspective of this paper is that of memory. The Soll perspective treats belief confidence as a subjective probability that a belief is correct to within some specific interval of error. The reported empirical evidence reveals overconfidence and confirmation bias, and he presents a knowledge sampling model that predicts these effects as a form of sampling bias. The methodological perspective of this paper is that of judgment and decision research.

As can be seen from this brief synopsis, the three papers draw upon different literatures and experimental paradigms, but have intriguing areas of overlap (cf. Wyer and Albarracin 2005). The Albarracin and Soll papers each examine how confidence leads to vulnerability in decision making. In Albarracin’s work, this vulnerability arises from openness to disconfirming information; in Soll’s work the vulnerability is in the overestimating of confirming information. The Albarracin work uses psychometric methods to measure a stable individual trait that affects virtually all beliefs; Soll’s work and that of Huang and Hutchinson use stochastic models of decision processes to measure dynamically changing levels of confidence in specific beliefs. By juxtaposing these three perspectives on belief confidence, we hope to (1) provide an introduction to each area of theory and method, (2) identify more precisely where the same constructs are intended and where different constructs are intended, and (3) begin to resolve apparent conflicts and synthesize a broader, more unified perspective.

EXTENDED ABSTRACTS

“Believing That One is Strong as a Defensive Weakness: Using Defensive Confidence to Attract Reluctant Audiences”

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History presents abundant examples that people who strongly advocate and defend a given attitudinal position often change this position, becoming “converted” to points of view that are opposite to the ones they initially held. We argue that one reason for such changes is the degree to which individuals perceive that they can defend their attitudes from attack. Ironically, this trait can make them vulnerable to attitude change (Albarracin, 2002; Albarracin & Mitchell, 2004). Presumably, people who are confident that their attitudes will survive future challenges are more willing to examine evidence that both supports and contradicts their prior attitudes. In contrast, people who doubt their defensive ability may prefer proattitudinal information over challenges (see also Byrne, 1961; Olson & Zanna, 1982b; for related views in other domains, see Tesser, 2001). Although denial may in many ways be relatively a primitive defense mechanism, avoiding counterattitudinal information may preserve the attitudes of people who doubt their defensive abilities. In contrast, individuals who believe that they will effectively self-defend may willingly receive counterattitudinal information that succeeds in changing their prior attitudes.

The present paper addressed various questions about the role of defensive confidence and the way to use it to the persuader’s advantage. First, we were interested in determining whether people vary in defensive confidence. If so, we were also interested in analyzing the origins and structure of defensive confidence as an individual difference. Because general demographic and personality variables are often inadequate to predict attitude change (Eagly & Chaiken, 1993), it is important to understand stable individual differences that relate specifically to people’s attitudes and their responses to persuasion. In addition, we investigated whether high (vs. low) defensive confidence renders people more open to receiving and changing more in response to counterattitudinal information. Identifying the consequences of defensive confidence is critical to producing change in different populations.

Defensive confidence is defined as people’s perceptions that they can defend their attitudes when information coming from the environment contradicts these attitudes (Albarracin & Mitchell, 2004). These perceptions of defensive capacity should lie at the heart of one’s resolution of the conflict between approaching information that challenges one’s attitudes and approaching information that supports these attitudes (Festinger, 1957, 1964; see also Cannon, 1964). That is, individuals who trust their defensive abilities may also expect to trust their initial attitudes. Similarly, people who are high (vs. low) in defensive confidence should anticipate more effective counterarguing of the discordant information and possibly greater self-enhancement. Thus, the effects of
defensive confidence may be mediated by attitude confidence, expected effective counterarguing, expected self-enhancement, and expected information novelty or strength.

The ultimate influence of defensive confidence on attitude change was also of interest. We hypothesized that people who doubt their defensive abilities should be more cautious in approaching counterattitudinal information. In contrast, those who believe they will successfully self-defend may be more apt to confronting information with which they disagree. Hence, they may become vulnerable targets of persuasion attempts. One of our studies examined the influence of defensive confidence on approach to counterattitudinal information and on ultimate attitude change, as well as the perceptions that mediated these effects.

Consistent with our hypotheses, our research indicated that people who lack confidence in their ability to defend their attitudes prefer information that agrees with their views. In contrast, people who are confident are less biased in their selection decisions. Instead, they appraise information regardless of whether or not it agrees with their own position. We also found that people who trust their defensive ability expect to counterargue attitude-inconsistent communications effectively, to continue to trust their initial attitudes despite the communication, and to receive novel information. In addition, chronic defensive confidence increased exposure to counterattitudinal communications and ultimately, attitude change, by mediating influences on expected counterarguing success, attitude confidence, and information novelty.

We then used these findings to design ways of attracting audiences to a target program. These methods were tested in two field studies. Participants were clients from the Alachua (FL) County Health Department and were recruited through flyers or direct referrals. Referral was made to what was described as a “health survey” and participants who called were asked various questions about health, including sexual activity. Only participants who were sexually active in the last six months and not currently pregnant were considered eligible and scheduled to come in for an interview at a subsequent time. At the time of this interview, after signing the informed consent, the participant responded to a questionnaire administered by a member of the research team. Among other things, the questionnaire measured prior attitudes about condom use and actual condom use. Critical to the research problem of interest in this paper, halfway through the interview, the interviewer paused the administration, announcing a 30-minute break. At that point, a confederate entered the room pretending to do work unrelated to the interview, and unobtrusively observed the participant’s exposure behavior. Specifically, participants had the opportunity to (a) read six HIV-prevention brochures, (b) watch a video on HIV-prevention, and (c) participate in a brief HIV risk-reduction counseling session that the interviewer offered to him or her. Thus, the behavior of the participant could be recorded with respect to the brochures, the video, and the counseling. Following this ostensible break, the interviewer returned and administered measures of material recognition, among other things.

The second field study manipulated the introduction to the brochures, the video, and the counseling in different ways. In one of the conditions (defensive confidence), the introductions highlighted that the materials/program did not impose a point of view and that most people exposed to them remained unchanged. In a second condition (change confidence), the introductions highlighted that the materials/program were highly effective at inducing condom use. The third and fourth conditions were control groups. Analyses indicated that instilling defensive confidence was more effective at increasing participation.

“Counting Every Thought: Indirect Measures of Cognitive Responses to Advertising”
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The traditional method of measuring the cognitive responses to an advertisement focuses on the thought-listing technique (e.g., Cacioppo and Petty 1981; Ericsson and Simon 1980). Specific responses have seldom been used to predict attitudes. Usually, the cognitive responses are coded for valence and summed to form measure of net affective response. This measure is a reliable and strong predictor of attitude. Recently, the confidence expressed by people in the validity of their cognitive responses has been shown to also be a strong and reliable predictor of attitude (Brinol, Petty, and Tormala 2004; Petty Brinol, and Tormala 2002).

In this research, we focus on the key assumptions (1) that specific cognitive responses occur during the processing of persuasive messages and (2) that each such response exerts some effect on subsequent attitudes. Despite their success in predicting attitudes, thought-listing techniques are necessarily introspective. As such, they are suspect because retrospective methods rely on memory processes that are potentially errorful and biased and concurrent methods create potential problems of reactivity that could distort the measurement of cognitive responses and the processing of ad information itself (e.g., Nisbett and Wilson 1977). To address these concerns, we desire methods that have a clear causal relationship to the occurrence of specific cognitive responses and are less susceptible to the contaminating biases of introspection.

The first method we examine is thought recognition. In the research reported here, we used a common sentence frame within which a single sentence was varied across trials. An example is “When viewing advertisements, people often have a variety of thoughts and reactions. Regardless of what you believe now, when viewing the magazine ads earlier in this experiment, did you ever think to yourself, ‘The Fiat SUV is fast?’” The final sentence varied across trials and the underlined word occurred after a delay. The target attribute was suggested or implied by the target ad but was not explicitly mentioned in the ad. Subjects pressed buttons to indicate “Yes” or “No” responses. Reaction times for this response and confidence ratings in its validity were also collected. Although the response itself is explicit and introspective, reaction times are not easily controlled consciously and such conscious process are detectable because the greatly increase time compared to natural responses.

The second method we examine is belief verification. As for thought recognition, we used a common sentence frame across trials (e.g., “The Fiat SUV is fast,” and the underlined word occurred after a delay). Subjects pressed buttons labeled “Agree” or “Disagree”. Belief verification should be much less susceptible to contamination than thought listing or thought recognition because the task makes no reference to the advertisement. Thus, all measures derived from this task (i.e., the response, valence, reaction time, and confidence) are indirect.

All of the experiments reported here manipulate the likelihood that an advertisement will produce a specific cognitive response using target ads (for which thought-listing pretests showed a high likelihood of a specific thought) and control ads. The thoughts that people have when reacting to advertisements should leave a measurable memory trace. Moreover, the tasks that should reveal that memory trace include thought recognition and belief verification for sentences that express those thoughts. In these tasks, the memory trace should reveal itself in a variety of ways, and these expected effects of memory traces form the basis of our experimental hypotheses.
First, an advertisement that has a high likelihood of eliciting a specific cognitive response (i.e., target ads) should yield more positive responses than an advertisement that has a low likelihood of eliciting that cognitive response (H1). Strong support for this hypothesis was found for both thought recognition and belief verification.

Second, target ads should yield faster positive responses than control ads (H2). For both tasks, the cognitive response is a form of elaboration that should enhance the accessibility of the information required to make a positive response. The mechanism is similar to that postulated for many standard priming and sentence verification tasks, as well as for attitude judgments. Strong support for this hypothesis was found for both thought recognition and belief verification.

Finally, target ads should yield higher confidence ratings for positive responses than control ads (H3). Confidence should increase because more positive evidence is retrieved from memory. Strong support for this hypothesis was found for both thought recognition and belief verification.

Although H1-H3 were strongly supported in our experiments, they pertain to positive responses only. This is because the evidence used for negative responses in these tasks is neither obvious based on common sense nor well-known in the related literatures. To test our hypotheses using both positive and negative responses, we estimated a Poisson counting of jointly observed responses, latencies, and confidence ratings (similar to those commonly used for traditional perceptual and recognition tasks). The key model parameters are the rates with which positive and negative evidence is recruited by memory processes. Model estimation provided strong evidence that the rate parameter for positive evidence was larger for target (vs. control) ads and that the rate parameter for negative evidence was smaller for target (vs. control) ads. These rate parameters are indirect in the sense that the measures were indirect and the relationship between observed measures and the rate parameters are complex; however, theoretically are the construct most directly related to the occurrence of a specific thought during ad exposure.

A third experiment replicated the results of the first two and showed that, in predicting attitude, reaction times and confidence ratings accounted for significant incremental variance in a regression model that also included response valence. A fourth experiment used a battery of belief statements to construct indices reflecting a variety of beliefs and showed that valence-weighted indices based on reaction times and confidence ratings predicted incremental variance in attitude judgments when the baseline was valence-weighted indices based on agree/disagree responses.

“Sampling, Overconfidence, and Consumer Decisions”
Jack B. Soll, Duke University
Joshua Klayman, University of Chicago

Consumers often make decisions based on estimates and predictions. For example, consider a consumer who is deciding whether to drive to next town to buy a television set. The consumer is confident that the store closes between nine and ten in the evening, and that the television is cheaper than in the local store. Everything may go as expected, in which case the consumer happily returns home with the television. However, it is also possible that the consumer will be surprised. The store may be closed when the consumer arrives, or the price may be higher than anticipated. More positively, the television may unexpectedly be on sale.

A robust finding in the literature on judgment and decision making is that people are overconfident. In this talk I will focus on interval estimates, which are typically associated with high levels of overconfidence. Studies of intervals typically ask participants to give lower and upper bounds for unknown quantities. For each interval, the participant is supposed to be 90% sure that the correct value lies inside the specified range. For example, the consumer above may be 90% sure that the store closes between nine and ten. Across many judgments, the intervals should contain the correct answer 90% of the time. In many studies, however, the “hit rate” is closer to 40%.

In several recent papers (Klayman et al., 1999; Klayman et al., 2006; Soll & Klayman, 2004) we have sought to explain overconfidence in intervals. Both confirmation bias and statistical effects are implicated. Interestingly, both of these explanations can be construed as a form of sampling bias. Consider confirmation bias, which holds that evidence that favors an initial hypothesis has a retrieval advantage. Our consumer may initially recall other stores that close late, which leads to an initial hypothesis that the store closes late, which leads to the generation of reasons that support a late closing (e.g., “Best Buy is open, Circuit City is open, so Joe’s Stereos should be open late also to compete”). The fact that Joe needs to compete may indeed be a good reason. However, it is only one reason drawn from a population of reasons. Overconfidence will result when the process of sampling of reasons is slanted toward the initial hypothesis, provided that additional processing fails to correct for this bias.

Confirmation bias is sufficient but not necessary for producing overconfidence. There are two ways in which random error alone can lead to biased judgment. First, Soll and Klayman (2004) considered the possibility of random error in setting interval width. In theory such error can lead to overconfidence, but Soll and Klayman showed that the effect of error is small compared to the effect of intervals simply being too narrow. Second, for some types of judgments intervals may be inferred from a sample of related instances. For example, a consumer might recall the closing times of other stores in order to estimate the unknown closing time of a specific store. People will be systematically overconfident if they infer variability in the population from variability in the sample (Klayman et al., 2006).

In this talk I will offer data that is consistent with both explanations for overconfidence. I will also discuss two methods for reducing overconfidence and improving judgment. Both methods are related to sampling. The first method involves asking multiple questions (“What is your upper bound? Ok, now what is your lower bound?”), rather than just one question (“What is your range?”). When multiple questions are asked, people appear to sample knowledge multiple times rather than just once. The effect is not only wider intervals, but also intervals that are better centered on the truth. This method improves both calibration and forecast accuracy simultaneously (Soll & Klayman, 2004). Note that the first method entails extracting non-overlapping samples of evidence from the same person. The second method involves sampling across people. To the extent that people rely on different samples or are prone to different errors, averaging across people should improve calibration and accuracy for point estimates.

Understanding the mechanisms that underlie overconfidence is important to consumer behavior. One reason is that, in many cases, marketers would be better off if consumers were surprised less often. It may be possible for marketers to encourage consumers to sample more (either from memory or by asking others). The desired result of such interventions is reduced overconfidence and greater information search. In other situations, marketers might actually benefit from consumer overconfidence. To discourage information seeking, a leading brand might pose questions to a consumer in a way that encourages limited as opposed to expansive sampling.
REFERENCES


SESSION OVERVIEW

Recent research in social cognition has examined implicit motivation or how goals operate in implicit or nonconscious ways. While some research in this area has examined whether goals can be activated nonconsciously, recent research has examined the complex ways in which both consciously and nonconsciously activated goals influence thought or behaviour through a variety of implicit mechanisms.

The three papers in this session address a number of questions with respect to implicit motivation: Which “mind” leads to more efficient goal pursuit—the conscious or the unconscious? Can the automatic evaluation of a goal predict goal-relevant behaviour better than explicit measures? And finally, in the context of a self-control dilemma, does a positive automatic evaluation of the goal make one more resistant to temptations?

In the first presentation, Gordon Moskowitz and Kai Sassenberg argue that conscious and unconscious goal pursuit may vary in effectiveness. In some cases, conscious goal pursuit may trigger interfering cognitive routines that deter successful goal pursuit which does not occur with unconscious goal pursuit. They demonstrate that conscious goal pursuit of the creativity goal may activate associations that inhibit creativity, while the unconscious pursuit of this goal will inhibit these associations.

Melissa Ferguson suggests that an automatic evaluation toward a goal should reflect a person’s tendency to approach that goal, which in turn should predict goal-consistent behavior. In a series of experiments, she finds that an automatic evaluation of goal constructs (i.e., abstract, desirable end-states) significantly predicts goal-relevant behavior. Interestingly, the automatic evaluations of the goal served as a better predictor of goal consistent behaviour than explicit attitudes, explicitly measured goal commitment, and automatic evaluations of concrete, goal-relevant objects.

In the last presentation, Darlene Walsh and Andrew Mitchell examine automatic goal activation and automatic evaluations on consumption under high and low cognitive load. And rather than focusing on more general temptations and goals, they focus on a specific self-control dilemma among only restrained eaters. They find that only individuals who automatically activate a goal while exposed to a real temptation activate an automatic self-control process. Interestingly, they find no relationship between behaviour and automatic evaluations of the goal. However, they do show that activation of a goal during exposure automatically decreased the positivity of automatic evaluations towards objects not useful in attaining that goal. In other words, although these restrained eaters had an automatic positive evaluation of the temptation before exposure to the temptation, during exposure their automatic evaluation became neutral. Participants who did not automatically activate a diet goal during exposure to the temptation did not have an automatic positive evaluation of the goal; however they did have an automatic positive evaluation of the temptation and there was a relationship between the positivity of the automatic evaluation and consumption.

Taken together, this session should be of interest across a broad range of research areas including self-regulation, automatic evaluation, implicit attitude, goal activation, and automatic goal pursuit. The three papers in this session examine implicit motivation from somewhat different approaches and results converge in some cases, and diverge in others. Given this, the purpose of this session is actually two fold: first, we want to expose consumer behaviour researchers interested in implicit motivation to some recent theoretical approaches used in the area; and second, we want to highlight the differences in the papers in order to resolve what may appear to be inconsistencies, consequently leading to a more complete understanding of the implicit motivation and its effects.

EXTENDED ABSTRACTS

“Unconscious Goals and Creativity: Activating Creativity Goals Breaks Established Associations and Leads to the Generation of Original Ideas”
Gordon B. Moskowitz, Lehigh University
Kai Sassenberg, University of Jena

It is known that the unconscious mind can be smart. People asked to consciously ruminate over important decisions can make worse choices than those simply asked to sleep on it and let the difficult options tumble through the unconscious (Dijksterhuis et al., 2006). Can the unconscious mind also be creative? Our research illustrates that creativity goals, and an associated “think different” mindset, operate in the preconscious to produce novel solutions and inhibit old/established associations—people exhibit unconscious creativity.

Being creative implies, by definition, the attempt to avoid the conventional routes of thinking and, therefore, the avoidance of the activation of typical associations. Research on idea generation has painted, however, a fairly bleak picture regarding human ability to consciously pursue the goal of being creative. Despite participants being explicitly instructed to generate new, original ideas, and not to copy any feature of some examples that are provided, participants copy the given examples (or at least certain features of them). If asked to generate a novel and creative name for a new pasta and being provided with sample pasta names (e.g., spaghetti, fettuccini, linguini), people produce something that sounds perfectly non-creative, a blending of the existing names (e.g., fellini). Individuals are not able to control this so-called inadvertent plagiarism intentionally. The conformity to given examples did not decrease when participants were explicitly instructed to create ideas that were very different from the examples, even though they were able to list the features they were asked to avoid (Smith, Ward, & Schumacher, 1993; Marsh, Ward, & Landau, 1999). The plagiarism occurs most likely because examples are highly accessible during idea generation, and this activated knowledge impacts idea generation without awareness (Marsh, Bink, & Hicks, 1999) and thus beyond intentional control.

While these findings point to the fact that thinking differently by conscious intent is difficult, the implicit volition model (IVM; Moskowitz, Li, & Kirk, 2004) suggests that unconscious goals may have greater success. Implicit motivation and preconscious goal pursuit involve processes of goal shielding that occur outside of awareness that are not subject to the pitfalls of conscious intent. As an example, considering the case of creativity goals, facilitation and inhibition processes help to implicitly allow for goal pursuit, by keeping goal-relevant concepts (such as being novel) accessible and keeping goal-competing concepts (such as being typical) inhibited. A mindset to “think different” is triggered by the creativity goal, and this mindset has preconscious effects on cognition that promote goal pursuit, with wide ranging consequences.