

Examining the Psychological Process Underlying the Sleeper Effect: The Elaboration Likelihood Model Explanation

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The sleeper effect describes a persuasive influence that increases, rather than decays, over time. The goal of the present article is to integrate the sleeper effect within a current theory in attitudes and persuasion. A history of the findings and explanations of the sleeper effect are outlined. An explanation of the sleeper effect from current theory is provided, and a study is reported in which hypotheses derivable from the current theoretical explanation are tested. The study found that, as hypothesized, the sleeper effect emerged only when the persuasive communication was initially elaborated. It is argued that the present study affords a new explanation of the sleeper effect that is able to accommodate and integrate prior explanations.

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ATTITUDES AND PERSUASION

Since the seminal work of Thurstone (1928), attitudes have played a central role in understanding how and why various mass and interpersonal communication factors influence human behavior. One early researcher summarized the importance of attitudes by writing that they were “the most distinctive and indispensable concept in contemporary social psychology” (Allport, 1935, p. 798). And since the 1930s, interest in attitudes has spread beyond social psychology to other disciplines, such as communications, marketing, political science, public health, and counseling psychology. Why has the attitude construct enjoyed such a preeminent position in so many fields? One answer lies, in part, in the definition of attitudes. All definitions of attitudes share at the most basic level the idea that attitudes are evaluative reactions to stimuli (Cacioppo & Berntson, 1994; Cacioppo, Petty, & Berntson, 1991; Petty & Cacioppo, 1981). That is, attitudes represent the psychological reaction of either being attracted to (i.e., approach) or being repelled from (i.e., withdrawal) some person, place, activity, object, or idea. And this psychological reaction often has been found to guide an individual’s behavior in relation to an attitude object. Thus, attitudes have played an important role in so many disciplines because of their influence on behavior: One can understand and predict behavior by understanding (and properly measuring) attitudes.¹

An important strategic implication of this relationship is that one way to change an individual’s behavior is to change that individual’s attitude. Not surprisingly, the study of attitude change (persuasion) has become as central to many disciplines as the construct of attitude itself. Persuasion research has most typically examined how and why different factors influence attitude formation and change (Eagly & Chaiken, 1993; McGuire, 1985; Petty, Priester, & Wegener, 1994; Petty & Wegener, 1998; Petty, Wegener, & Fabrigar, 1997). Much of this research has examined how long attitude change persists. Perhaps the most robust finding that has emerged from research on persuasion persistence is that attitudes exhibit their greatest change immediately after a persuasive communication, and then subsequently begin to shift back to their original position. Such a pattern is referred to as *attitude decay*.

EMERGENCE OF THE SLEEPER EFFECT

Although this pattern of attitude change is the hallmark of persuasion persistence, there have been notable exceptions. In one of the first studies examining attitude change over time, Peterson and Thurstone (1933/1970)

reported the results of research in which they presented different films to junior high and high school students from different cities. These films were intended to change specific attitudes related to different social concerns (e.g., different nationalities and ethnic races, punishment, war). The attitudes related to five of the films were measured both immediately after viewing the film and again from 2 to 19 months subsequent. Four of the films exhibited the typical attitude decay pattern, in which the students were most persuaded immediately following the film and were somewhat less persuaded after a period of time. However, one of the films (*Four Sons*) yielded attitude persistence results never before reported—the students were even more favorable toward Germans (one of the attitudes targeted by the film) after 6 months than they were immediately after viewing the film. That is, the attitudes became more influenced by the persuasive communication, rather than decayed, over time.

This pattern of increased persuasive impact, rather than decay, was reported again in 1949 by Hovland, Lumsdaine, and Sheffield. As part of a larger research project examining the influence of a documentary film on attitudes, Hovland et al. examined both the immediate and delayed influence of the film *The Battle of Britain*. Their results reveal that the attitudes targeted by the film showed greater change 9 weeks after viewing than they did 5 days after viewing the film. Hovland et al. coined the term *sleeper effect* in order to describe this unusual pattern of increase in persuasive impact over time.

EXPLANATIONS FOR THE SLEEPER EFFECT

Thus, the sleeper effect represents an intriguing and counter-intuitive influence of persuasive messages on attitudes. The surprising nature of the sleeper effect has made the effect of great interest to researchers, causing them to debate the nature and existence of the effect and to investigate a number of explanations for its occurrence. Specifically, several different explanations have been advanced in order to provide a theoretical account of this unusual findings.

Media Novelty

Peterson and Thurstone (1970) suggested that their anomalous finding for the persuasion persistence associated with the film *Four Sons* most likely resulted because films were a rare event in Genoa, Illinois, the town in which this effect was found. Thurstone and Peterson reasoned that given the novelty of the film, the film “was probably the subject of considerable comment and discussion among the children” (p. 52), and that it was this discussion that provided the

mechanism whereby attitudes continued to change over time in the direction of the position advocated by the film.

Memory of the Source Versus Message

Hovland et al. (1949) hypothesized that one possible explanation for their finding of the sleeper effect was that the merits of the film were initially discounted because the source of the film was suspected of bias. Thus, attitudes measured sooner rather than later after viewing would be influenced by both the (positive) attributes of the film and the (negative) attributes of the source—resulting in diminished persuasion. However, Hovland et al. reasoned, if the source of the film were forgotten more rapidly than the merits of the film, subsequent attitude measures might reveal the positive merits of the film (still in memory) without the initial negative influence of the source (now forgotten)—resulting in increased persuasion. Thus, one explanation for the finding of the sleeper effect may be that individuals simply forget the source while remembering the content of a persuasive communication.

Hovland and Weiss (1951) conducted an experiment to examine memory for the source hypothesis. In their experiment, individuals were exposed to four essays, two associated with sources high in trustworthiness and two associated with sources low in trustworthiness. They hypothesized that the sleeper effect should emerge for low trustworthy sources but not for sources high in trustworthiness. In addition, it was hypothesized that the sleeper effect should be associated with a lack of memory for the source. Specifically, greater impact of persuasion over time should emerge for individuals who forgot the source. Attitudes were measured both immediately after exposure to the persuasive messages and 4 weeks subsequent. In addition to the attitude measures, individuals were also asked to recall the sources of the information, thereby providing a mechanism by which to test for the memory-for-source hypothesis. Although an overall sleeper effect was demonstrated for the essays associated with the low trustworthy sources, this influence was not mediated by a lack of recall for the source. To wit, individuals who exhibited the sleeper effect were also able to recall the untrustworthy source of the essay, thereby failing to support the memory-for-source hypothesis.

Dissociation of Source from Content

Based on this surprising finding, Hovland and Weiss (1951) advanced an alternative explanation for both the Hovland et al. (1949) as well as their own

findings. They hypothesized that the basis of the attitude changes over time. They reasoned that immediately following a persuasive message, an attitude is influenced by both the source (which can serve as an augmenting or discounting cue) and the learning and acceptance of the message content. That is, the source serves as a contributing factor to the immediate, postpersuasive communication attitude. However, over time the attitude becomes dissociated from the augmenting or discounting cue and thus is influenced only by the learning and acceptance of the message content. Thus, although an individual may remember that a negative source was associated with a persuasive message, after a long enough period of time, the attitude resulting from the persuasive communication will not be influenced by the source.

Kelman and Hovland (1953) conducted an experiment in order to ascertain the validity of the dissociation of source from content explanation of the sleeper effect. In their experiment, they paired an essay advocating for extremely lenient treatment of juvenile delinquents with either a trustworthy or untrustworthy source and measured attitudes toward the advocacy both immediately and 3 weeks after the participants were exposed to the persuasive message. In addition, at the second session, the association between the source and the essay was either reinstated or not. This reinstatement was accomplished by either having the participants repeatedly link the source with the message or not. It was hypothesized that if dissociation of the source from the message were responsible for the sleeper effect, then those individuals for whom the source and message were reinstated should not exhibit the sleeper effect, whereas those individuals for whom the source and message were not reinstated should exhibit the sleeper effect. The results of their study supported the hypotheses, demonstrating a sleeper effect only for the non reinstated participants.

CONTROVERSY AND THE SLEEPER EFFECT

The sleeper effect, explained by means of the dissociation of source from content, held a respectable place within the attitudes and persuasion story (McGuire, 1969) throughout the 1950s and early 1960s. However, in the 1970s questions were raised as to the reliability and validity of the effect. Specifically, Gillig and Greenwald (1974) conducted seven experiments designed to elicit the sleeper effect. In none of these experiments did such an effect emerge. Gillig and Greenwald concluded that in the absence of a sleeper effect emerging, that either (a) the effect does not exist, or (b) their experimental tests may not have been adequate to capture the effect. The researchers concluded that given the rigor of their tests in combination with an examination of the extant literature, the sleeper

effect should be put to rest. "In short, if the sleeper effect is alive, we do not know where it is living" (p. 139).²

SPECIFICATION OF THE NECESSARY CONDITIONS

In response to these criticisms, Cook and colleagues provided theoretical and empirical work in order to defend the existence of the sleeper effect. They argued that any difficulty in obtaining the sleeper effect is the result of not establishing the necessary experimental conditions rather than any unreliability associated with the effect itself (Cook & Flay, 1978; Cook, Gruder, Hennigan, & Flay, 1979; Gruder, Cook, Hennigan, Flay, & Halamaj, 1978).³ Four necessary theoretical conditions were outlined in order to obtain the sleeper effect. These conditions are as follows. First, the message must have a significant influence on initial attitudes. Second, the discounting cue must have a significant influence, inhibiting the effect of the message on the attitudes. Third, the message and source must become dissociated before the assessment of the delayed attitude. Fourth, the delayed attitude of the message-only group must be higher than the initial attitude of the discounting-cue group. Although necessary, in and of themselves, these conditions may not be sufficient to produce the sleeper effect. Cook and colleagues further specified that adequate statistical power and an absence of countervailing forces are also necessary in order to provide tests that allow for the emergence of the sleeper effect.

In addition to specifying these theoretically necessary conditions, Cook and colleagues also demonstrated that the discounting cue need not be an untrustworthy or negative source. Rather, any cue that inhibits the initial persuasive impact of the message can serve as a discounting cue that produces a sleeper effect. For example, in their studies demonstrating the sleeper effect, Gruder et al. (1978) used both a short refutation of the message (suggesting that the findings reported were false) and psychological reactance as discounting cues.

In a series of 17 experiments, Pratkanis, Greenwald, Leippe, and Baumgardner (1988) provided evidence for additional conditions in order to produce the sleeper effect. In short, they found that having participants (a) note the important arguments in the message; (b) receive a discounting cue after, rather than before, the message; and (c) rate the trustworthiness of the message communicator immediately after receiving the discounting cue provided conditions that fostered the emergence of the sleeper effect. Based on their findings, Pratkanis et al. advanced the "differential decay" explanation for the sleeper effect. According to this explanation, the influence of the message and

discounting cue are poorly integrated into memory at the time of encoding. Additionally, it is hypothesized that the two are encoded into different memory systems. Because the memory decay is different for the episodic (cue) and the meaning (message) systems, the cue is forgotten sooner than the message. This explanation is predicated on the finding that the sleeper effect emerges only when the discounting cue follows, rather than precedes, the message. This order, it is hypothesized, provides an interference to the memorial state of the cue, facilitating the differential decay necessary to elicit the sleeper effect.

In addition to outlining these conditions, Pratkanis et al. also provided evidence that the amount of time required to allow the emergence of the sleeper effect can be relatively brief, provided that the environment is informationally rich. In the Pratkanis et al. studies, participants were provided with a series of messages in a brief amount of time. The topic of these messages were similar. Such an environment, it was argued, could provide evidence of attitude decay and the sleeper effect in relatively brief amounts of time. And Pratkanis et al. were able to uncover the emergence of the sleeper effect and as well as instances of attitude decay within brief time periods (e.g., 45 minutes)

ELABORATION LIKELIHOOD MODEL OF PERSUASION

One limitation to current explanations of the sleeper effect is that these explanations have concentrated on explaining the effect itself and have not attempted to integrate the explanation into more general models of attitude change theories. The goal of our article is to rectify this situation by explaining and demonstrating how this effect can be viewed as part of a broad integrative theory of persuasion.

Persuasion Processes

Contemporary theory in attitudes and persuasion suggests that attitudes can vary in the extent to which they have been formed or changed based on relatively thoughtful as opposed to nonthoughtful persuasion processes (Chaiken, Liberman, & Eagly, 1989; Petty & Cacioppo, 1986; Petty & Wegener, 1998). When individuals possess both motivation and ability, their attitudes are based on the active cognitive responses that they have in reaction to a persuasive communication. As such, the cogency of the communication influences the cognitive responses that influence the resulting attitude. In such circumstances, factors can influence persuasion either by serving as arguments that are elaborated (e.g., Petty, Cacioppo, & Goldman, 1981; Petty, Cacioppo, &

Schumann, 1983) or by biasing the direction of the cognitive responses to the arguments (Petty, Schumann, Richman, & Strathman, 1993). This biasing influence of factors under conditions of high elaboration likelihood is especially likely to occur when the attitude-relevant information is at all ambiguous or open to multiple interpretations (Chaiken & Maheswaran, 1994; Wegener & Petty, 1996).

In contrast, when individuals lack either motivation or ability, their attitudes are based on relatively nonthoughtful inferences and associations. As such, factors can influence persuasion by nonthoughtful persuasion processes. Specifically, factors such as message-recipient characteristics (e.g., mood), source characteristics (e.g., expertise), and message characteristics (e.g., number of arguments) can influence the resulting attitude without influencing the cognitive responses to a persuasive communication. Under these conditions of low elaboration likelihood, factors related to the arguments of the communication will often have little influence. For example, individuals may agree with a celebrity regardless of the cogency of the communication (Petty et al., 1983).

Under conditions of more moderate elaboration likelihood, when individuals possess the ability but are unsure whether to scrutinize a message, factors (e.g., source trustworthiness) can prompt an individual to increase or decrease elaboration (e.g., Priester & Petty, 1995; see Petty, Priester, & Wegener, 1994; Petty & Wegener, 1998).

Thus, attitudes of equal extremity (e.g., a +3 on a scale ranging from -4 to +4) can be the result of qualitatively different psychological processes: A +3 can be thoughtful or nonthoughtful (for additional discussion, see Petty & Wegener, *in press*).

Persuasion Consequences

The extent to which attitude-relevant information is scrutinized and elaborated has been found to result in significant differences in the consequences associated with the final attitudes. Attitudes changed as a result of thoughtful consideration of the central merits of a persuasive communication have been found to be stronger than attitudes changed as a result of inferences and associations unrelated to the central merits of a persuasive communication (see Petty et al., 1995; Petty, Priester, & Wegener, 1994; Priester & Fleming, 1997). Specifically, thoughtful attitudes have demonstrated greater ability to (a) influence subsequent behavior (Cacioppo, Petty, Kao, & Rodriguez, 1986); (b) resist counterpersuasive attempts (Haugtvedt & Wegener, 1994); (c) persist over time

(Haugtvedt & Petty, 1992); and (d) spontaneously come to mind (Petty & Cacioppo, 1986; Petty et al., 1995) than nonthoughtful attitudes.

Sleeper Effect Predictions

How can the Elaboration Likelihood Model (ELM) account for the sleeper effect, given that a sleeper effect generally involves impact of a persuasive message *and* impact of a countervailing (discounting) cue? Petty and Cacioppo (1986, p. 181–183) answer this question directly.

First, the sleeper effect is hypothesized to be most likely when the discounting cue is presented after the persuasive communication. If a discounting cue is presented before the message, it is possible that the cue itself will influence the extent to which the message is elaborated (e.g., why bother reading an article that has already proven to be false?). Because persistence of attitudes relies in part on elaboration of attitude-relevant information (see discussion to follow), the sleeper effect should therefore be more likely when elaboration has occurred before a discounting cue is encountered. As noted earlier, Pratkanis et al. (1988) presented an experiment in which the sleeper effect was found when the discounting cue followed rather than preceded the persuasive appeal (see also Petty, Wegener, Fabrigar, Priester, & Cacioppo, 1993).

Second, as foreshadowed earlier, the ELM stipulates that the sleeper effect is more likely when the message has been thoughtfully elaborated prior to receipt of the discounting cue. Such thoughtful elaboration provides sufficient persistence to the attitude resulting from the message, such that there still exists an influence of the message on the attitude after temporary influences of the discounting cue have dissipated. If, instead, the message is accepted in a relatively nonthoughtful manner, not enough persistence will have been transferred to the attitude to show an effect of the message after the discounting effect has dissipated. Thus, it is hypothesized that a vital component underlying the sleeper effect is the emergence of attitude persistence associated with a thoughtfully elaborated attitude. Lacking such elaboration, the likelihood of a sleeper effect is reduced. Although this idea has not been directly tested, examination of the extant literature suggests that the experiments that have found evidence for the sleeper effect have employed instructions that would prompt relatively thoughtful consideration of the message content. For example, Gruder et al. (1978) had participants read the information twice, focusing once on what was said (content) and once on how it was said (style). Moreover, participants in the Gruder et al. research were asked to underline the important arguments in each paragraph (see also Pratkanis et al., 1988, Experiment 17). It is important to

note that these predictions are based on the assumption that the reasons presented in the persuasive message are cogent and compelling, such that elaboration of them results in positive cognitive responses and that these positive cognitive responses create strong, positive attitudes.

Hypotheses

On a conceptual level, then, the ELM predicts that the sleeper effect is the result of temporary distortions to elaborated (i.e., strong) attitudes. As the discounting cue dissipates, the strong attitude resulting from the elaboration of the message content persists, resulting in increased persuasive impact, rather than decay. On an operational level, the ELM predicts that the sleeper effect should be more likely to emerge when (a) the discounting cue comes after the message, and (b) the message has been thoughtfully elaborated.⁴ As evidence already exists in support of the first condition, we sought to test the second of these two conditions. In order to investigate the influence of elaboration on the emergence of the sleeper effect, we manipulated the presence or absence of a discounting cue and the level of elaboration likelihood.

The amount of thought that individuals expend on a persuasive message can be influenced by situational factors and individual differences. Situational factors such as involvement (Petty & Cacioppo, 1979, 1984), rhetorical arguments (Petty, Cacioppo, & Heesacker, 1981), and the use of second- rather than third-person pronouns (Burnkrant & Unnava, 1989) has been found to influence the amount of elaboration. Individual differences in need for cognition (Cacioppo & Petty, 1982) have also been found to influence the amount of elaboration. Individuals high in need for cognition have been found to be more likely to elaborate persuasive messages, even when the background elaboration likelihood is low. As a consequence, individuals high in need for cognition have been found to possess relatively strong attitudes toward a variety of topics (e.g., Cacioppo et al., 1986). In contrast, individuals low in need for cognition have been found to elaborate persuasive messages only when prompted by situational factors (e.g., Priester & Petty, 1995). In short, individuals high in need for cognition enjoy the process of elaboration and engage in it regardless of situational factors, whereas individuals low in need for cognition do not enjoy elaboration and only engage in it when necessary (Cacioppo, Petty, Feinstein, & Jarvis, 1996).

We chose to instantiate the factor of elaboration likelihood by classifying individuals as either high or low in need for cognition. Such a strategy was chosen in that it provides a unique prediction, as none of the other of the explanations hypothesizes differences in the emergence of the sleeper effect as a

function of individual differences such as the need for cognition.

We hypothesized, then, that the presence of a cue following a persuasive message would be more likely to influence attitude persistence for the high-need-for-cognition individuals, whereas the presence or absence of a cue following a persuasive communication should not influence the attitude persistence of the low need for cognition individuals. Consequently, an Elaboration Likelihood x Discounting Cue interaction was predicted, such that the presence or absence of a cue following a persuasive communication influenced the attitudinal persistence of high-elaboration-likelihood participants more than the attitude persistence of low-elaboration-likelihood participants. This hypothesis is based on the idea that both the presence of a discounting cue following a persuasive communication and high elaboration increase the probability of the emergence of a sleeper effect.⁵

METHOD

Design and Cover Story

Forty-five students enrolled in introductory psychology classes at the Ohio State University participated for partial course credit. Participants were randomly assigned either to receive a discounting cue after reading a persuasive communication or instead to receive a persuasive communication without such a discounting cue. In addition, participants were classified as high or low in elaboration likelihood. Consequently, the design of the present experiment was a 2 x 2 between-participants factorial.

Instructions were provided on the first page of the booklet. These instructions informed the participants that they were to read an article as part of a study examining how people perceive different writing styles.⁶ In addition, participants were informed that they would read a short article on a program that was currently being proposed for students at the University of California at Santa Cruz.⁷ This University was chosen in order to establish relatively low background elaboration likelihood conditions, thus allowing for individual differences in need for cognition to influence the specific amount of cognitive effort expended on the article.

The second page of the article contained the persuasive communication. The first sentence of the article provided a positive source cue. "The Carnegie-Mellon Commission on Higher Education, which is comprised of 12 internationally recognized experts on university and college policies, recently submitted an exciting plan that changes the manner by which students 'pay' for their educations." Following this sentence, the plan was described as one that would

allow students to work as part of a University service program in order not to have to pay tuition. Following this description of the program, three strong arguments were provided in support of the plan (for additional information on this topic, see Baker & Petty, 1994). Thus, all participants were exposed to a persuasive communication that contained both a positive cue and strong arguments.

Recall that we reasoned that individuals high in need for cognition would be persuaded because they thoughtfully elaborated the content of the arguments and were thus persuaded by their own positive cognitive responses to the persuasive message. In contrast, we reasoned that individuals low in need for cognition would be persuaded because of relatively nonthoughtful inferences and associations, in the present case provided for by the positive source cue. To distinguish, individuals high in need for cognition are persuaded because their thoughts in response to the persuasive message are positive, whereas the individuals low in need for cognition are persuaded because they infer that the message must be compelling because it is endorsed by such expert sources. Such differential persuasion processes allow for our test of the hypothesis that elaboration is a necessary condition for the emergence of the sleeper effect.

Those participants in the discounting-cue-present conditions were presented with a discounting cue on the next page. All participants then completed one page of dependent measures. Approximately 1 week later, participants returned to the laboratory and completed a second set of dependent measures.

Independent Variables

Discounting cue. Participants were randomly assigned such that they either received a discounting cue immediately after the persuasive communication or they did not receive such a discounting cue. The discounting cue was presented under a headline that read, "More Recent Information about the Article," and stated the following:

Since this article was originally printed, new research evidence on this topic has been released. This recent comprehensive research demonstrates that the conclusions of this article are false. In fact, the opposite of the author's conclusions is true. The findings of this new research will be published soon in the same magazine as the original article.

Elaboration likelihood. Elaboration likelihood was instantiated by classifying individuals as either high or low in the individual difference of need for cognition.⁸ In short, individuals high in need for cognition have been found to elaborate information even when background variables do not provide

motivation to think about the information, whereas individuals low in need for cognition have been found to elaborate information only when prompted to do so by motivating situational factors (see Cacioppo, Petty, Feinstein, & Jarvis, 1996). All participants completed the 18-item Need-for-Cognition scale (Cacioppo, Petty, & Kao, 1984). A median split was performed such that participants who scored above 60 were classified as high in need for cognition and participants who scored 60 or less classified as low in need for cognition.

Dependent Variables

On the last page of the booklet, participants were asked to complete questions related to the article. Participants were first asked three questions solely designed to support the cover story (e.g., "How does the writer communicate ideas in the story"). Following these three questions, participants provided their responses to five questions designed to indicate their attitude toward the program advocated in the article. The first four of these questions were semantic differential scales anchored with -4 (equal to negative, harmful, foolish, and bad) and $+4$ (equal to positive, beneficial, wise, and good). The fifth question asked "if the proposed plan were offered at Ohio State University, what would your opinion of the plan be?" Answers to this question also ranged from -4 (equal to strongly oppose) to $+4$ (equal to strongly favor). Five to seven days later, participants returned to the laboratory and responded to the same five attitude measures.

Results

Data reduction. The responses to the five items designed to indicate the attitude toward the topic immediately following exposure to the persuasive communication were averaged in order to yield one overall measure of attitude at Time 1. The responses to the five items designed to indicate the attitude measured 5–7 days later were similarly averaged in order to yield one overall measure of attitude at time 2. A measures of attitude change over time was constructed by subtracting the attitude measure at Time 1 from the attitude measure at Time 2. Thus, negative scores associated with this measure emerged because the Time 1 attitude measure was greater (revealing more persuasion) than the Time 2 attitude measures. That is, negative scores indicated attitude decay over time. Positive scores associated with this measure, in contrast, represent the sleeper effect in that they emerge when the Time 2 attitude measures are greater than the Time 1 attitude measures.

Initial persuasion. The Time 1 attitude measure was subjected to a 2 (Discounting Cue) x 2 (Elaboration Likelihood) analysis of variance. Results of this analysis revealed only a significant main effect for Discounting Cue, $F(1, 41) = 4.4$, $p < .05$, revealing that participants who received a discounting cue were not as persuaded at time one ($M = -0.2$) as those participants who did not receive a discounting cue ($M = 0.9$). Neither the main effect for Elaboration Likelihood nor the interaction between Elaboration Likelihood and Discounting Cue emerged as significant.

Attitude change over time. The attitude change over time measure was subjected to a 2 (Discounting Cue) x 2 (Elaboration Likelihood) analysis of variance.⁹ Only the Discounting Cue x Elaboration Likelihood interaction emerged as significant, $F(1, 41) = 5.2$, $p < .03$. This interaction was decomposed by examining the influence of a discounting cue on the attitude persistence measure for both high- and low-elaboration-likelihood participants independently. As predicted, the presence of a discounting cue led to the sleeper effect for high-elaboration-likelihood participants ($M_{\text{cue}} = +1.1$, $M_{\text{no cue}} = -0.7$), $F(1, 20) = 8.1$, $p = .01$, but did not lead to a sleeper effect for low-elaboration-likelihood participants ($M_{\text{cue}} = -0.3$, $M_{\text{no cue}} = +0.1$), $F(1, 21) < 1$, $p > .6$.¹⁰

DISCUSSION

One perspective from which the present study can be viewed is that it provides yet another condition that is necessary in order to elicit the sleeper effect. Namely, it is necessary for the message to have been thoughtfully elaborated, in addition to the conditions outlined by others, in order to produce increased persuasive impact over time, rather than decay. For if the attitude is initially changed by means of relatively nonthoughtful persuasion processes, even if the conditions outlined by Gruder et al. (1978) and Pratkanis et al. (1988) are met, it is unlikely that a sleeper effect will emerge because the attitude will possess little persistence. With elaboration, in contrast, the greater persistence of the strong attitude will allow for an elicitation of the sleeper effect when the relatively temporary influence of the discounting cue decays.

We suggest, however, that there is another perspective from which to view the present study. Namely, it is possible to view our study as integrating a well-reported and controversial finding within the explanatory system of current theories in attitudes and persuasion. The present study can be viewed as not just adding another condition, but instead can be viewed as providing a new perspective by which to understand both the sleeper effect and the conditions

postulated as necessary by previous researchers. Recall that Cook and colleagues listed four conditions that must be met in order to elicit the sleeper effect. First, the message must have a significant influence on initial attitudes. Second, the discounting cue must have a significant influence, inhibiting the effect of the message on the attitudes. Third, the message and source must become dissociated before the assessment of the delayed attitude. Fourth, the delayed attitude of the message-only group must be higher than the initial attitude of the discounting cue group.

From the perspective of the present study, it can be argued that the necessity of a thoughtfully elaborated message subsumes both the first and fourth of the Gruder et al. (1978) conditions and helps articulate why the second and third conditions are possible. Specifically, a message recipient could satisfy the first requirement advanced by Gruder et al. by either thoughtfully considering the merits of the persuasive communication or instead by nonthoughtfully accepting the persuasive communication based on the observation that it contains many reasons. According to the Elaboration Likelihood Model perspective, the process by which Gruder et al.'s first condition is met is crucially important, for the process by which the attitude is initially changed influences whether the persuasion persists. It is the persistence of the persuasion that is called for by Gruder et al.'s fourth requirement. And it is the persistence of the persuasion that is influenced by initial elaboration of message content—attitudes that are the result of relatively thoughtful elaboration are relatively more persistent than attitudes that are the result of relatively nonthoughtful persuasion processes.

Recall too that Pratkanis and colleagues advanced three conditions that facilitate the emergence of the sleeper effect. First, individuals need to note the important arguments in the message. Second, the discounting cue must follow rather than precede the message. Third, individuals need to rate the trustworthiness of the message communicator immediately after receiving the discounting cue. From the perspective of the present study, it can be argued that the necessity of a thoughtfully elaborated message subsumes both the first and the second of the conditions. What began as a methodological requirement in the Pratkanis et al. work perhaps unintentionally mimicked the elaboration that can happen more spontaneously when message topics are interesting or important or when people naturally enjoy thinking. Pratkanis et al. treated timing of the discounting cue as an issue of creating intertwined versus separate memory traces for discounting cues and messages. According to the ELM, however, effects of discounting cue placement are because of the necessity that elaboration of the message take place uninfluenced by the discounting cue. When the discounting cue comes before rather than after the message, it is likely that either the discounting cue will reduce

or bias subsequent elaboration of the persuasive message.¹¹ If the discounting cue decreases processing, then there will be little persistent impact of the message, and no sleeper effect will emerge. If the discounting cue negatively biases the processing of the message, then persistence will be of negative reactions to the message, again resulting in a lack of increase in persuasive impact over time. As for the third requirement articulated by Pratkanis et al., although rating the trustworthiness of a source may facilitate the sleeper effect, our study, as well as others, reveals that this is not a necessary condition.

It is important to recall that the predictions offered by the Elaboration Likelihood are predicated on the persuasive message eliciting positive cognitive responses when elaborated. That is, the presence of a discounting cue following a persuasive message will elicit a sleeper effect only if the persuasive message is based on strong arguments. It is the elaboration of these strong arguments that influences the positive cognitive responses, which in turn allows for the emergence of a sleeper effect after the temporary distortion of the discounting cue dissipates.

It is important, also, to recognize the potential real-world implications of the research presented in this article. From the research of Cook and colleagues it emerges that discounting cues can take the form of various negative influences following a message (e.g., presentation of counterpersuasive information, invocation of reactance). From the research of Pratkanis and colleagues it emerges that the influence of a discounting cue can dissipate, resulting in the emergence of a sleeper effect, over relatively brief intervals of time. Together, these findings suggest that the sleeper effect may be potentially a more pernicious problem than past research would suggest. That is, rather than being merely an intriguing research aberration, the sleeper effect is pertinent to understanding media effects and noneffects. For instance, a national news program introduced the story of suspected treason by showing video footage from what appeared to be a CIA surveillance camera. The video showed the suspect providing what appeared to be national secrets to a Russian spy in exchange for an envelope of money. Only later in the news program was it mentioned that the opening video was a dramatic creation, rather than an actual treasonous exchange. Such are the conditions under which the sleeper effect is likely to emerge, leaving a long-term impact of the video uninfluenced by the subsequent information that the video was fictitious.

In conclusion, we argue that the present study offers not just an additional necessary condition for the elicitation of the sleeper effect. Rather, the present study offers a contemporary explanation of an unusual effect. The present study also demonstrates the importance of understanding the distinction between

relatively thoughtful and nonthoughtful attitude change processes. Past research has provided a wealth of evidence that knowing by which process an attitude has been changed is as, if not more, important than knowing how much an attitude has changed. The present study demonstrates that an understanding of the process by which an attitude has been changed can also provide an understanding of when and why unusual findings, such as the sleeper effect, occur.

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NOTES

¹ It is worth noting that attitudes influence memory, information processing, decisions, and judgments in addition to behavior. In short, attitudes influence the psychological processes that guide behavior, as well as behavior *per se*.

² Moscovici, Mugny, and Papstamou (1981) reached a strikingly similar conclusion. They argued that, over a period of three decades, the explanation had not been theoretically advanced, and the effect itself had not been reliably replicated.

³ Cook and colleagues also distinguished between an absolute and relative sleeper effect. An absolute sleeper effect is defined as when the increase in persuasion over time is compared against a no-message control group, whereas a relative sleeper effect is defined as when the increase in persuasion over time is compared against the attitude decay exhibited by the individuals who received a message paired with a positive source cue. In general, evidence suggests that the relative sleeper effect is easier to obtain than the absolute sleeper effect.

⁴ The ELM perspective also predicts that the sleeper effect should be more likely to emerge when the arguments presented in the persuasive message are strong. This stipulation is elaborated below.

⁵ The ELM explanation is also consistent with a view of the sleeper effect that comes out of the Flexible Correction Model (FCM; Wegener & Petty, 1997). This model of bias correction hypothesizes that differences in cognitive effort (and elaboration) given to corrective processes will influence the extent to which corrected assessments of targets persist over time (see also Wegener, Dunn, & Tokusato, in press; Wegener, Petty, & Dunn, 1998). According to this view, attempts to remove biases often require greater effort than lack of corrections. For example, an "uncorrected assessment" might require X amount of effort, but when "corrections" take place after uncorrected assessments are complete, an additional Y amount of effort might be required. In this sense, "corrected assessments" in such a setting require more effect (i.e., $X + Y$) than lack of corrections (i.e., X). In this context, a sleeper effect would be most likely if the amount of effort given to uncorrected assessments (i.e., X) is relatively high, but the amount of effort given to corrections *per se* (i.e., Y) is relatively low. According to the FCM, if one were to increase the effort and elaboration given to the corrections themselves (which, for example, might often happen when the correction occurs throughout exposure to the persuasive message, as in cue-before conditions), the corrected assessments would be more likely to persist over time, thus making the sleeper effect less likely.

⁶ A cover story was used in order to provide conditions under which participants read and were influenced by information in the absence of any biasing factors (such as their paying attention to the persuasive attempt). See Petty and Cacioppo, 1981 (p. 33) for a discussion of the use of cover stories.

⁷ An additional variable, manipulating how participants were instructed to read the article, was included in the instructions. However, this variable did not produce statistically significant results and did not interact with the reported results. Thus, this variable is not detailed or discussed further.

⁸ Analyses treating need for cognition as a continuous, rather than a dichotomous, variable were conducted. The results did not differ significantly as a function of how the variable was treated.

⁹ Analyses treating the two attitude measures (i.e., Time 1 and Time 2) as a repeated measure, resulting in a 2 (Time of Attitude Measurement) \times 2 (Elaboration) \times 2 (Discounting Cue) mixed factorial design, yield results identical to those reported for the collapsed attitude persistence measure.

¹⁰ Focused *t* tests revealed that the attitude persistence measure associated with only the high elaboration likelihood and discounting cue present ($M = 1.1$) reached statistical reliability at the $p < .05$ level.

¹¹ It should be pointed out that a negative discounting cue can sometimes result in more rather than less elaboration of the persuasive message. For example, Priester and Petty (1995) found evidence that sources who were perceived as untrustworthy resulted in greater elaboration of the message than sources who were perceived as trustworthy. Such differences in elaboration, again however, would obviate the likelihood of the emergence of a sleeper effect.

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