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Abstract

In this article we analyzed the information processing that underlies nonconscious impression formation. In the first experiment, the nonconscious activation of the impression formation goal led to a faster analysis of the trait implications of behaviors, compared with a control group. In Experiment 2, participants who were nonconsciously primed with an impression formation goal were more likely than those in a control condition to form associations in memory between behaviors and implied traits. In Experiment 3, nonconsciously primed participants were more sensitive than those in a control condition to whether inconsistent trait information was relevant or irrelevant to the actor's disposition. Moreover, in Experiments 2 and 3, those with a nonconscious goal showed just as much evidence of impression formation as those who were consciously and intentionally trying to form an impression. Implications for nonconscious goal pursuit and impression formation are discussed.

Keywords: nonconscious goal-pursuit, automaticity, impression formation, person perception, spontaneous trait inference

Taking a closer look: On the operation of nonconscious impression formation

Over the last three decades, research in social psychology has shown that stereotypes, traits, attitudes, and even individual actions can be generated without people's awareness or intentions (Bargh, in press; Dijksterhuis, Chartrand, & Aarts, in press; Greenwald & Banaji, 1995; Hassin, Uleman, & Bargh, 2005). Empirical work over the last five years suggests that even goal-pursuit can be characterized as proceeding automatically (e.g., Aarts, Gollwitzer, & Hassin, 2004; Fitzsimons & Bargh; 2003, Shah & Kruglanski, 2002a, 2002b, 2003). Evidence for nonconscious goal pursuit comes from paradigms in which participants are surreptitiously presented with stimuli that are strongly related to a goal such as achievement or cooperation (e.g., Bargh, Gollwitzer, Lee-Chai, Barndollar, & Trotschel, 2001; Chartrand & Bargh, 1996). After perceiving such stimuli, participants act in line with the primed goal construct, and report no awareness or intention of doing so. Furthermore, the participants in these studies show classic signs of motivational behavior, including persistence, resumption after an interruption, and increased pursuit following a delay (e.g., Aarts et al., 2004; Atkinson & Birch, 1970; Bargh et al., 2001; Forster & Liberman, in press).

And yet, the precise mental operations by which the nonconscious activation of a goal construct in memory is translated into behavioral effects are largely unknown. That is, we know very little about the specific procedures that become activated after goal-relevant information has been perceived. Such information would broaden our understanding of how goals operate nonconsciously. In addition, the hypothesis that nonconsciously induced goals operate similarly to consciously induced goals (e.g., Bargh et al., 2001; Chartrand & Bargh, 1996) cannot be fully evaluated without a finer-grained analysis of the psychological operations underlying each type of goal pursuit.

To begin to address this gap, the current work examined the nonconscious operation of one of the most well-established and -studied goals in social psychology -- impression formation. There are sizable literatures on both conscious and spontaneous impression formation (e.g., Brewer, 1988; Carlston & Skowronski, 1994; Fiske, Lin, & Neuberg, 1999; Gilbert, Pelham, & Krull, 1988; Hastie & Kumar, 1979; Srull & Wyer, 1979; Trope, 1986; Van Overwalle & Labiouse, 2004; Winter & Uleman, 1984) and we refer to some of this work in order to identify the procedures that might underlie a nonconscious impression formation goal. In what follows, we discuss nonconscious goal pursuit in general, and then nonconscious impression formation in particular. We then describe the current hypotheses and the series of experiments that tested them.

Nonconscious Goal Pursuit

Goals are cognitive representations of desired end-points that potentially impact evaluations, emotions, and behaviors (e.g., see Bargh, 1990; Fishbach & Ferguson, in press; Higgins & Kruglanski, 2000; Shah & Gardner, in press). Because goals are necessarily represented in memory (see also Hull 1931; Tolman, 1932), Bargh and colleagues have argued that they should be able to become activated nonconsciously and influence behavior just as do other psychological constructs (e.g., stereotypes, attitudes; Bargh, 1990; Bargh & Barndollar, 1996; Chartrand & Bargh, 1996). But, what exactly is included in a goal representation? How does a goal operate nonconsciously?

Goal representations are assumed to include information about the desired end-point and the plans, strategies, and behaviors that can be used to meet that end-point (Carver & Scheier, 1998; Kruglanski, et al., 2002; Martin & Tesser, 1989, 1996; Schank & Langer, 1994; Vallacher & Wegner, 1987; Wilensky, 1983). Therefore, when a goal is nonconsciously activated,

procedures for processing information, or for interacting with the environment, may become activated and then operate on incoming stimuli (see Smith & Lerner, 1986; Smith, Branscombe, & Bormann, 1988). This means that the nonconscious activation of a goal might activate a set of operations or procedures for handling information pertinent to that goal. Although researchers have claimed that nonconscious goals work this way, there has been little documentation of nonconsciously activated, goal-relevant operations (though see Hassin, 2005).

Nonconscious Impression Formation

The first empirical paper on nonconscious goal pursuit involved an impression formation goal (Chartrand & Bargh, 1996). Participants were subliminally primed with words relating to impression formation (e.g., personality) or memorization (e.g., retain). As in classic conscious impression formation research (Hamilton, Katz, & Leirer, 1980), participants then read a series of sentence predicates describing various behaviors of a target person. After a filler task, they recalled the predicates. Participants given the nonconscious impression formation goal recalled more behaviors and exhibited greater memory organization than those given the nonconscious memorization goal. In fact, the nonconscious goal produced the same effects as the conscious impression formation instructions.

This work demonstrated that (1) people with a nonconscious impression formation goal exhibit more organizational processing of behavioral information about another person compared with those without the goal, and (2) they seem to do so to the same extent as people with a conscious, intentional goal to form an impression. However, what procedures enable such organizational processing? And, how might such operations compare with those underlying conscious impression formation? To answer such questions, we tested three specific predictions for how those with a nonconscious impression formation goal should process social information.

In all three experiments, we compared those with a nonconscious impression formation goal with those given no such instructions. In this way, we tested a nonconscious impression formation goal against people's well-documented tendency to spontaneously form impressions of others (e.g., Carlston & Skowronski, 1994; Carlston, Skowronksi, & Sparks, 1995; Todorov & Uleman, 2003; Uleman, 1999). We predicted that those with a nonconscious goal should show more evidence of processing consistent with impression formation compared with those in the control condition. In addition, in two of the three experiments we compared the effects of a nonconscious versus conscious impression formation goal in order to test whether similar goal-relevant operations underlie each type of goal.

The Present Research

The first prediction is that those with a nonconscious impression formation goal should be more efficient at inferring traits from behaviors, compared to those without the goal. Just as various social decisions and judgments become automatized with sufficient practice (Smith & Lerner, 1986), those primed to form impressions should be faster at assessing the trait implications of behaviors. To test this, in the first experiment participants were primed with an impression formation goal or not, and then decided whether each of a series of behaviors matched a given trait.

The second prediction concerns the ease with which people develop associations between behaviors and implied traits. Research on spontaneous trait inferences demonstrates that people who read about behaviors naturally tend to infer the trait that is implied by the behavior, forming an association between the two (e.g., Bassili & Smith, 1986; Winter & Uleman, 1984). We predicted that people with a nonconscious goal should show this tendency even more than people in the control condition. We also tested whether those with a nonconscious goal showed as much

of this kind of processing as those who were intentionally and deliberately trying to generate such associations.

The third prediction addresses the selectivity of a nonconscious impression formation goal. Previous research shows that people who are consciously and intentionally trying to form an impression process incongruities between behaviors more so when the reason for the incongruity pertains to the actor (i.e., dispositional attribution) rather than an irrelevant factor (i.e., situational attribution) (Crocker, Hannah, & Weber, 1983). In other words, when forming an impression, people seem to "care" about behavioral incongruities only when the incongruity concerns the actor – an effect that demonstrates selectivity and goal-directedness. We tested whether those with a nonconscious goal would show the same selectivity as those with a conscious goal. We also tested whether those with a nonconscious goal would show this more than those in the control condition.

Experiment 1

Experiment 1 tested whether priming a nonconscious impression formation goal activates procedures related to fulfilling the goal. Specifically, we investigated the efficiency of these nonconsciously activated procedures by pitting them against the natural inferential processes that occur upon encountering behavioral information.

Participants primed with a nonconscious impression formation, or not, were asked to judge as quickly as possible whether a trait matched the preceding behavior. If those with a goal analyze the trait implications of a behavior more efficiently, this judgment should be easier. Therefore, participants given the nonconscious goal should be quicker to make these judgments than those in the no goal condition. Furthermore, if the procedures are efficient, this effect should hold over time (i.e., the experimental blocks).

Method

Participants

Thirty students from New York University participated in the experiment for course credit.

Materials and Procedure

Goal priming. A parafoveal priming procedure (for details see Bargh, Bond, Lombardi, & Tota, 1986; Chartrand & Bargh, 1996) was used to ensure that participants were not aware of the semantic content of the stimulus words. Participants were told that the purpose of the first computer task was to gauge their visual skills. Participants were told they would see flashes appear on the right and left hand sides of the screen, and their task was to indicate as quickly as possible which side the flash appeared on by pressing one of two keys.

The flashes consisted of neutral words in the no goal condition (e.g., *building, calendar, plant, sidewalk*), and goal-related words in the nonconscious goal condition (e.g., *evaluate, judgment, personality, impression*), with each word presented for 60 ms immediately masked by a 60 ms letter string. The delay between stimulus word presentations varied from two to seven seconds to help maintain vigilance throughout the task. In both conditions, participants were presented with 6 practice trials followed by 75 experimental trials in which the appropriate set of words (4 in each set) was randomly presented (see Chartrand and Bargh, 1996, Experiment 2, for further details).

Judgment task. Participants were then informed that a series of sentences would appear on the screen, each followed by a word. Their task was to decide whether the word "fit" the sentence as quickly and as accurately as possible by pressing one of two computer keys. The mapping of the keys to the response was counterbalanced between subjects. After a few practice

trials, 100 experimental trials were presented. Each behavioral sentence appeared for 3.5 s, followed by a 1 s pause. Then the trait attribution appeared and remained on the center of the screen until the participant responded.

For counterbalancing purposes, the task consisted of five blocks with 20 trials each. Each block contained five trait-implying behavioral sentences followed by a positive, relevant trait attribution (e.g., "carried an old lady's groceries to the car" / "helpful"), five trait-implying behavioral sentences followed by a negative, relevant trait attribution (e.g., "never donated money to the homeless" / "stingy"), five non-trait implying behavioral sentences, followed by a positive, non-relevant trait attribution (e.g., "purchased a new yellow raincoat" / "humorous"), and five non-trait implying behavioral sentences followed by a negative, non-relevant trait attribution (e.g., “opened the small cereal box" / "abusive").

Funneled debriefing. Participants then completed a funneled debriefing form (Bargh & Chartrand, 2000) which checked for awareness and suspicion. They were then debriefed and thanked for their participation. None of the participants reported any awareness of the primes, or any perceived connection between the priming phase and the judgment task.

Results and Discussion

The data were trimmed in the following manner. Firstly, all reaction times (RTs) above 3000 ms were excluded. Secondly, upper-bound means for each participant were calculated by adding 2.5 standard deviations to each participant's overall mean, and RTs above each individual's upper bound mean were excluded. This trimming procedure eliminated 84 reaction times out of 3000 (0.03%).

A 2 (Goal Condition: Nonconscious Goal vs. No Goal) x 2 (Trait Type: Relevant vs. Non-relevant) x 5 (blocks) mixed model ANOVA was performed on the mean latencies[1]. A

main effect of trait type emerged such that participants displayed faster RTs when responding to relevant (M = 785.18) versus non-relevant traits (M = 873.63), $F(1, 28) = 46.21$, $p < .01$. As expected, a significant effect of goal condition also emerged, $F(1, 28) = 5.29$, $p < .03$. Those with a nonconscious impression formation goal (M = 771.64) were significantly faster in deciding whether or not a trait word matched the preceding behavior in comparison to those with no goal (M = 887.17). This effect was not moderated by block, $F<1$ (see Figures 1 and 2). This advantage for the nonconscious condition held over all blocks for both types of stimuli, indicating that it is not attributable to proceduralization. Lastly, there was no evidence of a speed-accuracy tradeoff as incorrect responses were negligible (i.e., in both conditions the errors consisted of less then 6 % of the total trials) and the conditions did not differ in the number of errors, $F<1$.

The results of Experiment 1 demonstrate that priming a nonconscious impression formation goal activates mental operations that facilitate trait inferences over spontaneous trait inferences. This advantage in processing was not due to proceduralization over experimental blocks. Hence, the operations set in motion by the priming of a nonconscious goal are efficient upon activation.

Experiment 2

Experiment 2 tested whether a nonconscious impression formation goal enhances the formation of associative links between behaviors and corresponding traits. Past work on spontaneous trait inferences has found that people display greater recall for behavioral stimuli when a trait that was implied by the behavior is provided as a cue, in comparison with a semantic cue or no cue (Uleman, 1987, 1999; Winter & Uleman, 1984; Winter, Uleman, & Cunniff, 1985). Bassili and Smith (1986) found that trait-cued recall was even better under conscious

impression formation instructions versus memory instructions. Together, this work suggests that this type of encoding occurs spontaneously, and can also be strengthened with a conscious goal to form an impression. The present experiment therefore tested whether a nonconscious goal can further boost an already automatic process (e.g., the spontaneous inference of traits from behaviors) in the same manner as a conscious impression formation goal.

Participants were given a conscious or nonconscious goal, or not, and then viewed a series of behavioral sentences, and then completed a cued recall task. It was predicted that participants with either the nonconscious or conscious goal would display better recall with a trait versus semantic cue compared with control participants.

Method

Participants

Seventy-two students from the introductory psychology course at New York University participated in the experiment for course credit.

Materials and Procedure

Goal priming. In the nonconscious goal and no goal conditions, the subliminal priming task from Experiment 1 was used. In the conscious goal condition, participants received the following instruction: "While you are reading a sentence, please think about the kind of person the subject of the sentence is" (see Bassili & Smith, 1986).

Encoding. Eighteen behavioral sentences appeared on the screen for 5 s each. Participants were asked to carefully read each one. The sentences were taken from Winter and Uleman (1984) and Bassili and Smith (1986).

Cued-recall. To control for recency effects, participants next did a filler task for two minutes. Then they were given 10 minutes to complete a surprise recall task. Participants were

given a sheet of paper with nine dispositional trait cues and nine semantic cues, each designed to match a particular behavioral sentence, with a line after each cue for writing down their response. For example, the trait cue of "concerned" or the semantic cue of "meat" was presented to aid in the recall of the sentence "The butcher writes a letter to the editor about air pollution." The order and type of cues were counterbalanced, creating two different recall forms.

Funneled debriefing. Participants completed a funneled debriefing form similar to Experiment 1, then were debriefed and thanked for their participation. None of the participants in the nonconscious condition reported any awareness of the primes, or any suspicion about the connection between the priming task and the sentence and recall tasks.

Results and Discussion

Each participant's recall data was coded by two independent raters using a lenient criterion (98% inter-rater reliability). The coding scheme was adopted from Winter and Uleman (1984) and Bassili and Smith (1986). For all 18 sentences, each sentence had 4 "parts": subject, verb, object, and second object. However, Bassili and Smith (1986) found that the actor or subject of the sentence was recalled significantly better with semantic versus trait cues, so they excluded “actor” from their analyses. As we also found this effect, we similarly excluded "actor" from our analyses. Thus, each sentence part was worth 1 point, yielding 3 points possible per sentence, for a possible 54 total points per participant.

A mixed 3 (Goal Condition: Nonconscious Goal, Conscious Goal, No Goal) x 2 (Cue Type: Trait, Semantic) ANOVA was run on average number of sentence parts (verb, object, and second object[2]), There was a significant cue-type effect, $F(1, 69) = 12.654$, $p < .001$: a trait was a better cue for recall ($M = 3.03$) than a semantic cue ($M = 2.25$). A main effect of condition was also obtained, $F(2, 69) = 6.036$, $p < .01$, revealing that participants in the conscious goal

condition recalled significantly more sentence parts overall than those in the nonconscious goal condition, $F(1, 46) = 6.54$, $p < .01$, and the no goal condition, $F(1, 46) = 10.\ 208$, $p < .01$ (these latter two groups did not significantly differ from each other, $F<1$). As predicted, a significant interaction emerged, $F(2, 69) = 7.57$, $p < .001$. The trait cues facilitated recall performance over semantic cues in the nonconscious goal, $F(1, 23) = 4.09$, $p < .05$, and conscious goal conditions, $F(1, 23) = 19.46$, $p < .01$, but not in the no goal condition, $F(1, 23) = .219$, $p = .644$ (see Figure 3).

Because verbs are indicators of goal-directed behavior and intention (Jeannerod, 2003) (e.g., "the person *tripped* on his girlfriend's feet"), recall for verbs was analyzed separately. A mixed 2 x 3 ANOVA was conducted on the verbs recalled. A significant interaction, $F(2, 69) = 8.02$, $p < .001$, was obtained, revealing a facilitation in recall of verbs due to the use of trait cues over semantic cues in the nonconscious, $F(1, 23) = 4.97$, $p < .05$, and the conscious, $F(1, 23) = 17.81$, $p < .01$, conditions, but this pattern was not obtained in the no goal condition, $F(1, 23) = .209$, $p = .652$ (see Figure 4).

In sum, the data support our hypothesis that conscious and nonconscious impression formation goals activate procedures that facilitate trait inference and the subsequent association between the trait and its behavioral antecedent. This set of procedures appears to operate in the same manner whether given a conscious goal or a nonconscious goal.

Experiment 3

To extend the findings of Experiment 2, we considered the kind of information that might influence how those with a nonconscious goal encode behaviors. Crocker, Hannah, and Weber (1983) have shown that people given an explicit (i.e., conscious) impression formation goal differentially process behavioral information depending on the accompanying attribution.

Specifically, incongruent information was better recalled *only* when it was attributed to dispositional causes. In Experiment 3, we tested whether participants with a nonconscious impression formation goal would show the same selective nature in processing behavioral information as those with a conscious goal.

Using the general framework from the Crocker et al. study, participants in Experiment 3 were given a nonconscious impression formation goal, a conscious impression formation goal, or no goal. Then, they were presented with behavioral sentences to read. These behavioral sentences were either congruent or incongruent to the character's personality, and were either attributed to a dispositional cause, a situational cause, or no cause. It was predicted that those with an impression formation goal, nonconscious or conscious, would display better recall for incongruent behavioral sentences attributed to dispositional causes relative to those with no goal.

Method

Participants

Ninety-two students from New York University participated in the experiment for course credit.

Materials and Procedure

Goal priming. In all three conditions, priming procedures and instructions were the same as in Experiment 2. However, this time participants in the conscious goal condition first completed the neutral-word version of the subliminal priming task before receiving their impression formation instructions.

Encoding. Following the priming phase, participants were instructed to carefully read a series of behavioral sentences presented on the computer screen. Each sentence was presented for 9 s, followed by a 1 s pause. The set of sentences were related to the central trait

"unintelligent" and consisted of four consistent behaviors with dispositional attributions (e.g., John missed the point of the joke because he couldn't make the connection), two consistent behaviors with situational attributions (e.g., John wrote the essay very slowly because there were a lot of outside distractions), two inconsistent behaviors with dispositional attributions (e.g., John completed the difficult crossword puzzle because he has a good vocabulary), two inconsistent behaviors with situational attributions (e.g., John did really well on the test because he was a really good guesser), and ten consistent behaviors with no attributions.

The first four sentence positions were fixed as consistent dispositional to ensure that participants formed the impression of "unintelligent" before the inconsistent behavior appeared in the 7th position; otherwise, the inconsistent behavior might not seem inconsistent (Bargh & Thein, 1985). To prevent order effects, the type of attribution was rotated in the four "inconsistent" positions. In addition, the different sentences within each type (e.g., consistent dispositional) were rotated in these fixed positions yielding four counterbalancing groups.

Free recall. Participants next completed a filler task followed by a surprise free recall task. Participants were given a recall form consisting of 20 lines and were instructed to recall and write down the behaviors of "John" that were previously presented.

Funneled debriefing. A funneled debriefing was administered similar to the previous experiments, then participants were thanked and debriefed. None of the participants in the nonconscious goal condition reported any awareness of the primes, nor any perceived connection between the priming task and the sentence task.

Results and Discussion

A mixed 3 (Goal Condition: Nonconscious Goal, Conscious Goal, No Goal) x 2 (Sentence Type: Consistent, Inconsistent) x 2 (Attribution Type: Dispositional, Situational)

ANOVA was run on the recall data. Neither a significant 3-way interaction nor any main effects were found for attribution or sentence type, *F*s< 2. A Sentence Type by Attribution Type interaction was significant, $F(1, 89) = 14.48$, $p < .01$, indicating a significant difference between recall for consistent dispositional behaviors ($M = .29$) and inconsistent dispositional behaviors ($M = .46$), $t(91) = 4.66$, $p < .01$. No significant difference was found between recall for consistent situational behaviors ($M = .45$) and inconsistent situational behaviors ($M = .40$), $t(91) = 1.55$, $p = .12$.

There was a main effect of goal condition, $F(1, 89) = 4.03$, $p < .05$. A contrast analysis showed that recall for the critical behaviors (excluding filler sentences) was significantly lower in the no goal condition ($M = .33$), $t(89) = 2.82$, $p < .01$, than in the nonconscious ($M = .44$) and conscious goal ($M = .42$) conditions, which did not significantly differ from each other, $t < 1$. This same pattern held for all sentences including filler sentences, such that participants in the conscious goal and the nonconscious goal conditions recalled significantly more total sentences, $t(89) = 2.668$, $p <. 01$, than those in the no goal condition. However, participants in the conscious goal condition recalled significantly more filler sentences, $t(89) = 3.74$, $p < .001$, than those in the nonconscious and no goal conditions, which did not differ from each other, $t(89) = 1.49$, $p = .138$.

To test the main prediction regarding inconsistent behaviors with a dispositional versus situational attribution, pair-wise comparisons were run to examine differences between the three goal conditions (see Figure 5). Participants in the nonconscious goal condition ($M = .52$) recalled significantly more inconsistent dispositional behaviors than the no goal condition ($M = .34$), $F(1, 59) = 4.43$, $p < .05$. Participants in the conscious goal condition ($M = .52$) also recalled significantly more inconsistent dispositional behaviors than the no goal condition, $F(1, 60) =$

3.94, $p < .05$. The conscious and nonconscious goal conditions did not differ from each other, $F<1$. When comparing the three goal conditions on recall for inconsistent situational sentences, the three goal conditions were not significantly different from each other, Fs<1. This pattern of findings is in line with our predictions.

This last experiment demonstrated that participants with either a conscious or nonconscious impression formation goal showed enhanced recall for inconsistent behaviors attributed to dispositional causes. There were no significant differences between recall for consistent behaviors (see Figure 6) or for inconsistent behaviors attributed to situational causes between the three goal conditions. These results suggest that those with either a conscious or nonconscious impression formation goal differentially process behavioral information based on its predictive qualities.

General Discussion

In the present research, we took a closer look at the mental operations that underlie nonconscious impression formation. To do so, we identified some of the procedures that are part of the impression formation goal, and that can be activated without the person's awareness or intention. Firstly, we predicted that priming a nonconscious impression formation goal should activate procedures that facilitate trait inferences (Experiment 1). Although trait inferences have been shown to occur spontaneously (e.g., Uleman, 1999), we argued that having a nonconscious impression formation goal should help perceivers make judgments regarding trait inferences more quickly. The results supported this prediction, and thus demonstrate the efficiency of nonconscious impression formation. Secondly, we hypothesized that a nonconscious impression formation goal would foster the formation of associative links in memory between inferred traits and their corresponding behaviors (Experiment 2). We found that traits (vs. semantic

associates)served as better cues for the recall of corresponding behaviors only for those with a conscious or nonconscious impression formation goal, but not for those in the control condition. Hence, it appears that once the trait is inferred, the mental operations primed by the impression formation goal operate further to solidify or enhance that inference. Lastly, we hypothesized that the operations activated by a nonconscious impression formation goal should act upon behavioral information selectively according to attributional information (Experiment 3). Participants with a nonconscious impression formation goal or a conscious impression formation goal recalled significantly more inconsistent dispositional behaviors than those with no goal. This suggests that nonconscious goals operate selectively on information that could aid in creating an accurate impression of an actor.

The results also suggest that holding an impression formation goal leads to better processing of behavioral information than having no goal. Therefore, we conclude that impression formation goals appear to have a processing advantage in comparison to inferential processing that occurs spontaneously. Other research (e.g., Carlston & Skowronski, 1995, 2005), however, demonstrates no processing difference between participants given explicit impression formation instructions and those who were uninstructed. Two possibilities may account for this discrepancy. One concerns the extremity of the trait stimuli in previous research versus the present studies. Whereas in Carlston & Skowronski (1994) there was strong consensus about the trait implications reported by participants, the stimuli in the present studies might be less extreme and less likely to prompt spontaneous inferences. Another possibility is that Carlston and Skowronski (e.g., 1994, 2005) employed photos along with the behavioral sentences. The photos may have served as strong cues to form impressions, rendering previous goal-related instructions redundant. Future research will be needed to resolve these issues.

In addition to identifying some of the operations that are involved in nonconscious impression formation, we also compared whether these operations were similar to those underlying conscious impression formation. In this way we explored whether conscious and nonconscious goal pursuit, beyond their shared motivational features, operate in the same manner in terms of these procedures. The results from Experiments 2 and 3 suggest that they do, and thus provide additional support for the claim that nonconscious goals operate in a manner similar to that of conscious goals.

However, it should be noted that just because conscious and nonconscious goals both seem to depend on these relatively more specific processes, this of course does not mean that the two "types" of goal pursuit are identical. For example, there may be differences in the boundaries or mechanisms of even these more specific processes depending on whether the perceiver is consciously thinking about the goal versus not – a possibility in line with assumptions about differences between conscious versus nonconscious processing more generally (e.g., see Brewer & Harasty-Feinstein, 1999; Smith & DeCoster, 1999).

What do these results indicate about how nonconscious goals might operate more generally? Impression formation is ultimately an information-processing goal, and so necessarily involves various types of mental operations. However, even goals that involve more overt behavioral strategies -- such as achievement or cooperation -- should depend on operations that guide how information is interpreted, organized, or processed in a goal-relevant manner. For example, just as the impression formation goal fosters the analysis of the trait implications of behavior, the achievement goal might involve the analysis of performance opportunities and likelihoods afforded by various actions, people, or events.

Future examinations of the procedures and mechanisms that underlie nonconscious goal pursuit could draw from recent research on the mechanisms of conscious goal pursuit. For instance, recent research has demonstrated that conscious goal pursuit seems contingent on changes in the accessibility of goal-relevant knowledge (Aarts, Dijksterhuis, & De Vries, 2001; Forster, Liberman, & Higgins, 2005; Moskowitz, 2002), as well as the implicit evaluation of that knowledge (Ferguson & Bargh, 2004; Ferguson, in press). It remains an open question whether nonconscious goals operate according to the same kinds of processes, and to the same degree.

Conclusion

In sum, these results go beyond a mere demonstration that the impression formation goal can be nonconsciously activated, to identifying some of the specific information-processing operations that enable the pursuit of the goal. These findings also tentatively support the notion that conscious and nonconscious goal pursuits rely on some of the same mental operations. The import of this investigation is not only to rid nonconscious goals of their "miraculous" status, but also to begin to understand how their operations are managed.

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Footnotes

[1] We did not include valence in our factorial design, but in a separate analysis a main effect for valence was found, $F(1, 28) = 30.17$, $p = .001$, such that the positive words were responded to more quickly than the negative words, ($M = 801.98$ vs. 849.9). Valence did not interact with goal condition, $F<1$.

[2] See Table 1 for means of all sentence parts by cue by condition.

Figure Captions

Figure 1. Experiment 1. Mean reaction times by block and goal condition for relevant traits.

Figure 2. Experiment 1. Mean reaction times by block and goal condition for irrelevant traits.

Figure 3. Experiment 3. Mean sentence parts (verb, object, second object) recalled by goal condition and cue type.

Figure 4. Experiment 3. Mean verb parts recalled by goal condition and cue type.

Figure 5. Experiment 4. Mean percentage of inconsistent behaviors recalled by goal condition and attribution.

Figure 6. Experiment 4. Mean percentage of consistent behaviors recalled by goal condition and attribution.

Table 1.

Mean Recall for Sentence Parts by Goal Condition and Cue Type

		Sentence Parts			
Goal Condition	Cue Type	Subject	Verb	Object	2nd Object
Nonconscious					
	Trait cue	2.12	2.83	2.65	2.71
	Semantic cue	4.25	2.17	2.0	2.12
Conscious					
	Trait cue	2.88	4.62	4.37	4.21
	Semantic cue	3.62	2.62	2.62	2.33
No Goal					
	Trait cue	1.37	2.00	2.04	1.83
	Semantic cue	3.88	2.17	2.12	2.12

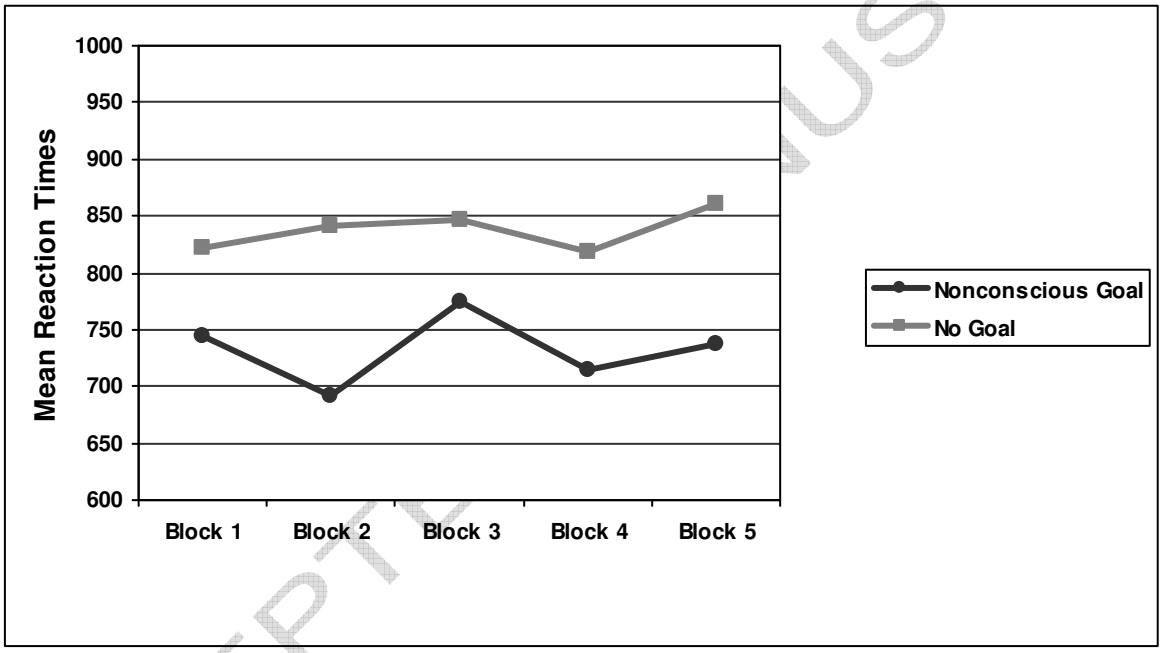

Fig 1

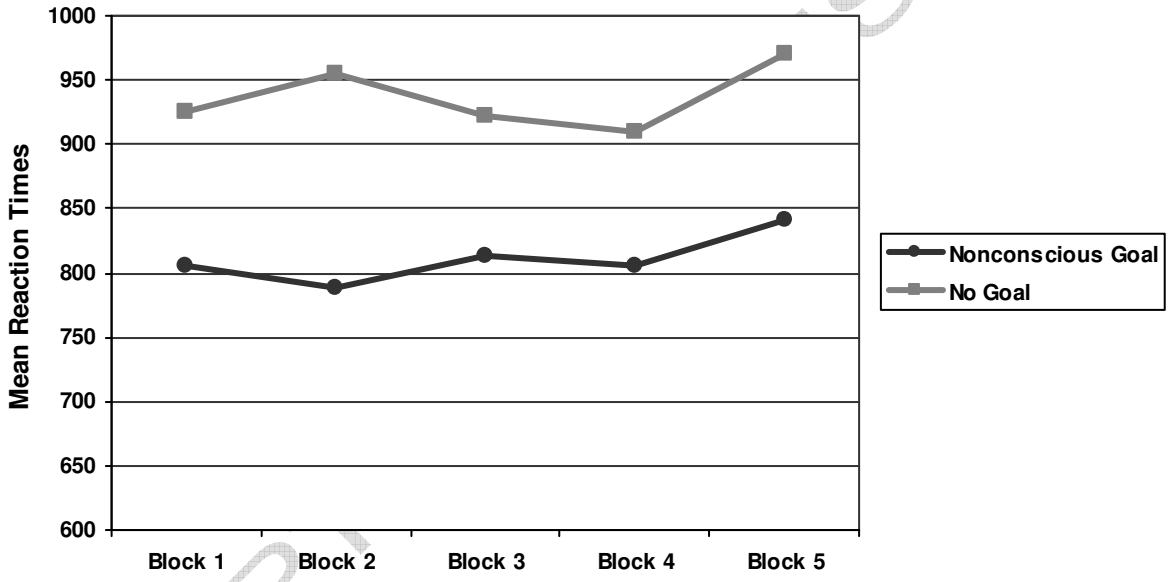

Fig 2

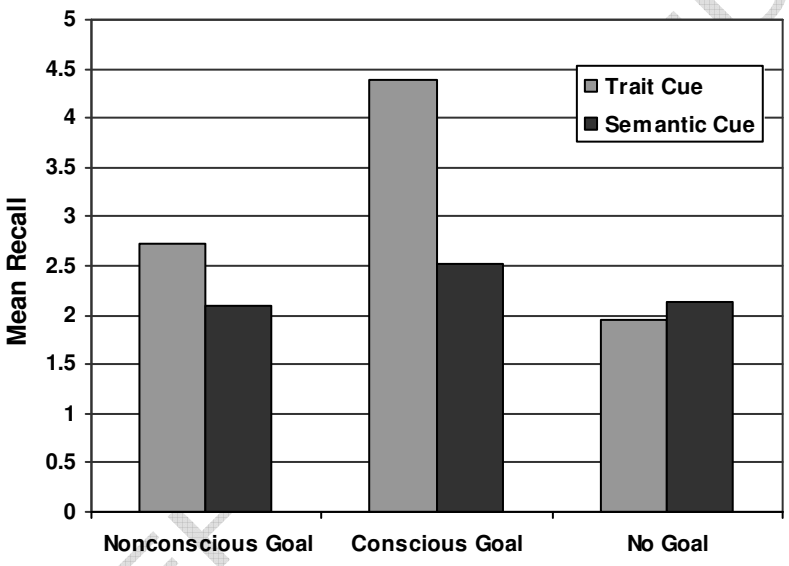

Fig 3

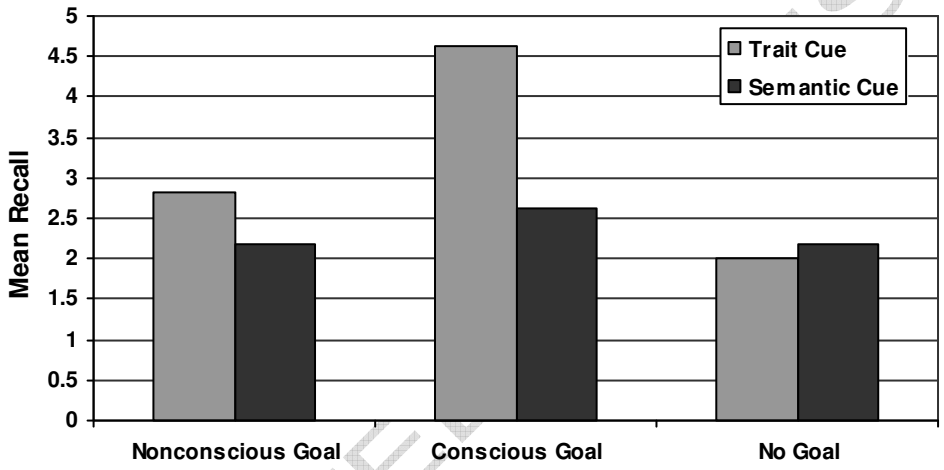

Fig 4

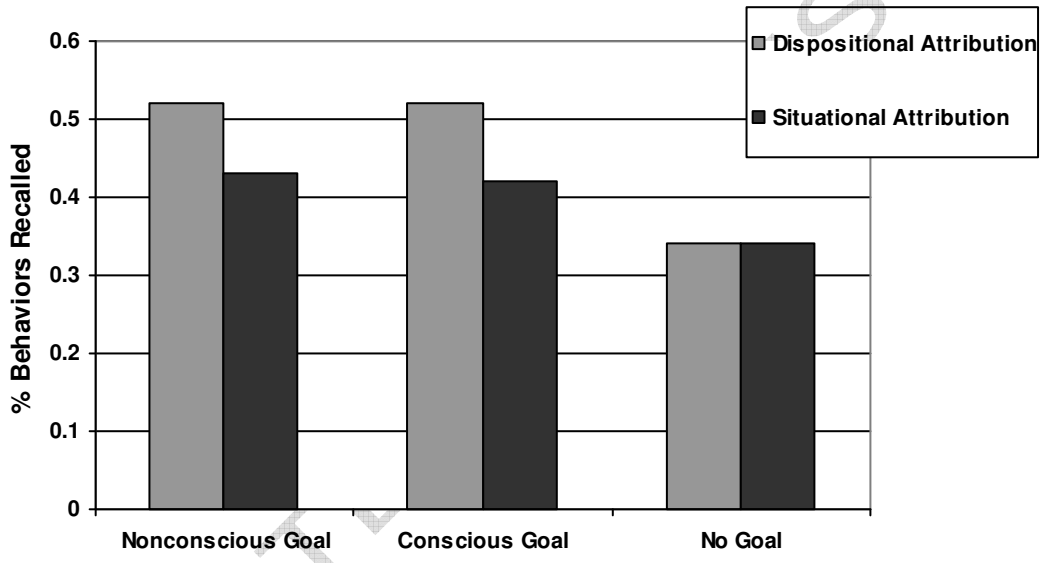

Fig 5

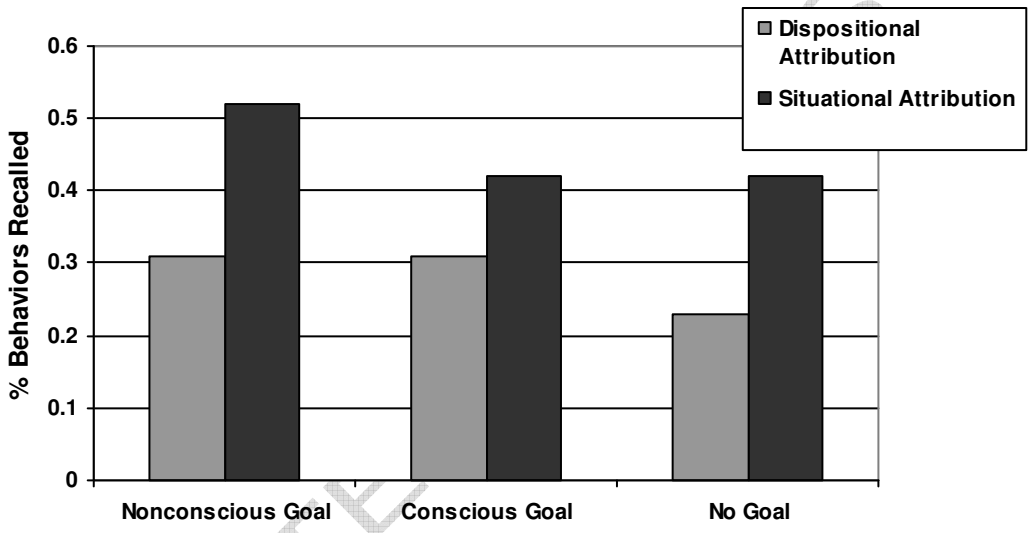

Fig 6