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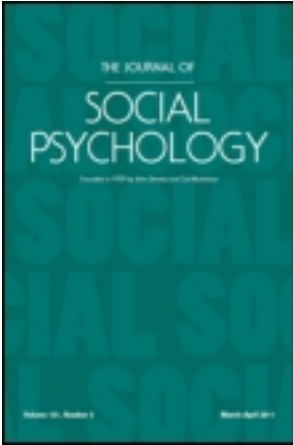
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### Intentional Inferences Are Not More Likely Than Unintentional Ones: Some Evidence Against the Intentionality Bias Hypothesis

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## REPLICATIONS AND REFINEMENTS

# Intentional Inferences Are Not More Likely Than Unintentional Ones: Some Evidence Against the Intentionality Bias Hypothesis

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**ABSTRACT.** We conducted a study to test the hypothesis that inferences about intentionality are biased toward an intentional interpretation. Contrary to previous research, participants were no more likely to judge ambiguous actions as intentional in a speeded compared to an unspeeded condition. Further, participants were faster to respond and more consistent in responding to unintentional rather than intentional actions.

**Keywords:** attribution, intentional bias, intentionality, social perception

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ROSSET (2008) SUGGESTED THAT INTENTIONALITY ATTRIBUTIONS, or judgments regarding whether or not an action is intentional, are automatically activated. The bias is similar to the anchoring and adjustment heuristic whereby perceivers anchor on an intentional interpretation of action and only with sufficient time and mental resources adjust toward an accidental interpretation (Tversky & Kahneman, 1974). However, other researchers suggest that intentionality attributions are made systematically (Malle & Knobe, 1997; Reeder, 2009).

Rosset (2008, Study 1) conducted a study in which participants in speeded or unspeeded conditions decided whether an action was intentional. Participants

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were more likely to judge actions as intentional in the speeded than unspeeded condition. We sought to replicate and extend Rosset's experiment by measuring responses and response times to action sentences. The intentionality bias hypothesis predicts that responses should replicate those found previously, and that response times should be faster for intentional action sentences.

We recruited 35 female and 18 male students (aged 19 years on average,  $SD = 4.0$ ) and used E-Prime to present them with a series of actions. Our sample differed from Rosset's only with respect to geographic location. Participants indicated whether the action was intentional (on purpose) or unintentional (accidental) by pressing the "j" or "f" keys (counterbalanced across participants). Participants completed 5 practice trials and then sentences were presented in random order and shown for 2400 ms (speeded condition) or 5000 ms (unspeeded condition).

The action sentences were drawn from Rosset (2008, Study 1) and included 74 sentences that were similar in length. Test sentences were divided into those which were prototypically intentional and accidental; in both cases the actor could have done the action on purpose or by accident (e.g., "He set the house on fire"). Control sentences consisted of unambiguous intentional and accidental sentences. In summary, the design was a 2 (Condition: speeded vs. unspeeded)  $\times$  4 (Sentence Type: accidental control vs. intentional control vs. prototypically intentional vs. prototypically accidental) mixed factorial.

An intentionality endorsement (IE) score was calculated for each participant and sentence type. IE scores were defined as the number of intentional responses divided by the number of total responses. Thus, the IE score represented one's tendency to choose an intentional response. A mixed-measures ANOVA was used with Sentence Type and Condition as factors. There was no effect of condition,  $F(1, 51) = 2.49, p = .12, \eta_p^2 = 0.05$ , indicating that participants' IE scores did not differ in the speeded ( $M = 0.48, SD = 0.07$ ) versus unspeeded conditions ( $M = 0.44, SD = 0.05$ ). The main effect of Sentence Type,  $F(3, 153) = 700.78, p < .001, \eta_p^2 = 0.93$ , showed that IE scores were highest for intentional control sentences ( $M = 0.95, SD = 0.06$ ) followed by prototypically intentional sentences ( $M = 0.63, SD = 0.15$ ), prototypically accidental sentences ( $M = 0.24, SD = 0.13$ ), and finally accidental control sentences ( $M = 0.11, SD = 0.12$ ).

Replicating Rosset, an interaction between Condition and Sentence Type emerged,  $F(3, 153) = 7.86, p < .001, \eta_p^2 = 0.13$ . Participants' IE scores were higher when responding to accidental control sentences in the speeded ( $M = 0.16, SD = 0.13$ ) than unspeeded condition ( $M = 0.05, SD = 0.05$ ),  $t(51) = -4.15, p < .001, d = 1.16$ . Contrary to the intentionality bias hypothesis, IE scores for intentional control sentences were greater in the unspeeded ( $M = 0.99, SD = 0.02$ ) compared to the speeded condition ( $M = 0.91, SD = 0.06$ ),  $t(51) = 5.24, p < .001, d = 1.47$ . Further, IE scores for test sentences did not differ in the speeded (prototypically accidental:  $M = 0.27, SD = 0.16$ ; prototypically intentional:  $M = 0.63, SD = 0.16$ ) versus unspeeded conditions (prototypically accidental:  $M = 0.20, SD = 0.09$ ; prototypically intentional:  $M = 0.62, SD = 0.14$ ),  $t(51) = -1.82, p = .07, d = 0.51$  and  $t(51) = -0.34, p = .73$ ,

$d = 0.20$ , for prototypically accidental and intentional sentences respectively. Finally, collapsed across test sentence type, IE scores were significantly different in the speeded ( $M = 0.39$ ,  $SD = 0.14$ ) versus unspeeded ( $M = 0.35$ ,  $SD = 0.09$ ) conditions,  $t(51) = -2.05$ ,  $p = .045$ ,  $d = 0.57$ .

According to the intentionality bias hypothesis it should take longer to respond to unintentional than intentional sentences, regardless of speeded condition. Thus, RTs should be faster when responding to control and test intentional sentences than when responding to the control and test accidental sentences. Consistent with the intentionality bias hypothesis, RTs were faster when participants responded to intentional control sentences ( $M = 1,584$ ,  $SD = 353$ ) compared to accidental control sentences ( $M = 1,642$ ,  $SD = 390$ ),  $t(53) = 2.29$ ,  $p = .02$ ,  $d = 0.63$ . However, participants were slower to respond to intentional test sentences ( $M = 1,954$ ,  $SD = 603$ ) than accidental test sentences ( $M = 1,836$ ,  $SD = 514$ ),  $t(53) = -3.08$ ,  $p = .003$ ,  $d = 0.85$ , disconfirming the intentionality bias hypothesis.

Another way to test the intentionality bias hypothesis is to examine consistency scores within sentence type in the speeded condition. If perceivers anchor on an intentional interpretation of ambiguous actions, they should consistently respond to intentional sentences while inconsistently responding to unintentional sentences, especially within the speeded condition. However, Kuder-Richardson coefficients revealed that participants were more consistent when responding to accidental control ( $KR-20 = 0.74$ ) and accidental test sentences ( $KR-20 = 0.72$ ) compared to intentional control and intentional test sentences ( $KR-20 = -0.04$  and  $0.08$ , respectively).

The current study provided evidence against the intentionality bias hypothesis. First, test sentence IE scores did not differ by speed condition. Second, people were slower to respond to intentional than accidental test sentences. Finally, the intentionality bias hypothesis would predict that when people do not have sufficient time to override their intentional anchor they should consistently respond that intentional actions are intentional, whereas they should respond to unintentional actions less reliably. Our data contradict this prediction.

Further research is needed to disambiguate the data provided by Rosset (2008) and the evidence provided here. We believe that the failure to replicate Rosset's findings represent a refutation of the intentionality bias because our study provided a stronger test of the hypothesis. Specifically, we tested participants alone, rather than in large groups, and collected RT data. Although evidence against the intentionality bias hypothesis is tentative, we look forward to continued empirical investigation into this intriguing area of research.

#### AUTHOR NOTES

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