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Educating About the Misinformation Effect Prior to Reading Does Not Seem to Reduce It

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Abstract

Readers' engagement with false information is a topic of growing importance. In two experiments, we investigated whether the misinformation effect can be reduced by educating participants about it prior to reading. In both experiments (N = 84 and N = 133), no reduction of the misinformation effect through psychoeducation was observed. Participants in both groups (control and psychoeducation) referenced a similar amount of misinformation after reading false information on items they previously answered correctly. Both reading false and reading neutral information did not change the confidence participants had in answers they previously knew, while reading correct information increased confidence.

Keywords: misinformation effect, reading, psychoeducation, confidence in knowledge

Educating about the misinformation effect prior to reading does not seem to reduce it

Nowadays, people are often confronted with an abundance of information each day. While a lot of it is well researched and validated, there are also statements that are unfounded or even contain false information. This may in part be due to a lack of information curation but can also be the result of directed misinformation campaigns. Given these circumstances, examining how people process misinformation is of ever-growing importance. Previous research shows that misinformation tends to be directly encoded by readers (Gilbert et al., 1993). Even when they knew the correct answer before reading the false statement, after being confronted with misinformation they reproduce some of it as correct information (Fazio et al., 2013). This phenomenon is described as the misinformation effect. Furthermore, even when misinformation is not reproduced, it can lead to doubting the accuracy of one's knowledge (Rapp & Salovich, 2018) and is therefore obstructive for individuals' problem-solving and decision-making.

Several different interventions have been explored and shown to be ineffective in reducing the misinformation effect (for a review see Rapp, 2016). However, Ecker et al. (2010), who examined a similar effect regarding misinformation, the continued influence effect (i.e., the effect that retractions often fail to eliminate the influence of previously encoded misinformation) showed that educating participants about the continued influence effect prior to reading was effective in reducing it. Therefore, in two experimental studies, we investigated whether educating university students about the misinformation effect prior to reading fictional texts that contain misinformation on general knowledge facts that they answered correctly beforehand (cf. Fazio et al., 2013) would also be effective in reducing the effect. Further, we aimed to explore whether reading misinformation would change readers' self-assessed confidence in answers to items they previously answered correctly.

Experiment 1

Method

Data from 84 participants, 42 in each of two experimental groups, was collected. Their age ranged from 18 to 50 (M = 24.05, SD = 4.59), 66 identified as female, 18 as male. The experiment was divided into two parts. In the first part, participants filled out an online general knowledge test (GKT), answering general knowledge questions (free response) e.g. "What is the capital of Canada?" (Ottawa), and indicating their confidence in the answers on a scale from 0 to 100. Sixty-four questions were used, 32 being distractor items, only used in the first GKT and 32 critical items, which were also presented as neutral or false statements in the second stage of the experiment. Five to nine days later, the second part of the experiment took place in the lab. Participants were asked to attentively read two fictional stories (of 1,500 words each). Each story contained false statements for 8 of the 32 critical items (e.g. "[...] who was from Canada's capital Toronto.") and neutral statements for another 8 of the critical items (e.g. "[...] who was from Canada's capital."). False and neutral statements were counterbalanced between participants. In addition, half of them were educated about the misinformation effect (psychoeducation group). This experimental procedure resulted in a 2x2 mixed design with the between-subject factor group (control, psychoeducation), and the within-subject factor item type (neutral, false). After a 5-minute distractor task, participants filled out another GKT, containing 32 new distractor items and again the 32 critical items. Finally, as a manipulation check, participants were asked to describe the misinformation effect.

Results

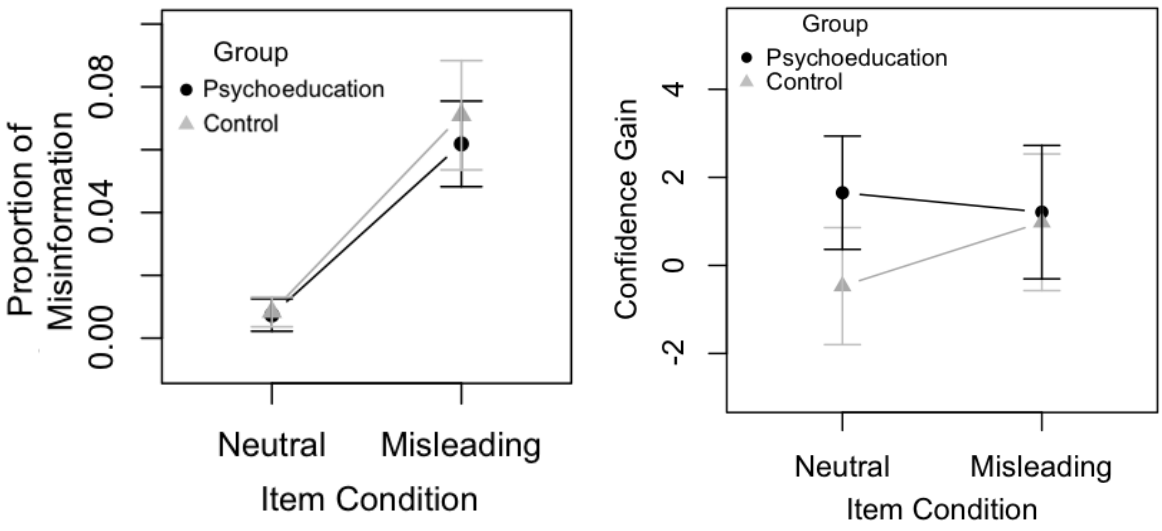
A repeated-measures ANOVA with % misinformation mentioned in the second GKT for items answered correctly in the first GKT as dependent variable, showed neither a significant interaction effect, nor a significant main effect of group, both Fs < 1. Only the

main effect of item condition was significant, $F(1,82) = 28.46$, $p < .001$. After answering an item correctly in the first GKT, participants in both groups referenced significantly more misinformation in the second GKT, when presented with misinformation about an item (7%), than when items were mentioned with no additional information (1%). See Figure 1 left for an illustration. Furthermore, only 55% of the participants in the psychoeducation group were able to explain the misinformation effect correctly during the manipulation check.

Exploratory analysis revealed that, for items answered correctly in the first GKT, participants' confidence in their answers did not change significantly after reading neutral items or false statements. A repeated measures ANOVA with mean confidence difference from first to second GKT as dependent variable showed no significant interaction effect and no significant main effects of group, or item condition, all Fs < 1, (see Figure 1 right).

Figure 1

Left: Proportion of misinformation mentioned in the second GKT, after exhibiting knowledge in the first GKT. Right: Average confidence gain in answers from first to second GKT for items participants answered correctly in the first GKT.



Note. Standard errors are represented by error bars attached to each group mean.

Experiment 2

Although we were not able to reduce the misinformation effect through psychoeducation in Experiment 1, the low completion rate of the manipulation check suggests that this might be due to the psychoeducation not being salient or clear enough. To ensure that this is not the case, some alterations from the original experimental design were made for Experiment 2. First, the psychoeducation instruction was extended as well as given its own page, separate from the reading instructions. Second, the manipulation check was implemented directly before reading the story (this time only for the psychoeducation group), to assess the knowledge of the misinformation effect directly after having been confronted with it. Furthermore, not passing the manipulation check was determined an exclusion criterion for the psychoeducation group. Third, both parts of the experiment were conducted online, due to the Covid-19 pandemic. Fourth, to keep the experiment short and thus increase compliance, we decided to only use one story, namely the one which yielded more misinformation mentions in Experiment 1. This in turn led to shorter GKTs, as less items were used overall (i.e. 16 critical items plus 16 randomly selected distractor items). Fifth, to increase the credibility of the stories, we used correct statements instead of neutral ones in addition to false statements. Apart from these changes, the procedure was identical to Experiment 1.

Method

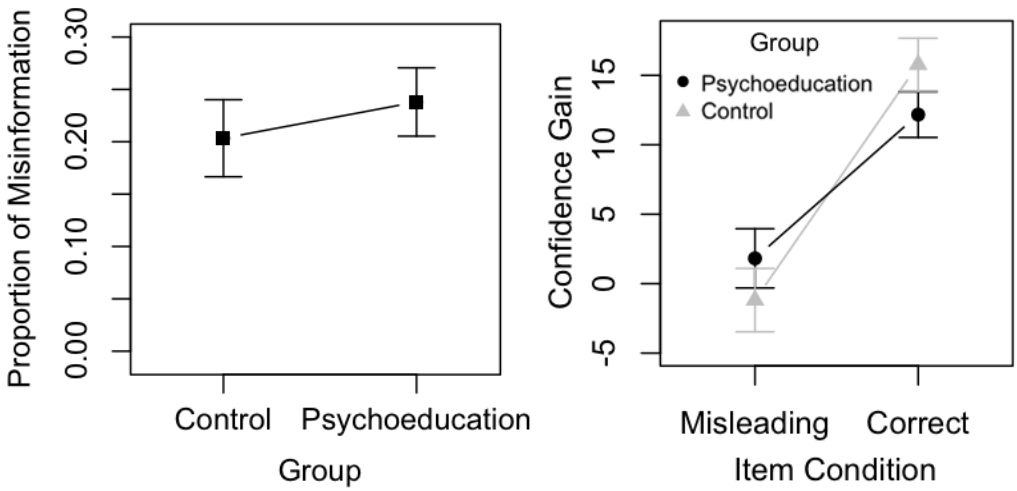
One hundred forty-two participants completed both parts of the experiment. Nine participants from the psychoeducation group had to be excluded because they were not able to sufficiently describe the misinformation effect in the manipulation check. The age of the remaining 133 participants ranged from 18 to 32 (M = 22.97, SD = 3.13), 116 identified as female, 16 as male, and one person as diverse. Fifty-nine participants were assigned to the psychoeducation group, 74 to the control group.

Results

A one-sample t-test showed that the % misinformation mentioned in the second GKT for items answered correctly in the first GKT was significantly greater than 0 (M = 22.26, SD = 27.90), $t(130) = 9.13$, $p < .001$. However, the % misinformation did not differ between groups $t(122.16) = -0.70$, $p = .483$. Regarding participants' mean confidence difference from first to second GKT, a repeated measures ANOVA again showed neither a significant interaction effect, nor a significant main effect of group, both Fs < 1. Only a significant main effect of item condition (correct, false) emerged, $F(1, 131) = 40.25$, $p < .001$, (see Figure 2 left). Regardless of the group, reading false statements about items they answered correctly in the first GKT, did not change the confidence in their answers in the second GKT, 95% CI of mean change in confidence [-2.99, 3.28]. In contrast, reading correct information about items in the text after answering them correctly increased confidence in the answers to the second GKT, 95% CI [11.63, 16.74], (see Figure 2 right).

Figure 2

Left: Proportion of misinformation mentioned in the second GKT, after reading misleading information, for items participant's exhibited knowledge in the first GKT. Right: Average confidence gain in answers from first to second GKT for items participants answered correctly in the GKT test.



Note. Standard errors are represented by error bars attached to each group mean.

Discussion

To summarize, in both experiments, psychoeducation did not reduce the misinformation effect, even after ensuring that participants could explain the effect. This contrasts the findings of Ecker et al. (2010) and might suggest that different mental processes underlie the misinformation and the continued influence effect. Although participants did encode and reproduce misinformation for some of the items that they knew correctly beforehand, the confidence in their answers was not negatively affected by reading misinformation. This conflicts with the notion that people doubt their knowledge after encountering misinformation. While neutral and false statements had no impact, correct items did increase participant's confidence in their answers, which shows that information in fictional stories does have the potential to influence readers' confidence in their knowledge. Future studies should investigate why this is only the case for correct items and also further examine the relation between confidence and reliance on misinformation.

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