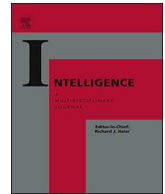


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‘Fake news’: Incorrect, but hard to correct. The role of cognitive ability on the impact of false information on social impressions

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ABSTRACT

The present experiment ($N = 390$) examined how people adjust their judgment after they learn that crucial information on which their initial evaluation was based is incorrect. In line with our expectations, the results showed that people generally do adjust their attitudes, but the degree to which they correct their assessment depends on their cognitive ability. In particular, individuals with lower levels of cognitive ability adjusted their attitudes to a lesser extent than individuals with higher levels of cognitive ability. Moreover, for those with lower levels of cognitive ability, even after the explicit disconfirmation of the false information, adjusted attitudes remained biased and significantly different from the attitudes of the control group who was never exposed to the incorrect information. In contrast, the adjusted attitudes of those with higher levels of cognitive ability were similar to those of the control group. Controlling for need for closure and right-wing authoritarianism did not influence the relationship between cognitive ability and attitude adjustment. The present results indicate that, even in optimal circumstances, the initial influence of incorrect information cannot simply be undone by pointing out that this information was incorrect, especially in people with relatively lower cognitive ability.

1. Introduction

During the 2016 American presidential elections, many people were concerned about the influence of false information that was circulating about the presidential candidates. Some commentators have even suggested that the dissemination of incorrect information played a critical role in the eventual outcome of the election (see e.g. [Parkinson, 2016](#); [Read, 2016](#)). Although spreading false information or ‘fake news’ for personal or political gain is certainly not new, recent evolutions such as social media platforms allow every individual to ‘plant’ false information more easily than ever before, and on scale comparable to leading newspapers and TV-stations ([Allcott & Gentzkow, 2017](#)). Importantly, while spreading false information is easy, correcting the record may be much harder. The present study examines whether the impact of incorrect information can be undone by explicitly pointing out that a person’s earlier assessment is based on incorrect information, and whether the correction of the assessment depends on an individual’s level of cognitive ability.

More than four decades ago, [Ross, Lepper, and Hubbard \(1975\)](#) already demonstrated that initial social impressions are perseverant, even when individuals learn that their initial impression is based on incorrect information. These authors argued that once formed, initial impressions structure and distort the processing and interpretation of

new information. As such, people are often unable to reinterpret or reattribute information when this information is inconsistent with their existing knowledge structures. However, one might wonder whether all individuals are (equally) unable to adequately adjust their initial social impressions when they learn that these are based on clearly incorrect information.

We argue that cognitive ability may play a crucial role in this process of (not) adjusting initial social impressions. Indeed, although cognitive ability refers to the capability to execute higher cognitive processes of reasoning, remembering, understanding and problem solving ([Bernstein, Clarke-Stewart, Penner, & Roy, 2011](#)), its importance in social judgments has also been acknowledged for many decades (see e.g. [Allport, 1937](#); [Taft, 1955](#)). Indeed, meta-analytic evidence shows that advanced information processing abilities relate to more accurate judgements about other individuals ([Murphy & Hall, 2011](#)). We argue that cognitive ability may not only be important in attitude formation, but also in attitude adjustment when the situation changes. Indeed, [Stanovich, West, and Toplak’s \(2016\)](#) model of Comprehensive Assessment of Rational Thinking (CART) states that cognitive ability is related to the capability to inhibit and override previously learned responses, and to the ability to think and act more rational, by hypothetical thinking and cognitive simulation. Moreover, [Guilford \(1956\)](#) already considered cognitive flexibility as an important expression of general

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intellect, and Schaie, Dutta, and Willis (1991) showed that, although measures of rigidity-flexibility and cognitive ability cannot be reduced to each other (see also Stanovich et al., 2016), cognitive ability is indeed strongly related to attitudinal flexibility. Furthermore, Hasher and Zacks (1988) argued that the reduced ability to inhibit false and irrelevant information observed in the elderly is the result of a decline in their cognitive abilities (see also Peters, Hess, Västfjäll, & Auman, 2007).

Hence, we expect that individuals with lower (versus higher) levels of cognitive ability are less equipped to adjust existing schemes and initial judgments when confronted with new, more reliable information. Consequently, we hypothesize that information that is later proven to be incorrect, has a more perseverant influence on social impressions for those individuals with lower (versus higher) levels of cognitive ability. In order to test this hypothesis, we conducted a straightforward experiment in which participants made an initial judgment of an unknown person based on available information, that afterwards proved to be unequivocally incorrect. We then compared their revised judgments with the judgments of those who did not receive the incorrect information and investigated the role of cognitive ability in these judgment adjustments.

Additionally, to demonstrate that the effects of cognitive ability cannot merely be ascribed to non-ability variables that are often associated with cognitive capacity (see e.g., De Keersmaecker, Bostyn, Fontaine, Van Hiel, & Roets, 2017), we also included short measures of need for closure and authoritarianism as control variables. In particular, these control variables aim to rule out epistemic motivation and ideological attitudes regarding norm violations as alternative explanations underlying the cognitive ability effects.

All data and materials of the experiment are available on the following Open Science Framework (OSF) page: <https://osf.io/9hg46>

2. Method

2.1. Participants

Power analyses, conducted with the ‘pwr’ package (Champely, Ekstrom, Dalgaard, Gill, & De Rosario, 2015) in R (version 3.3.1; R Core Team, 2015), indicated that we needed a sample of 390 participants (195 participants in each condition) in order to obtain a power of approximately 80% to detect a medium effect between the control and the experimental condition ($d = 0.30$), and a small effect of cognitive ability on attitude change in the experimental condition ($r = 0.20$). Four hundred participants were requested on Amazon Mechanical Turk, resulting in 407 participants who completed the full questionnaire. Seventeen participants were omitted from the final sample because they failed to correctly answer the control questions, leading to an effective sample size of 390 participants ($M_{\text{age}} = 37.92$ years, $SD_{\text{age}} = 12.13$, 50.3% female).

2.2. Procedure

The experiment was conducted online. After responding to the control measures (i.e. need for closure and right-wing authoritarianism), participants were randomly assigned to either the *experimental* or *control* condition. In the experimental condition, participants were presented with a picture and description of a young woman, named Nathalie. In this description, general information about Nathalie was provided, such as that she is married and works as a nurse in a hospital. At the end of the description, it reads that ‘Nathalie was arrested for stealing drugs from the hospital; she has been stealing drugs for 2 years and selling them on the street in order to buy designer clothes’. After completing three control questions, participants were asked to evaluate Nathalie on several dimensions, and to complete a measure of cognitive ability. Next, participants saw an explicit message on their screen stating that the information regarding the stealing and dealing of drugs

was not true. Subsequently, participants were again presented with the picture and description of Nathalie, showing exactly the same information as before, but with the incorrect piece of information in a strikethrough typography. Then participants were asked to evaluate Nathalie again, knowing that she was not arrested and did not steal and sell drugs.

In the control condition, participants were presented with the same photo and description as in the experimental condition, but without the final paragraph about the arrest for stealing and dealing of drugs.

2.3. Measures

2.3.1. Attitudes

To assess participants' attitudes towards the target person, we asked participants to indicate (on sliders ranging from 0 to 100) how they felt towards Nathalie on four general dimensions: *negative* versus *positive*, *cold* versus *warm*, *hostile* versus *friendly*, and *unfavorable* versus *favorable*. Additionally, participants were also asked to rate Nathalie on four more specific dimensions: *untrustworthy* versus *trustworthy*, *insincere* versus *sincere*, *contemptuous* versus *respectful* and *unintelligent* versus *intelligent* using the same 0 to 100 sliders. The scores on these eight dimensions were combined into a reliable scale (Control condition: Cronbach $\alpha = 0.96$; Experimental condition - initial evaluation: Cronbach $\alpha = 0.90$, second evaluation: Cronbach $\alpha = 0.97$).

2.3.2. Cognitive ability

As a measure of cognitive ability, we used a 10-item vocabulary subtest from the WAIS. In this subtest, participants are presented with a target word and are asked to select the word from a list of five words that comes closest to the meaning of the target word (Cronbach $\alpha = 0.67$, $M = 6.96$, $SD = 1.90$). The participant's score on this test was used as measure of his/her cognitive ability. Although the use of a subscale to measure cognitive ability may be less informative than full-fledged intelligence tests (see De Keersmaecker et al., 2017), such tests tapping into a specific aspect of intelligence can be a valid alternative when administration of broad IQ tests are not feasible. Indeed, this particular vocabulary test is frequently used as a proxy of cognitive ability or intelligence in social sciences (e.g. Caplan & Miller, 2010; Carl, 2015), and vocabulary knowledge is highly related to general intelligence (Pearson, 2012).

2.3.3. Control variables

2.3.3.1. Need for closure. Participants responded to Roets and Van Hiel's (2011) 15-item short version of the revised need for closure scale (Roets & Van Hiel, 2007) on 6-point Likert scales (Cronbach $\alpha = 0.92$, $M = 4.14$, $SD = 0.95$).

2.3.3.2. Right-wing authoritarianism. An 11-item version of Altemeyer's (1981) right-wing authoritarianism scale (e.g., Van Hiel, Pandelaere, & Duriez, 2004) was administered on 7-point Likert scales (Cronbach $\alpha = 0.90$, $M = 3.81$, $SD = 1.33$).

3. Results

All analyses are conducted in SPSS (Version 22.0; IBM Corp., 2013). First, we investigated whether the attitudes towards the target person were different, depending on the presented information. As expected, providing the additional negative information about the target person was related to dramatically less positive attitudes towards the target ($M_{\text{negative information}} = 25.16$, $SD = 15.20$) compared to the control group who was not presented with the negative information ($M_{\text{control group}} = 82.64$, $SD = 15.89$); $F(1, 388) = 1328.59$, $p < 0.001$. After the experimental group was informed that the negative information was not correct, the second evaluation revealed significantly more positive attitudes towards the target person ($M_{\text{false information}} = 81.87$, $SD = 17.29$) compared to the first evaluation, ($t(187) = -32.04$,

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