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## ABSTRACT

An effect observable across many different domains is that negative instances tend to be more influential than comparably positive ones. This phenomenon has been termed the negativity bias. In the current work, it was investigated whether this effect pertains to judgments of truth. That is, it was hypothesized that information valence and perceived validity should be associated such that more negative information is deemed more true. This claim was derived from the findings that negative instances tend to demand more attentional resources and that more elaborate processing can render messages more persuasive. In three experiments manipulating information valence through framing– and assessing judgments of truth – the hypothesized negativity bias was corroborated. Theoretical explanations and implications for further research are discussed.

Word count: 120

Keywords: negativity bias, positive-negative asymmetry, truth judgment, validity, elaboration, persuasion, framing

## INTRODUCTION

Across various disciplines within scientific psychology and beyond, one commonly accepted and well documented phenomenon is what has been called the negativity bias. This term refers to the general tendency for negative information, events, or stimuli to have a greater impact on human cognition, affect, and behavior than comparably positive instances. In broad reviews of the extant literature Baumeister, Bratslavsky, Finkenauer, and Vohs (2001) as well as Rozin and Royzman (2001) come to the conclusion that ‘bad is stronger than good’ across a wide range of domains such as impression formation, perception, memory, decision making, and many others. However, I am aware of no study investigating whether negative information is – per se – deemed more valid or true. It is therefore the aim of the current article to explore whether the perceived veracity of information is impacted by its valence. Stated bluntly, it was tested whether instances may not (only) be ‘sad, but true’ – as the every-day aphorism implies – but possibly ‘sad, *thus* true’.

Why should we be more inclined to accept negative information as more accurate? Even though it is beyond the scope of this report to test specific mechanisms responsible for the hypothesized valence-validity association, it seems appropriate to point out from which theoretical positions it was derived. First, it has been argued that negative instances are often more informative (Peeters & Czapinski, 1990) – parallel to the higher informativeness of disconfirming evidence (Leyens & Yzerbyt, 1992). So, there could be a simple direct association between valence and (perceived) veracity.

Secondly, there is evidence for increased elaboration of negative instances which has been termed ‘informational negativity effect’ (e.g. Lewicka, 1997; see also Lewicka, Czapinski, & Peeters, 1992). Specifically, different lines of research indicate that negative stimuli are detected more reliably (Dijksterhuis & Aarts, 2003), lead to more elaborate attributions (Bohner, Bless, Schwarz, & Strack, 1988), and generally demand more attention, thus entailing more elaborate processing (Baumeister et al., 2001). Rozin and Royzman

(2001) refer to these findings as negative differentiation, stating that ‘our cognition is perhaps more complex, elaborated, and fine-tuned’ (p. 299), comparing negative instances to positive ones.

Finally, there is a noteworthy body of literature which confirms that more elaboration, deeper processing, and high processing motivation can increase the persuasiveness of messages (e.g. Petty & Briñol, 2008; Shiv, Britton, Payne, Mick, & Monroe, 2004). Similarly, though investigating the realm of wishful thinking rather than negativity bias, Bar-Hillel, Budescu, and Amar (2008) showed that the causal link ‘I focus on, therefore I believe in’ (p. 283) is well-supported. Also, elaboration can increase the perceived truth of past-events, even and especially when these never happened, which has been explained as an effect of constructive processing (Kealy, Kuiper, & Klein, 2006).

So, since negative information is often especially diagnostic we may have learned to pay increased attention to it. Consequently, it is more likely to demand thorough processing than positive information. Finally, given that more elaboration can yield more persuasion, information valence will impact truth judgments. However, before testing the proposed process it is clearly necessary to show that the to-be-explained effect actually exists. That is, I first aimed to demonstrate that more negative instances are indeed deemed more veridical.

This conjecture was tested in three experiments which investigated participants’ judgments of truth concerning different pieces of statistical information, taken from the German Police Crime Statistics 2007 (Federal Criminal Police Office, n.d.) and the Statistical Yearbook 2008 (Federal Statistical Office, n.d.). Experiments 1 and 2 were conducted as online-surveys adhering closely to the standards for internet experiments suggested by Reips (2002). Experiment 3 was administered via ordinary questionnaires.

Importantly, to test the hypothesized valence-validity association, information shown to participants would need to differ in valence but not in objective accuracy. That is, the actual accuracy of the information provided must be held constant across experimental

conditions. A typical method for equating information while manipulating its valence is framing (Kahneman & Tversky, 1984). That is, formally equivalent messages are framed as gains vs. losses or, more generally, positively vs. negatively. This principle was used in the experiments reported herein.

## EXPERIMENT 1

The first experiment was conducted as an online-survey. After providing consent and demographical information, participants were shown statistical information from the crime domain and instructed to provide a truth rating. As information, the success rate<sup>1</sup> of crimes from the category of rape and aggravated sexual coercion (denoted 'rape' in what follows) was presented. The actual success rate (85%) was used. Half of the participants were told that 85% of attempted instances of rape were successful (negative frame), while the other half were told that 15% were unsuccessful (positive frame). All participants were then asked to judge the truth of the stated information on a 4-point scale. 110 participants (84 female, aged  $M = 25$ ,  $SD = 7$ ) were recruited via a mailing list and randomly assigned to one of these conditions.

Additionally, since effects of dispositional optimism or pessimism may play a role, individual scores of optimism and pessimism were assessed by means of a German version (Glaesmer, Hoyer, Klotsche, & Herzberg, 2008) of the revised Life-Orientation-Test (Scheier, Carver, & Bridges, 1994), filled out by participants before the judgment task.

### *Results and discussion*

Participants rated the information to be true with  $M = 2.9$  ( $SE = .09$ ) in the negative vs.  $M = 2.5$  ( $SE = .11$ ) in the positive framing condition,  $t(104.5) = 2.9$ ,  $p = .004$ , Cohen's  $d = .60$ , resembling a medium to large effect size (Cohen, 1988). The results are displayed in Figure 1. Controlling for optimism and pessimism in a one-way ANCOVA revealed that both covariates had significant effects, but the effect of framing condition remained significant and actually increased very slightly (from  $\eta_p^2 = .075$  to  $\eta_p^2 = .076$ ). In sum, the hypothesized

negativity bias was corroborated using formally equivalent information and manipulating its frame. However, the success rate of a crime is a concept not easily understood (higher success rates being more negative) and so the results may be distorted by participants misunderstanding the task. Therefore, the experiment was repeated using the clearance rate<sup>2</sup> as information, instead.

## EXPERIMENT 2

Following the logic of Experiment 1, the information frame was again manipulated. 38 participants (30 female, aged  $M = 17.3$ ,  $SD = .50$ , recruited from a high school course of introductory psychology) were randomly assigned to two groups. These were shown the actual clearance rate of rape (70%), either framed positively (70% of cases cleared) or negatively (30% of cases not cleared) and asked to judge, again on a 4-point scale, the truth of the provided statement. Also, like in Experiment 1, individual differences in optimism and pessimism were assessed (before the judgment task).

### *Results and discussion*

As can again be seen in Figure 1, participants' truth ratings were higher in the negative ( $M = 3.1$ ,  $SE = .15$ ) as compared to the positive framing condition ( $M = 2.6$ ,  $SE = .15$ ), which was significant with  $t(36) = 2.6$ ,  $p = .015$ ,  $d = .80$ , and entailed a large effect size. Neither optimism nor pessimism explained additional variance. So, the negativity bias in judgments of truth, as found in Experiment 1, could be replicated. However, there are two limitations pertaining to Experiments 1 and 2 which deserve additional attention: First, online studies principally allow participants to cheat, that is, to look up the truth of information presented. Although there is no immediate reason why this should have been more likely in the negative framing condition (thus leading to selectively higher truth ratings), a replication using simple questionnaires seemed desirable. Secondly, the negativity bias found may be specific to the crime domain. Thus, I aimed to replicate the reported effects in a different domain.



### EXPERIMENT 3

The principal logic of this experiment was again to manipulate the frame of the information presented (between participants) while holding the information itself constant. In contrast to the previous experiments, the information was not from the crime domain but from demographics. Specifically, participants were shown the probability of a marriage to be divorced within the first ten years which is, in Germany, about 20% (Federal Statistical Office, n.d.). Participants were randomly assigned to one of two conditions: In the positive frame, they were informed that 80% of marriages lasted 10 years or longer whereas their counterparts in the negative frame were informed that 20% of marriages were divorced within the first 10 years. Like in the previous experiments, participants rated the truth of this statement on a 4-point scale. The experiment was run using simple 1-page questionnaires dispersed to a community sample of 33 participants (16 female, aged  $M = 27.7$ ,  $SD = 12.6$ ).

#### *Results and discussion*

Participants in the negative framing condition again provided higher truth ratings ( $M = 2.7$ ,  $SE = .18$ ) than their counterparts in the positive framing condition ( $M = 2.1$ ,  $SE = .20$ ), which was significant,  $t(31) = 2.3$ ,  $p = .026$ , again entailing a large effect size of  $d = .82$ . Once more, this result is depicted in Figure 1. So, the predicted negativity bias could be replicated in a different judgment domain and using simple questionnaires rather than an online experiment.

### GENERAL DISCUSSION

The aim of the experiments reported herein was to investigate whether the negativity bias – which can be found in many areas of human cognition (Baumeister et al., 2001; Rozin & Royzman, 2001) – pertains to judgments of truth. That is, I sought to show that information will, by itself, be deemed more valid whenever it is more negative.

In three experiments, participants' judgments of truth concerning different statistical statements were assessed. It could be shown that framing the provided information in a negative vs. positive way clearly affected these judgments of truth, although the information was actually the same in all conditions: Whenever the success rate (Exp. 1) or clearance rate (Exp. 2) of a crime were negatively framed, the information was deemed more true, as compared to the positive frame. Likewise, the stated divorce rate (Exp. 3) was judged to be more true when framed negatively (proportion of marriages divorced within 10 years) rather than positively (proportion of marriages lasting 10 years or longer). The obtained negativity bias entailed medium to large effect sizes, reaching statistical significance even in small samples (Experiments 2 and 3). Also, it was robust across different judgment domains, using different assessment methods, and different samples of participants. Finally, the effect was not altered when individual differences in optimism and pessimism were controlled for.

However, the negativity bias demonstrated herein calls for an explanation. That is, the psychological mechanisms underlying the reported effects are by no means clear. As outlined in the Introduction, I have reasoned that the greater diagnosticity of negative information (Peeters & Czapinski, 1990; Rozin & Royzman, 2001) may be responsible for such an effect. Moreover, negative information can lead to more thorough processing (Ito, Larsen, Smith, & Cacioppo, 1998), which may then produce the negativity bias since more elaboration can increase the persuasiveness of messages (Tormala, Brinol, & Petty, 2007).

Interestingly, others have proposed similar processes in other contexts. For example, Igou and Bless (2007) recently argued that biasing effects of framing are due to increased necessity for elaboration in ambiguous situations. This claim follows from the ideas of the affect infusion model (e.g. Forgas, 2007; Forgas & George, 2001) according to which environmental aspects (such as frame or mood) are more likely to impact behavior when a person must go beyond the information provided to complete a task. As judging the statistical

statements presented to the participants in the current experiments is likely to represent such a situation, it seems plausible for information valence to affect its perceived veracity.

Also, it should be pointed out that the underlying direct association between valence and informativeness is likely to be reinforced by different social processes. For example, we might have learned to trust negative information more, simply because others are much more unlikely to lie to us when bringing us bad news, whereas they may well exaggerate when informing us about something good. Similarly, one might propose that negative messages are more likely to be conveyed by sources we tend to trust, especially the media (given the strong focus on negative events in the news, e.g. Grabe & Kamhawi, 2006; Grabe, Lang, & Zhao, 2003), which would foster a learned negative association between valence and subjective validity.

Clearly, much further research is needed to test how the negativity bias in judgments of truth comes about. To investigate whether it really is produced by more elaboration, as hypothesized herein, analyses of decision times or experimental manipulations of the opportunity for enhanced elaboration, are needed. In sum, the current work will hopefully provide a compelling demonstration of the negativity bias in judgments of truth. Of course, the challenge does not end here. On the contrary: If events we encounter are not merely 'sad, but true', but actually 'sad, *thus* true', it seems central to uncover the mechanisms responsible such effects – although this is beyond the scope of this article. Nevertheless, I hope to have pointed out at least one line of arguments which could inspire future tests of why we see more truth in the negative.

## FOOTNOTES

<sup>1</sup> 'success rate' denotes the proportion of successful attempts to a crime. So, in the current case, this ratio refers to instances in which the victim was actually raped.

<sup>2</sup> 'clearance rate' denotes the proportion of registered cases of a crime which were cleared by the police or associated forces. That is, a high clearance rate indicates that culprits were caught in most instances.

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## FIGURE CAPTION

*Figure 1.* Mean truth ratings (original scale ranging from 1 to 4) for the negative vs. positive framing conditions in each of the experiments. Error bars represent one standard error of the mean.

ACCEPTED MANUSCRIPT



