Biased memory retrieval in the service of shared reality with an audience:

The role of cognitive accessibility

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Abstract

After communicators have tuned a message about a target person's behaviors to their audience's attitude, their recall of the target's behaviors is often evaluatively consistent with their audience's attitude. This audience-tuning effect on recall has been explained as resulting from the communicators' creation of a shared reality with the audience, which helps communicators to achieve epistemic needs for confident judgments and knowledge. Drawing on the ROAR (Relevance Of A Representation) model, we argue that shared reality increases the cognitive accessibility of information consistent (vs. inconsistent) with the audience's attitude, due to enhanced truth relevance of this information. We tested this prediction with a novel reaction-time task in three experiments employing the saying-is-believing paradigm. Faster reactions to audience-consistent (vs. audience-inconsistent) information were found for trait information but not for behavioral information. Thus, audience-congruent accessibility bias emerged at the level at which impressions and judgments of other persons are typically organized. Consistent with a shared-reality account, the audience-consistent accessibility bias was correlated with perceived shared reality about the target person and with epistemic trust in the audience. Among possible explanations, the findings are best reconciled with the view that the creation of shared reality with an audience triggers basic and "automatic" (spontaneous, low-level) cognitive mechanisms that facilitate the retrieval of audience-congruent (vs. audience-incongruent) trait information about a target person.

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The construction of judgments and memories depends on the interplay between motivational and cognitive processes (Sorrentino & Higgins, 1986; Kunda, 1990; Eitam et al., 2013; Di Rosa et al., 2021). Regarding memory, research on motivational factors has focused on the impact of self-serving recall biases. For example, in a classical experiment from Sanitioso et al. (1990), participants recalled more own autobiographical memories indicative of either introversion or extraversion, dependent on whether they had previously read a text about scientific findings that described either introversion or extraversion as a critical predictor of academic success. Focusing on motivationally negative effects, Sedikides and colleagues found that people tend to recall information about themselves that challenges a positive self-view to a lesser degree than other information, an effect that they termed “mnemic neglect” (Sedikides et al., 2016). In line with this, Kouchaki & Gino (2016) recently reported that people’s memories of own unethical actions lose subjective clarity and vividness over time.

While representing compelling examples of motivated memory processing, these studies are clearly limited in their scope, focusing only on self-related memories in connection with self-related motives (self-enhancement/self-protection). A recent model by Eitam and colleagues adopts a broader view on motivated remembering, which is not limited to self-related memories and also extends its scope beyond specifically value-related motives (Eitam & Higgins, 2010; Eitam et al., 2013). This model, called “Relevance Of A Representation” (ROAR), posits that the influence of motivational factors on memory (and more generally on cognition) is a result of the specific effects that they exert on accessibility of stored information.

According to ROAR, motivational relevance of a representation determines which information becomes cognitively accessible to the mind and is therefore most likely to be actually used for current thought and action. Motivational sources that can increase cognitive accessibility can refer not only to value (motives related to desired outcomes), but also to truth (motives related to establishing what is real) and to control (motives related to managing what happens). Within research on self-serving motives on self-related memories, at least two studies have provided some evidence that the memory bias was associated with better accessibility of motivation-congruent information, as reflected in faster reaction times for motivation-congruent than for motivation-incongruent information (Sanitioso et al., 1990, Study 3; Dunning et al., 1991, Study 5). However, other applications in which motivation and memory contents do not specifically refer to the self would be needed to draw more general conclusions and to identify these mechanisms as more universal ones within motivated remembering.

We employed the so-called “saying-is-believing” (SIB) paradigm (Higgins & Rholes, 1978) to test predictions from the ROAR model. The memory effects demonstrated in this paradigm reflect the communicators’ creation of shared reality with a partner (Echterhoff et al., 2005). Saying-is-believing effects thus involve motivation grounded in truth relevance rather than value relevance (as in self-serving motives). In a typical SIB study, participants first read a text about the behavior of a specific target person. The text consists of several passages describing the target persons’ behavior in an evaluatively ambiguous manner. For example, the described behavior in one of the passages could be interpreted either as “stubborn” (more negative interpretation) or as “persistent” (more positive interpretation). After having read the text, participants are asked to describe the target person to another person (their audience), being informed that the audience knows and either likes or dislikes the target person. Under these circumstances, participants typically create an evaluatively more positive message for the audience if they believe that the audience likes the target and

an evaluatively more negative message if they believe that the audience does not like the target, a process called audience tuning. Critically, when participants are later asked to recall the original information they had read about the target person as accurately as possible, they show the same evaluative bias in their own memory, called recall tuning.

Thus, the communicator's memory for a target person becomes biased through her communication with an audience. This memory bias is termed "saying-is-believing effect", because it suggests that participants finally remember and truly believe what they have communicated to the audience rather than what they actually learned about the target person (Higgins & Rholes, 1978). Subsequent analyses indicated that this memory bias is motivationally driven. Specifically, the SIB effect was found if participants were able to successfully create a shared reality with their audience, i.e., a perceived commonality of inner states with respect to the specific target (Echterhoff et al., 2005, 2009). For example, the effect did not occur if the audience belonged to an outgroup, or if participants received feedback indicating that the audience failed to identify the target person (Echterhoff et al., 2005). It likewise did not emerge if audience tuning served other goals, such as being polite or obtaining financial incentives (Echterhoff et al., 2008). Recently, the effect also has been shown to be positively correlated with a self-report measure of shared reality (Schmalbach et al., 2019). Because the role of shared reality in the saying-is-believing effect has been repeatedly demonstrated, the SIB effect is also referred to as "sharing-is-believing" (Higgins et al., 2021).

There are two major motivational aspects of shared reality creation, i.e., the relational motive to be socially connected with the audience, and the epistemic motive to acquire valid and true knowledge about the world (Echterhoff et al., 2009; Echterhoff & Higgins, 2020). Of these, the epistemic motivation, closely related to truth relevance in the ROAR model, has been identified as critical in the SIB effect. Thus, the effect is mediated by the extent of epistemic trust in the audience (Echterhoff et al., 2005, 2008), and it was found to occur only

in individuals with high epistemic needs (Kopietz et al., 2010). These findings fit well with recent generative conceptualizations of episodic memory retrieval, according to which remembering is not simply a reinstatement of originally encoded information, but instead depends on how a “scenario of the past” is reconstructed at the time of retrieval (Blank, 2009; Cheng et al., 2016).

However, while shared reality theory so far has highlighted the interpersonal and motivational factors of the SIB effect, it has remained largely silent about the underlying cognitive processes. Thus, the question arises which cognitive mechanism leads people to predominantly remember evaluative information about the target person that is consistent with the audience’s attitude towards the target. We emphasize that previous studies and extensive piloting have established that the original information about the target’s behaviors does not contain explicitly evaluative information and is thus evaluatively ambiguous. According to ROAR, it should be enhanced cognitive accessibility of audience-congruent as opposed to audience-incongruent information that determines the motivationally driven memory bias. To test this assumption, we included direct measures of cognitive accessibility within the SIB paradigm. Following the predictions from ROAR, audience attitude effects should not only be observed in the classical memory bias within the SIB paradigm, but also in differential cognitive accessibility, and the two effects should be positively correlated. Because truth relevance is assumed to be the critical motivational driver of the effect, we additionally explored whether the extent to which audience-congruent information becomes more accessible would also directly be associated with questionnaire scales of perceived shared reality and epistemic trust in the audience, two measures closely related to the concept of motivational truth relevance.

We further assume that enhanced accessibility primarily emerges at the level of trait information about the target person, but not necessarily on the level of specific behavioral information. This is because people are inclined to immediately form trait interpretations of

other people's behaviors, so that their mental representations of other persons are primarily coded on a more abstract (semantic) trait level rather than on the level of specific behaviors (Klein et al., 2002; Newman & Uleman, 1989; Uleman & Moskowitz, 1994). Thus, when thinking about a target person, people are more likely to ask themselves "which kind of person is the target?" rather than "which kind of behavior is descriptive of the target?" Hence, audience congruence effects in cognitive accessibility should be primarily effective with regard to the first question, which refers to the trait level.

If cognitive accessibility, specifically at the trait level, can be accounted for the classical memory bias in the SIB paradigm, this would also provide evidence against other possible mechanisms. First, the memory bias could be explained by a higher-level constructive process that uses information filtering at recall based on an audience-congruent schema. Such an explanation has been proposed to account for communication effects on communicators' own memory for stories (Tversky & Marsh, 2000). When asked to retrieve the original target information, people possibly have access to both audience-congruent and audience-incongruent information evenhandedly, but they might apply their knowledge about the audience's attitude to filter out audience-consistent information. This process can refer either indiscriminately to both available information sources, that is, the original text and the own message to the audience.

According to a second possible account, communicators might judge their own message as particularly relevant and appropriate for the memory report (Higgins, 1996) to the extent that they create a shared reality with the audience. In this case, communicators would predominantly use their own, audience-tuned message to recall information about the target's behaviors (see Echterhoff et al., 2008). Because audience-tuned messages contain more information that is consistent (vs. inconsistent) with the audience's attitude, the recalled material would be evaluatively biased in the direction of the audience's attitude.

Such alternative processes would not require differential accessibility of audience-congruent vs. audience-incongruent information, because audience-incongruent information is not less accessible but is simply ignored. Moreover, a filtering process would not be expected to refer primarily to trait information, because the information conveyed both in the original text and in the message predominantly consists of behavioral target information.

Overview of Studies

To examine the role of cognitive accessibility as the underlying mechanism of the SIB effect, we performed three online studies that complemented the traditional SIB paradigm (Higgins & Rholes, 1978; Echterhoff et al., 2005) by measurements of cognitive accessibility of audience-congruent vs. audience-incongruent target information on the trait level and on the behavioral level. All studies were performed as online studies. Study 1 was a preliminary study in which two different measures of cognitive accessibility were included to test their suitability within the SIB paradigm, one based on a reaction time task (Sanitioso et al., 1990; Dunning et al., 1991) and one based on a scrambled-sentences task (Costin, 1969). Based on the results of this initial study, the task that turned out to be the more sensitive measure of cognitive accessibility (a reaction time task), was further investigated in Studies 2 and 3 under conditions that were particularly conducive to the creation of a shared reality (experimentally enhanced perception of commonality between communicator and audience). Study 2 additionally tested how the classical SIB effect is affected by the mere assessment of cognitive accessibility in the supplemental reaction time task. Study 3 further examined the role of specific communication content (target-related vs. target-unrelated) on the effects of audience attitude. Across all studies, the consistent finding was that audience-congruent information turned out to be more accessible than audience-incongruent information, and that this difference in cognitive accessibility correlated with subjectively perceived shared reality with and epistemic trust in the audience.

Study 1

Because the assessment of cognitive accessibility is a new procedure in the context of sheared reality research, we designed Study 1 as a preliminary study, in which two different measures of cognitive accessibility were included to test which of them would be better suited within the SIB paradigm. One of the measures was based on a reaction time task (speed-based measure) and the other on a choice task (content-based measure). Both of the measures had been successfully applied already within other research contexts of personality and social psychology (Sanitioso et al., 1990, Study 3; Dunning et al., 1991, Study 5; Costin, 1969; see Methods below, for detailed descriptions). The measure that turned out to be more sensitive within the SIB paradigm should be selected for further investigation in subsequent studies. Apart from the inclusion of these additional measures of cognitive accessibility, the protocol followed the standard procedures of the SIB paradigm (Higgins & Rholes, 1978; Echterhoff et al., 2005).

Finally, participants also filled out questionnaires of subjectively perceived shared reality about the target person (SR-T; Schmalbach et al., 2019), epistemic trust, relational motivation, and self-other overlap with respect to their communication partner, which we used for further cross-validation of the expected, audience-consistent accessibility effect. Particularly subjective shared reality and epistemic trust, which have been shown to correlate positively with the classical SIB effect, should likewise be associated with the extent of the effect of audience attitude on cognitive accessibility according to our theorizing.

Thus, we predicted that after communication with the audience about the target cognitive accessibility for audience-congruent trait information about the target would be higher than audience-incongruent trait information. Also, this effect of audience attitude on cognitive accessibility (difference in accessibility between audience-congruent and audience-incongruent trait information) should predict the magnitude of the subsequent SIB effect, i.e., the evaluative bias in free recall. Additionally, we explored whether cognitive accessibility of

trait information consistent with the audience's attitude is correlated with subjectively perceived shared reality about the target person and epistemic trust in the audience.

Methods

Participants

A power analysis performed by G*Power (Faul et al., 2007) indicated that at least 128 participants would be required to detect a medium-sized effect of $d = 0.5$ with a statistical power of .80 and a type I error probability of $\alpha = .05$ (two-tailed). Considering the novelty of the two accessibility measures used in the present context, especially within an online study that did not allow clarifications by the experimenter on request, we calculated about 25% more to allow for the possibility of a relatively high sample shrinkage due to major problems that participant might experience with the new tasks. (It turned out that such problems did not occur.) 165 participants eventually completed the study (age: $M = 28.1$ years, $SD = 13.2$; 97 female). They were recruited online or personally at the University of Münster (Germany). Participants took part in the study for curricular credit or the chance of winning a voucher for an online shop (€10). The study was approved by the ethics committee of the Department of Psychology at the University of Münster and was carried out in accordance with the provisions of the Declaration of Helsinki. All participants gave informed written consent before participation.

Materials and Procedure

The study was performed via the online platform SoSciSurvey (Leiner, 2019). The general procedure basically followed the standard SIB paradigm (Higgins & Rholes, 1978; Echterhoff et al., 2005). The main adjustment was that we added two tasks designed to assess differential cognitive accessibility of audience-congruent vs. audience-incongruent target information. These tasks were performed after participants' message production.

Participants were informed that they would participate in a study on “person perception and communication”. In the beginning of the study, they were informed that they would now be in an online exchange with a communication partner called “Jan”, who was introduced as a former volunteer in a group experiment performed at the University of Münster. In order to increase plausibility of Jan’s existence as an online communication partner, the program purportedly first performed an availability check in order to test whether Jan actually was currently available online. Participants were asked to start the study again later if Jan currently turned out to be unavailable (which was actually never the case). After the program had confirmed Jan’s current online availability, participants were asked to enter their name or a nickname for their subsequent communication with Jan.

Then, participants received a text describing a target person called “Michael”. The text was evaluatively ambiguous, containing several behavioral descriptions of Michael that could be interpreted in either a positive or a negative way. The text was a modified version of the person description used in Schmalbach et al (2019). Participants were asked to carefully read the text in order to form an impression of Michael. After having read the text, participants received the task to describe Michael for their communication partner Jan. They learned that Jan knows Michael from the previous group experiment, and that he likes vs. dislikes him (manipulation of audience attitude). The participants were asked to describe Michael in their message to Jan in such a way (without mentioning his name) that Jan would be able to identify him from the description. After they had sent their descriptive message to Jan, participants received feedback of successful message transmission and asked to work on some other cognitive tasks, which purportedly served to bridge the time that Jan needed to read the message. These tasks were actually the two tasks to measure cognitive accessibility, the reaction time task and the scrambled sentences task. The order of the two tasks was balanced across subjects.

Reaction-time (RT) task

The reaction-time task was based on the idea that, in a speeded task, enhanced cognitive accessibility of audience-congruent information will lead participants to react faster to audience-congruent than to audience-incongruent information. Such an approach to assess differential accessibility by a reaction-time measure has previously likewise been adopted by Sanitioso et al. (1990), who found that the self-serving bias in autobiographical recall of desired traits was accompanied by faster recall autobiographical examples of desired than non-desired traits. A similar approach was also used by Dunning et al (1991; Exp.5) in the context of a study on self-serving biases on prototypicality judgments, where goal-oriented and people-oriented participants were presented with various attribute words (including attributes related to goal orientation and people orientation) and asked to indicate for each of the attributes as quickly as possible whether the attribute was associated with the concept of leadership or not. Reaction times for goal-oriented items were faster for goal-oriented than for people-oriented participants, while reaction times for people-oriented items were faster for people-oriented than for goal-oriented participants. (Although the proportion of affirmative answers was generally on a very high level of >90% for both item categories, the same interaction as for reaction times tended to apply also to this variable.)

In the present context, we modified the procedure to apply it to differences in reaction times as a function of audience-congruence rather than self-congruence of presented items. We created positively and negatively valenced items in the form of sentences describing traits and behaviors of the target person Michael. In the condition of positive audience attitude (where participant had received the information that their communication partner Jan likes Michael), positive items represented the audience-congruent items and negative items the audience-incongruent items. Conversely, in the condition of negative audience attitude (where participants had received the information that their communication partner Jan did not like Michael), negative items represented the audience-congruent items and positive items the audience-incongruent items.

Altogether 40 items were created, 20 items referring to traits (10 positive and 10 negative) and 20 items referring to behaviors (10 positive and 10 negative). The items were constructed as pairs of one positive and one negative item. For trait items, the positive item in the pair referred to a trait that indicated a positive interpretation of a certain paragraph in the original text that participants had read about Michael, while the negative item in the pair referred to a trait that indicated a negative interpretation of the paragraph. For behavioral items, behavioral expressions of the same positive vs. negative trait interpretations were created. (The original behavior described in the text was not suitable for this purpose because of its evaluatively ambiguous nature.) For example, the (translated) trait item pair “is independent” (positive) vs. “is obstinate” (negative) and the behavioral item pair “refuses meddling by others” (positive) vs. “ignores advice from others” (negative) were created with regard to the fifth paragraph of the original text description of Michael. Care was taken to match the number of syllables used in positive and negative items (in German language). Some of the items were applicable to several paragraphs of the text. Pilot testing confirmed that positive and negative items indeed substantially differed in perceived valence, both for trait items and for behavioral items.

For each item, participants had to indicate as fast as possible by a keypress whether in their view the respective trait or behavior applied to the target person Michael or not. During task performance, the word “Michael...” was visible above each trial. The keys “v” and “m” on the keyboard served as response keys, with assignment of “Yes” and “No” answers to the two keys balanced across subjects. Participants were first familiarized with the task and performed two neutral practice trials. Then, the 40 actual task items were presented successively in random order.

Scrambled-sentences (SS) task

The scrambled-sentences task was based on the idea that when participants are asked to create spontaneously any sentence at will from given components and have the option to

choose between an audience-congruent and an audience-incongruent component, enhanced cognitive accessibility of audience-congruent information will lead participants to spontaneously choose the audience-congruent alternative with higher probability than the audience-incongruent alternative. A similar approach has previously been adopted by Costin (1969) as a method to measure hostility in an unobtrusive manner. The author created items that contained a number of words that were presented in random order (“scrambled sentences”). The participant’s task was to spontaneously create meaningful sentences from the words contained in these “scrambled sentences”. Critically, each item allowed the creation of exactly two correct sentences, which differed in their content regarding hostility. This was achieved by the possibility to use one of two critical words within each item to solve the task, one word with low hostility content and one word with high hostility content. For example, in the scrambled sentence “shoot I’ll you ask”, the words “shoot” and “ask” were the two critical words, allowing participants to generate either the sentence “I’ll shoot you” (high hostility option) or the sentence “I’ll ask you” (low hostility option). Validating this measure in a group of students who had also been interviewed by psychological experts, Costin (1969) found that students judged by the experts as hostile on the basis of their interview created a substantially higher proportion of “hostile” sentences than students judged as non-hostile.

In the present context, we modified the procedure by using two critical words within each scrambled sentence that differed in valence (positive vs. negative) rather than in high vs. low hostility. As for the reaction time task, trait items and behavioral items were created, referring to the different paragraphs of the original text. According to the intended nature of the task as an indirect measure, no explicit reference to Michael was given in the instructions. However, all items contained the word “he”, to make the statements semantically applicable to Michael. For example, a (translated) trait related item was “is – decent – he – pettifogging” (with the two critical valenced words “decent” and “pettifogging”), and a behavioral item was “complains – messiness – he – injustice – about” (with the two critical

valenced words “messiness” and “injustice”), both relating to the sixth paragraph of the original text. The word length of the two critical words within in each item was matched as closely as possible (in German language). The order of the two critical words (positive first or negative first) was counterbalanced. To avoid that all trait items uniformly had the same very simple solution format “He is [adjective]...”, the words “quite” (German: “ziemlich”) or “very” (German: “sehr”) were added in some trait items.

Because it was clear that the probability that participants are able to recognize that the items related to possible characterizations of the target person, would increase with task length, the number of items was kept small. Ten behavioral items five trait items were used. (The item number for traits was even lower than for behaviors, because especially trait items were assumed to make the reference to the target person more obvious.) Pilot testing confirmed that the positive and negative solution sentences indeed substantially differed in perceived valence, both for trait items and for behavioral items. These target-related items were mixed with six filler items (with mostly neutral content) to further obscure the relation to Michael. Some of the filler items allowed only one meaningful solution, so that participants were not led to expect that there were always exactly two possible solutions. All items were scrambled sentences consisting of four to six components, which during task performance were arranged in vertical order in the middle of the screen.

Participants were told that they would see scrambled sentences on the screen, and their task in each trial would be to press a solution key (the space key on the keyboard) as soon as they were able to create a meaningful sentence from the words shown on the screen. Immediately after they had pressed the solution key, the scrambled sentence disappeared and was replaced by a text box, where participants had to type in their solution sentence. Instructions pointed out that solution sentences were only counted as correct if maximally one of the components within the previously presented scrambled sentence was missing. Participants received the hint that all trials contained the word “he”, which could always serve

as the subject of the solution sentences. The first three trials always used neutral filler items and served as practice trials. After these three practice trials, the target trials were presented, intermixed with the remaining filler items, in random order.

Free Recall and Questionnaires related to Shared Reality

After participants had performed the two tasks of cognitive accessibility (order balanced across subjects), the classical SIB effect in free recall was assessed (Higgins & Rholes, 1978; Echterhoff et al., 2005). Participants were asked to recall the original text about Michael as accurately as possible, with as many details as possible. Instructions explicitly emphasized that this task was not referring to their own message they had sent to Jan, but to the original text they had read. Finally, after this free recall task, participants were asked to fill out a number of questionnaires referring to their subjective psychological perceptions of the communication partner, including perceived shared reality with respect to the target, epistemic trust and relational motivation (Schmalbach et al., 2019), and self-other overlap (one-item “Inclusion of Other” in Self scale, IOS; Aron et al., 1992).

Statistical analysis

For the reaction time task, mean reaction times in each condition served as the dependent variable. Separately for trait items and behavioral items, a mixed 2x2 analysis of variance (ANOVA) was performed with the between-subjects factor Audience Attitude (positive vs. negative) and the within-subjects factor Item Valence (positive items vs. negative items). Reaction times exceeding the mean of an individual by more than three standard deviations (separately calculated for trait and behavior items) were regarded as outliers and not included in statistical analyses, as well as generally all reaction times below 400 ms.

To determine the extent of audience attitude effects in reaction times independent of positive vs. negative attitude, a congruence effect was calculated as reaction time difference between negative and positive items for the positive audience attitude condition and as

reaction time difference between positive and negative items for the negative audience attitude condition. Thus, for all participants a higher value indicated a greater effect of audience attitude, i.e., faster reaction times for audience-congruent than for audience-incongruent information.

For the scrambled-sentences task, the percentage of positively valenced solution sentences was compared by t-tests between the positive and the negative audience attitude group separately for trait items and behavioral items. (Alternatively, the percentage of negatively valenced solution sentences could have been chosen as the dependent variable, which would yield the same statistical results with the opposite direction of mean differences.) To determine the extent of audience attitude effects in the scrambled sentences task independent of positive vs. negative audience attitude, the effect was determined as the percentage of positive solution sentences for the positive audience attitude condition and as the percentage of negative solution sentences for the negative audience attitude condition.

The classical SIB effect (recall bias) as well as audience tuning of the message were determined by established procedures (Echterhoff et al., 2005). Two raters blind to experimental conditions assessed the valence of each message text and each recall text on a rating scale ranging from -5 (extremely negative) to +5 (extremely positive). In cases of deviations between the two raters of two points or more, the raters were asked to discuss about the reasons for their respective evaluations, with the possibility (but not necessity) to reconsider their own initial rating in light of this discussion. The average of the two final ratings served as the dependent variable. Interrater correlations for final ratings were $r = .96$ for message ratings and $r = .82$ for recall ratings.

To statistically reveal audience tuning and SIB effects, t-test comparisons between positive and negative audience attitude conditions were performed for message ratings and recall ratings, respectively. For analyses of audience tuning effects and SIB effects regardless of positive vs. negative attitude conditions, valence ratings were multiplied by -1 in the

condition of negative audience attitude, so that greater influence of audience attitude were reflected in higher values for all participants.

Results

Effects of positive vs. negative audience attitude

Means of cognitive accessibility measures and text valences of message and recall depending on positive vs. negative audience attitude are shown in Table 1. As expected, a positive audience attitude yielded faster reaction times for positive than for negative traits items in the RT task, whereas faster reaction times for negative than for positive traits items were found when the audience attitude was negative. The predicted interaction between audience attitude and item valence was highly significant ($F(1,161) = 9.39, p = .003, \eta_p^2 = .055$). No such interaction was found for behavioral items ($F(1,161) = 2.27, p = .134, \eta_p^2 = .014$). For both trait items and behavioral items, there were no significant main effects of audience attitude or item valence, although responses tended to be faster for positive than for negative behavioral items ($p = .077$). The overall audience-congruence effect on reaction times for trait information in Study 1, i.e., the reaction time difference between incongruent and congruent conditions regardless of positive vs. negative audience attitude, is visualized in the left panel of Figure 1.

In the SS task, the effect that was expected for trait items pointed into the predicted direction, but failed to reach significance level, $t(163) = 1.61, p = .11$. There was also no significant effect of audience attitude for the behavioral items, $t(163) = 0.43, p = .67$. Regarding text valence, there was a significant audience tuning effect in the message production, $t(163) = 5.46, p < .001$, but the recall valence did not differ significantly between positive and negative audience attitude, $t(163) = 0.73, p = .47$.

For exploratory purposes, the factor task order (RT task first vs. SS task first) was additionally included in the analyses of accessibility measures. The audience attitude effects did not significantly interact with task order ($p < .28$). Numerically, the effects in the RT task

were stronger when the task was performed first. The SS task yielded weaker effects when it was performed first.

Correlations between audience attitude effects

Table 2 shows the intercorrelations between the audience attitude effects in the different measures. All correlations are numerically positive, confirming the assumed basic theoretical connection between all measures. The extent of the classical SIB effect (recall bias) was predominantly predicted by the extent of previous message tuning, in line with previous SIB studies pointing out the importance of the own communication as a determinant of the effect. In the context of the present study, the correlation between the classical SIB effect in free recall with the audience attitude effects in the newly introduced measures of accessibility. As expected, enhanced accessibility of audience-congruent as compared to audience-incongruent trait information (both when measured in the RT task and the SS task) significantly predicted the classical SIB effect, although the correlations were numerically not very high ($r = .18$ and $r = .16$, respectively). Correlations of similar size were also found with both accessibility measures on the behavioral level as predictors for the SIB effects, reaching significance for the SS task ($r = .17$, $p = .03$) and marginal significance for the RT task ($r = .17$, $p = .06$).

Correlations of audience attitude effects with questionnaires related to shared reality

Table 3 shows the correlations between audience attitude effects and questionnaire measures of subjective psychological perceptions of the communication partner, including perceived shared reality with respect to the target, epistemic trust and relational motivation (Schmalbach et al., 2019). Following previous research, we expected positive associations specifically for subjective experiences of shared reality about the target and for epistemic trust in the communication partner (Echterhoff et al., 2008; Schmalbach et al., 2019). These subjective indicators of shared reality correlated positively with all audience attitude effects, reaching significance for the association with the RT effects for trait items, as well as for

message tuning, which also correlated significantly with the IOS. Subjectively perceived shared reality was also significantly associated with audience attitude effects in the SS task for behavioral items. No other correlations reached significance.

Discussion

Study 1 addressed, for the first time, the question of differential accessibility of audience-congruent vs. audience-incongruent target information as the cognitive basis of the classical SIB effect, an evaluative memory bias that is motivationally driven by shared reality creation with an audience. Because there was no prior experience with the use of accessibility measures within the SIB paradigm, we tested two different measures that had already successfully been applied in previous studies in other topics within research on personality and social psychology, i.e., a reaction-time measure (Sanitioso et al., 1990; Dunning et al., 1991) and measure relying on a scrambled sentences task (Costin, 1969). The main aim was to establish at least one of these approaches as sufficiently sensitive method to detect differential cognitive accessibility of audience-congruent vs. audience-incongruent target information within the SIB paradigm. Considering that the SIB paradigm relies on basic mechanisms of person perception, we expected differential cognitive accessibility especially on the trait level of target-related information processing, because people typically represent information about other persons on this more abstract (semantic) level, rather than on the level of specific behaviors, even if the original information that they receive is only about specific behaviors that the other person shows in certain episodes or situations (Newman & Uleman, 1989; Uleman & Moskowitz, 1994; Klein et al., 2002).

Thus, provided that a measure of cognitive accessibility is sensitive enough within the present context, we expected that cognitive accessibility for audience-congruent trait information about the target would be higher than audience-incongruent trait information, and that this effect of audience attitude on cognitive accessibility would correlate positively with the SIB effect in free recall, as well as with subjectively perceived shared reality and

epistemic trust in the audience (Echterhoff et al., 2008; Kopietz et al., 2010; Schmalbach et al., 2019). The reaction-time task to measure cognitive accessibility met all these criteria, while the scrambled sentences task met them only partly. Most critically, the audience congruence effect per se did not reach significance in the scrambled sentences task. Thus, the RT task turned out to be a generally suitable task and also to be the more sensitive measure in comparison to the SS task. We therefore selected the RT task for further investigation in subsequent experiments.

Study 2

Study 1 was designed as a preliminary study to first generally explore the suitability of two different measures of cognitive accessibility within the SIB paradigm. The RT task turned out to be a sensitive measure, yielding a pattern of results consistent with the assumed differential cognitive accessibility of audience-congruent vs. audience-incongruent semantic (trait) information about the target as the basis for a shared-reality-driven memory bias. The primary aim of Study 2 was to replicate the findings from the RT task under partly modified conditions. The following modifications were introduced: First, the scrambled sentences task was omitted, so that any possible mutual interference between the two cognitive accessibility tasks could be excluded. Second, we wanted to overcome one major drawback in the results from Study 1, i.e., that the classical SIB effect (memory bias) per se did not reach significance. The interpretation of differential accessibility as the cognitive basis of the classical SIB effect would be more convincing if the latter actually emerges in a substantial extent. For this purpose, we introduced conditions that were conducive to the generation of shared reality. Specifically, three different manipulations were used to increase participants' perceived commonality with their audience. One of the manipulation was performed before the communication (common picture judgment with the audience), another one after the communication (feedback about successful target identification by the audience), and a third one combined both of them (see Methods, for details). With these manipulations aiming to

support shared reality creation, we expected both the audience attitude effects in the RT task and also the classical SIB effect to occur overall, and with the strongest extent in the combined manipulation condition.

Finally, we also explored in Study 2 in how far the mere assessment of cognitive accessibility through the RT biases the subsequently measured classical SIB effect in free recall. In Study 1, we found the expected significant correlation between accessibility effects and the classical SIB effect. However, this correlation may have been biased through effects that mere assessment of cognitive accessibility could exert on subsequent recall. This effect might be either boosting (increasing the correlation) or attenuation (dampening the correlation). In any case, if one of these possible effects exists, it needs to be considered in the interpretation of the correlation between the two outcome variables. By omitting the SS task, we could only exclude the occurrence of influences by the SS task on the later free recall task which could have occurred in Study 1, while the RT task could still have an effect. To examine this effect in Study 2, half of the participants did not perform the RT task before the free recall task. Instead of the RT task, these participants performed a short unrelated filler task. The study was preregistered (https://aspredicted.org/X97_KD2).

Participants

We determined the sample size based on the results from Study 1. Because the SS task was omitted in Study 2, we estimated the effects size expected for audience attitude effect in the RT measure of cognitive accessibility on the basis of the effects size obtained for RT task in Study 1 in the condition where it was presented before the SS task and was therefore unaffected it ($\eta_p^2 = .077$). For the free recall task, we expect an effect of at least lower medium size ($\eta_p^2 = .04$) for audience attitude effects. (In most of the published laboratory studies, this effect is typically substantially higher, but we assume that it may be attenuated in an online version.) For effects of type of commonality creation, we wished to be able to detect effects of at least upper medium size ($\eta_p^2 = .08$). Assuming these effect sizes, with an alpha

error of .05 and a power of .80, a power analysis using G power (Faul et al., 2007) showed a total required sample size of at least 119 for the RT task (included in half of the experimental groups) and at least 235 for the free recall task (included in all experimental groups). To allow shrinkage of about 10%, we planned to recruit at least 264 participants. Finally, 294 participants completed the study. Five participants had to be excluded due to obvious ignorance of instructions (production of nonsense texts), leaving 289 participants for statistical analyses (age: $M = 25.9$ years, $SD = 8.8$; 225 female).

Materials and Procedure

The study followed the same procedures as Study 1, with the following modifications: First, the SS task was omitted so that only the RT task was used to assess cognitive accessibility of audience-congruent vs. audience-incongruent target information. Second, for half of the sample, also this RT task was omitted, i.e., cognitive accessibility was not assessed at all in this subsample, as in the classical SIB paradigm that uses only the recall bias to assess shared reality effects of communication with a partner. These participants performed a simple math task (consisting of additions and subtractions of two-digit numbers) instead of the RT task. By comparing the conditions with and without the RT task, the influence of mere assessment of cognitive accessibility by the RT task on the subsequently assessed classical SIB effect could be gauged. Third, the study was designed to create conditions that were particularly conducive to the creation of shared reality. For this purpose, three different manipulations were used to achieve this by enhancement of subjectively perceived commonality between the participants and their communication partner. One manipulation, a picture judgment task, was performed pre-communicatively (condition “Pictures”), another manipulation (condition “Feedback”) was performed post-communicatively, and a third condition (“Pictures and Feedback”) manipulation combined both of these manipulations. Participants were assigned randomly to one of the conditions.

In the conditions “Pictures” and “Pictures and Feedback”, participants were informed, just after they had entered their name for the communication with Jan, that they would first perform a short task together with Jan, which would serve to help to get to know each other. In this task, the participants was asked to judge three pictures depicting ambiguous social scenes (adopted from Kopietz et al., 2010) by giving yes vs. no answers to four statements that were presented with each picture. The communication partner Jan ostensibly performed the same task simultaneously. To support credibility of this alleged procedure, all participants received after this task the information that Jan had not yet completed the task, so that they had to wait a short while until Jan would also have finished all the picture judgments. The next screen (appearing after 10 seconds) stated that both communication partners had now finished the task, and that a comparison of the answers showed that there was a concordance of 93% in the judgments (matching of 11 of the altogether 12 answers). It was pointed out that this degree of concordance was considerably higher than the average. Participants then continued with reading the text about the target person Michael.

In the conditions “Feedback” and “Pictures and Feedback”, participants were informed after they had sent their descriptive message about Michael to Jan that they had received the following message from Jan (translated from German): “The description clearly applies best to a participant called Michael. I know Michael very well from the previous group work, and I think that the description suits him quite well. Am I right?” Participants then received the opportunity to send an own message as an answer to Jan. The remaining procedure was the same as in Study 1.

Statistical analysis

For both trait items and behavioral items in the reaction time task, a mixed 2x3x2 ANOVA was performed with the between-subjects factors Audience Attitude (positive vs. negative) and Commonality Manipulation (“Pictures”, “Feedback”, and “Pictures and Feedback”), and the within-subjects factor Item Valence (positive items vs. negative items).

Interrater correlations for text valence were $r = .93$ for message ratings and $r = .81$ for recall ratings. For message valence and recall valence, a $2 \times 3 \times 2$ between-subjects ANOVA was performed with the independent variables Audience Attitude (positive vs. negative), Commonality Manipulation (“Pictures”, “Feedback”, and “Pictures and Feedback”), and “RT Task” (present vs. absent).

Results

Effects of positive vs. negative audience attitude

We first describe the results independent of the type of commonality manipulation. Table 4 shows the respective means for reaction times in the RT task and for text valences of message and recall. Confirming results from Study 1, the expected interaction between item valence and audience attitude for trait items in the RT task was found to be highly significant ($F(1, 138) = 12.73, p < .001, \eta_p^2 = .084$). The overall audience-congruence effect on reaction times for trait information in Study 2 (reaction time difference between incongruent and congruent conditions regardless of positive vs. negative audience attitude) is visualized in the middle panel of Figure 1. There was also a significant main effect of item valence, with faster reaction times for positive than for negative items ($F(1, 138) = 15.31, p = .023, \eta_p^2 = .037$) and tendency to react faster under negative than positive audience attitude conditions ($F(1, 138) = 3.59, p = .060, \eta_p^2 = .025$, for main effect of audience attitude). No significant effects were found for behavioral items (all p s $< .20$).

Regarding text ratings, not only message tuning but also the classical SIB effect in recall bias was overall significant (main effect of audience attitude for message valence: ($F(1, 277) = 81.66, p < .001, \eta_p^2 = .228$; for recall valence: ($F(1, 277) = 4.38, p = .037, \eta_p^2 = .016$). The possible influence of the RT task on the classical SIB effect way was explored by comparing the conditions with vs. without the inclusion of the RT task. The SIB effect appeared to be attenuated to some extent by the previous RT task, because it only reached significance under conditions where the RT task was not performed (see Table 5). However,

the formal interaction between audience attitude and presence vs. absence of the RT task was not significant ($p=.29$), indicating that the data from the condition that included the RT task still contributed to the overall effect.

Regarding type of commonality manipulation (see Table 5), we expected that all audience attitude effects should be more pronounced in the combined manipulation (“Pictures & Feedback”) compared to only the single manipulations (either “Pictures” or “Feedback”). The expected Audience Attitude x Commonality Manipulation interaction was found for trait items in the RT task, but not for behavioral items and also not for the classical SIB effect. Unexpectedly, in the latter case, the effect was numerically even reversed (instead of being enhanced) in the combined manipulation condition.

Correlation analyses

The correlations of the different audience attitude effects with each other and with the questionnaires related to shared reality are shown in Table 6 and Table 7, respectively. Except for one exceptions, all correlations were again numerically positive. As expected, the audience attitude effect in reaction times for trait information again correlated significantly with perceived shared reality with epistemic trust in the communication partner. However, its correlation with the classical SIB effect in recall valence did not reach significance level ($r = .09$, $p = .30$).

Discussion

Study 2 further investigated the reaction time measure of cognitive accessibility from Study 1 within the SIB paradigm. The main aim was to replicate the findings from Study 1 under conditions where the RT task could not be influenced by another measure of cognitive accessibility and where the classical SIB effect occurred to a significant extent. The latter condition was actually achieved, using manipulations that aimed at enhancing perceived commonality between participants and their audience. The results overall confirm the finding from Study 1 of differential cognitive accessibility of audience-congruent vs. audience-

incongruent trait information (but not behavioral information) about the target as a result of shared-reality creation. As in Study 1, reaction times for target-related trait information depended on the audience's attitude toward the target, with faster reaction times for congruent than for incongruent information. As in Study 1, the extent of this effect again was significantly associated with perceived shared reality with and epistemic trust in the audience. However, the direct correlation with the classical SIB effect (recall bias) did not reach significance. This latter finding has to be seen in view of another relevant finding from this study: A comparison of the extent of the classical SIB effect between condition with and without preceding assessment of cognitive accessibility through the RT task showed that, if any, the RT task appeared to have an attenuating rather than a supportive influence on the subsequent recall bias. This means that the direct correlation between the two measures has to be interpreted with caution, because it is likely to underestimate the actual relationship. This may be the reason for the numerically relatively low (and in the present case non-significant) values for this correlation that we have observed.

Regarding the comparison of the three types of commonality creation, an inconclusive pattern of results emerged. As expected, the double manipulation ("Pictures & Feedback") exerted stronger audience attitude effects on trait information in the RT task than the single manipulations by either "Pictures" or "Feedback". However, this was not the case for the classical SIB effect. Here, unexpectedly, the effect was numerically even reversed (instead of being enhanced) in the combined manipulation condition. Thus, although the manipulations overall were capable of generating the desired overall significant SIB effect, it was just the double manipulation that did not contribute to it. These opposite contributions of the double manipulation on the audience attitude effects in the RT task vs. the free recall task might also be a reason for the lower correlation between the two variables compared to Study 1.

Study 3

We conducted a third study to replicate and extend the findings from Study 1 and Study 2. Study 1 established a reaction time measure of cognitive accessibility associated with shared reality creation by showing that after communication with the audience about the target, cognitive accessibility for audience-congruent trait information about the target, as assessed with this measure, was higher than audience-incongruent trait information, and this effect of audience attitude on cognitive accessibility predicted the subsequent classical SIB effect in free recall. Supporting the relation to shared reality creation, the effect of audience attitude on cognitive accessibility also correlated with subjectively perceived shared reality and epistemic trust in the audience. However, the classical SIB effect did not emerge to a substantial extent in that study, and there could have been interfering effects by another measure of cognitive accessibility (the SS task) that was also used. Study 2 did overcome these drawbacks, but in the results the second criterion that was fulfilled in Study 1, i.e., the positive correlation of the RT effect with the classical SIB effect, did not reach significance. As the results from Study 2 show, this is partly due to the fact that the mere testing of cognitive accessibility in the RT task can attenuate the subsequent recall bias. While this effect is inevitable, we conjectured that both a significant SIB effect per se (as in Study 2) and a significant positive correlation between the RT effect with the classical SIB effect (as in Study 1) could be reached with a greater sample size and modified procedures in Study 3.

Compared to Study 2, the following changes were introduced. First, the double manipulation condition of communality, which had partly counterintuitive effects in Study 2, was removed and replaced by a standard SIB condition without an additional manipulation of perceived communality. This allowed us to examine the extent to which the “Pictures” and the “Feedback” condition actually affect audience attitude effects in comparison to a standard SIB condition. We assumed that the effects would be stronger than in the standard condition. Second, we also varied the type of communication between the interaction partners. Whereas half of the participant communicated with their audience about the target person Michael, as

in Studies 1 and 2, the other half communicated about another person, specifically about US president Joe Biden. Previous studies on shared reality have shown that the SIB effect disappears when no communication takes place (Higgins et al., 2007; Higgins & Rholes, 1978). Because target specificity has been described as a critical aspect of shared reality creation (Echterhoff et al. 2009), we assumed reduced effects also under conditions when communication actually takes place, but does not refer to the target in its content. Thus, stronger effects should be obtained with target-related communication (about Michael) than with target-unrelated communication (about Joe Biden). Together, by including the standard SIB condition and a condition of target-unrelated communication in Study 3, more variance in the audience attitude effects than in Study 2 could be expected and, hence, also the likelihood to detect a positive correlation between the effects. The study was preregistered (https://aspredicted.org/JZB_QYC).

Participants

Based on results from Study 2 (excluding the double commonality manipulation condition), we expect effect sizes of at least $\eta_p^2 = .032$ for the audience attitude effect in the RT task, and $\eta_p^2 = .041$ in the free recall task. For main and interaction effects involving the factors “type of commonality creation” and “target-related communication”, we wished to be able to detect effects of at least medium size ($\eta_p^2 = .06$). Assuming these effect sizes, with an alpha error of .05 and a power of .80, a power analysis using G power (Faul et al., 2007) shows a total required sample size of at least 295 for the RT task and at least 229 for the free recall task. To allow shrinkage of about 10%, we planned to recruit 324 participants. Finally, 352 participants completed the study. Five participants had to be excluded due to obvious ignorance of instructions (production of nonsense texts), leaving 347 participants for statistical analyses (age: $M = 29.8$ years, $SD = 11.4$; 255 female).

Materials and Procedure

The study followed the same procedures as Study 2, with the following modifications: First, the double manipulation of commonality (“Pictures & Feedback”) was replaced by a standard SIB condition without commonality manipulation. Second, half of the participants did not communicate with their audience about the target person Michael (as in Studies 1 and 2), but instead engaged in target-unrelated communication with their audience. Target-unrelated communication referred to US president Joe Biden. This person was selected because it could be presumed to be generally known. All participants read the text about the target and were informed about the audience’s attitude of the target. However, participants in the condition of target-unrelated communication then received the information that they would be randomly assigned to one of two conditions, one in which they would communicate with their interaction partner Jan about Michael, or one in which they would communicate with Jan about a celebrity. They were then informed that they were assigned to the second possibility, and that the celebrity they would communicate about would be Joe Biden.

To match the procedure with the target-related communication condition, participants were asked to describe Joe Biden for Jan in such a way that he could be able to identify him. In order to standardize the content of the text messages as much as possible, and to ensure that neither Joe Biden’s name nor other clearly person-defining information was written, participants were instructed to give only information about the celebrity to be identified (i.e., Joe Biden in this case) with regard to the following five aspects: nationality; societal field, in which the celebrity is particularly relevant (culture, science, sports, politics); approximate age; approximate year when the person became famous in Germany; and current extent of public awareness regarding this person in Germany. Instructions emphasized that no other information should be given. When in the “feedback” condition, the communication partner’s subsequent alleged message indicating successful person identification read when Joe Biden has been described (translated from German): “The description clearly applies best to US president Joe Biden. Am I right?” Because of the predetermined content of the message

descriptions that participants produced about Joe Biden, these texts were not rated for their valence. All other procedures were the same as in Study 2.

Statistical analysis

For both trait items and behavioral items in the reaction time task, a mixed 2x3x2x2 ANOVA was performed with the between-subjects factors Audience Attitude (positive vs. negative), Commonality Manipulation (“Pictures”, “Feedback”, and “Standard”), and Type of Communication (target-related = communication about Michael vs. target-unrelated = communication about Biden), and the within-subjects factor Item Valence (positive items vs. negative items).

Interrater correlations for text valence were $r = .93$ for message ratings and $r = .86$ for recall ratings. For recall valence, a 2x3x2 between-subjects ANOVA was performed with the independent variables Audience Attitude (positive vs. negative), Commonality Manipulation (“Pictures”, “Feedback”, and “Standard”), and Type of Communication (target-related vs. target-unrelated). As noted, message valence was not determined for the texts about Joe Biden because the content of these texts was predetermined by instructions. Therefore, the factor Type of Communication was not included in the analysis of message valence.

Results

Effects of positive vs. negative audience attitude

As in Study 2, we first describe the results independent of the commonality manipulation. Table 8 shows the respective means for reaction times in the RT task and for text valences of message and recall, overall and separately for the two types of communication. The interaction between item valence and audience attitude for trait items in the RT task was again highly significant, both overall ($F(1, 335) = 8.56, p = .004$) and when, as in Studies 1 and 2, only participants with target-related communication were considered ($F(1, 335) = 5.94, p = .016, \eta_p^2 = .034$). The effect reached marginal significance for participants with target-unrelated communication about Joe Biden ($F(1, 167) = 2.87, p = .092$,

$\eta_p^2 = .017$), indicating that it also contributed to the overall effect. A non-significant Item Valence x Audience Attitude x Type of Communication confirmed this ($F(1, 335) = 0.31$, $p = .58$). The overall audience-congruence effect on reaction times for trait information in Study 3 (reaction time difference between incongruent and congruent conditions regardless of positive vs. negative audience attitude) is visualized in the right panel of Figure 1.

In contrast to Studies 1 and 2, the interaction between item valence and audience attitude was also significant for behavioral items, with the same pattern of means ($F(1, 335) = 5.06$, $p = .025$). A non-significant Item Valence x Audience Attitude x Type of Communication indicated that the effect did not differ between communication conditions contributed to this effect ($F(1, 335) = 0.86$, $p = .36$). When the two communication conditions were considered separately, the Item Valence x Audience Attitude interaction for behavioral items reached significance only for target-unrelated communication ($F(1, 167) = 4.40$, $p = .038$, $\eta_p^2 = .026$), but not for target-related communication ($F(1, 168) = 1.02$, $p = .31$, $\eta_p^2 = .006$).

As in the previous studies, message tuning was highly significant (main effect of audience attitude for message valence: $F(1, 168) = 48.30$, $p < .001$, $\eta_p^2 = .223$). The results for the classical SIB effect in recall mirrored the RT effects on trait information, showing a significant audience attitude effect overall ($F(1, 335) = 8.54$, $p = .004$, $\eta_p^2 = .025$) and when, as in the previous studies, only participants with target-related communication were considered ($F(1, 168) = 12.27$, $p < .001$, $\eta_p^2 = .068$). The effect did not reach significance with target-unrelated communication about Joe Biden ($F(1, 167) = 2.87$, $p = .092$, $\eta_p^2 = .017$), but this condition still contributed to the overall audience attitude effect, as indicated by a non-significant Audience Attitude x Type of Communication confirmed this ($F(1, 335) = 1.49$, $p = .22$, $\eta_p^2 = .004$).

In none of the analyses of reaction times or text valence, the commonality manipulation exerted any statistically significant effects, neither as a main effect nor in

interaction with other factors. Means of reaction times and text valence are shown separately for the three commonality conditions in Table 11 (for target-related communication) and Table 12 (for target-unrelated communication).

Correlation analyses

The correlations of the different audience attitude effects with each other and with the questionnaires related to shared reality are shown in Table 9 and Table 10, respectively. All correlations had again a numerically positive sign. Critically, the audience attitude effect in reaction times for trait information correlated significantly with the classical SIB effect in recall valence ($r = .18$, $p = .001$). As in Studies 1 and 2, it also correlated significantly with perceived shared reality with and epistemic trust in the communication partner. In addition, its correlation with relational motivation reached significance in this study.

Discussion

Study 3 aimed to extend and replicate shared-reality related selective effects on cognitive accessibility from Studies 1 and 2, employing modified experimental conditions. The commonality manipulation conditions “Pictures” and “Feedback” were compared with a standard SIB condition. Furthermore, half of the participants engaged in target-unrelated rather than target-related communication with their audience. Although these manipulations turned out to be not strong enough to substantially affect the extent of the audience attitude effects, the overall results regardless of these manipulations clearly demonstrated the intended replications. Critically, a substantial classical SIB effect in Study 2 was obtained, and at the same time, the critical findings from Study 1 (where the classical SIB effect did not emerge per se to a significant extent) were confirmed here: Reaction times for audience-congruent trait information were faster for audience-congruent than for audience-incongruent trait information, indicating higher cognitive accessibility, and the extent of this reaction time advantage correlated significantly with the classical SIB effect in free recall. In addition, replicating the findings from both Study 1 and Study 2, it also correlated significantly with

both perceived shared reality with the audience and epistemic trust in the audience. Together, these findings establish audience-attitude dependent reaction time differences in the processing of target-related trait information as a new indicator of shared reality creation, which reveals selective information accessibility as a mediating cognitive component of motivational effects related to truth relevance (Eitam & Higgins, 2010; Eitam et al., 2013).

General Discussion

The ROAR model (Eitam & Higgins, 2010; Eitam et al., 2013) proposes motivation-dependent cognitive accessibility as a general mechanism of motivation-cognition interaction, including motivated remembering. In three studies, we found empirical evidence supporting this model with regard to the socially motivated memory bias known as the “saying-is-believing” effect (Higgins & Rholes, 1978; Echterhoff et al., 2005), using a reaction time task to assess cognitive accessibility. After communicators had received information about their audience’s attitude towards the target person, they reacted faster to target information that was congruent to the audience’s attitude than to audience-incongruent information. As expected, this effect particularly referred to trait information about the target. We specifically expected the effect for trait information because previous research indicates that people are inclined to immediately form trait interpretations of other people’s behaviors, so that their mental representations of other persons are primarily coded on a more abstract (semantic) trait level rather than on the level of specific behaviors (Newman & Uleman, 1989; Uleman & Moskowitz, 1994; Klein et al., 2002). Thus, effects on the behavioral level should be less sensitive to such effects. Indeed, our exploratory additional analyses on the behavioral level showed that audience congruence effects were less pronounced for behavioral information and – with the exception of Study 3 – did not reach significance.

As predicted, the audience attitude effect on cognitive accessibility (differential reaction times for audience-congruent vs. audience-incongruent trait information) was also generally positively correlated with the subsequent classical SIB effect (memory bias),

consistent with the assumption of differential cognitive accessibility depending on audience attitude as the underlying mechanism for the memory bias. However, the size of the correlation was numerically relatively small ($r < .20$ in all studies), and in Study 2 failed to reach significance. However, Study 2 also showed that the direct correlation between the two audience attitude effects obtained in the RT task and in the free recall task needs to be interpreted with caution. The classical memory bias in the free recall task was only obtained *per se* in a significant extent if there was no previous RT task to assess cognitive accessibility. That is, mere inclusion of the RT task itself obviously exerted some attenuating effect on the classical SIB effect. Hence, the direct correlation between the two measures probably underestimates the real association. However, it is also to be noted that even if we predicted a substantial and significant association, it should not be expected to be overly strong, because of the basically different nature of the two measures. The recall bias measures valence, more closely related to the motivational aspect of shared reality, while reaction times measure objective speed of information processing, more directly relating to the cognitive aspects of shared reality creation. Hence, despite their common relation to the process of shared reality creation with an interaction partner, they still represent qualitatively different aspects within this process. Indeed, with reference to the ROAR model, this is indeed what we were intending to show: Motivation and cognition are not the same, but they are still closely related to each other.

These findings extend previous research on motivated remembering, which has mainly focused on the specific case of self-serving memory biases in self-related memories, i.e. biases in episodic or autobiographical memories of own past experiences or behaviors that help individuals to maintain a positive self-image (Sanitioso et al., 1990; Dunning et al., 1991; Kouchaki & Gino, 2016; Sedikides et al., 2016). At least two experiments within this previous research have also found some evidence for enhanced cognitive accessibility of self-serving information, which is consistent with the predictions from the ROAR model (Sanitioso et al.,

1990, Study 3; Dunning et al., 1991, Study 5). Our results extend these findings in two important ways. First, they demonstrate the mechanism of motivation-dependent cognitive accessibility for the first time within a setting that does not specifically refer to self-related memory processes. This is an important extension because self-related memory processing can be guided by specific mechanisms that do not necessarily hold more generally (e.g., Symons & Johnson, 1997).

Second, our studies addressed a different kind of motivation. Among the three major types of motivational sources, i.e. value, truth, and control (Eitam & Higgins, 2010), the shared-reality approach does not refer to value or control, but specifically to truth relevance. Many previous studies using the SIB paradigm have shown that the evaluative recall bias that is observed in this paradigm is driven by the epistemic motivation to obtain “true” knowledge about the target, achieved by shared reality creation with a trustworthy partner (Echterhoff et al. 2005). As such, this paradigm addresses a type of motivation driven by truth relevance, which is rarely investigated in other research contexts.

By confirming the predictions from the ROAR model in this specific motivational domain, the present findings further support its more general applicability. As explicated above, we found evidence for a positive association between a motivated memory bias and differential cognitive accessibility of information that is congruent vs. incongruent with communicators’ motivation (i.e., to create a shared reality). These findings thus extend demonstrations of cognitive accessibility resulting from self-serving memory biases (Santioso et al., 1990; Dunning et al., 1991).

The association of cognitive accessibility with truth-related motivation in our paradigm is further supported by our additional exploratory analyses on correlations with questionnaire data. These analyses referred to four specific questionnaires, two of which assessed truth-related motives (SRT, Epistemic Trust), while the other two measured interpersonal relationship motives (Relational Motivation, IOS). In all three experiments, the

audience-attitude effect on cognitive accessibility (reaction time advantage for audience-congruent trait information) significantly correlated with the SRT and with Epistemic Trust, but not with Relational Motivation or IOS. In all cases, the two truth-related motives appeared to be even more strongly associated with the audience-attitude effect in cognitive accessibility than with the classical SIB effect in memory. However, these differential associations should be interpreted with caution, because of the negative influence of the mere measurement of cognitive accessibility through the RT task on the subsequent classical memory bias (see above). Previous studies have found substantial associations of the classical SIB effects with truth-related motivation, both with Epistemic Trust and with the SRT (Echterhoff et al., 2005, 2008; Schmalbach et al., 2019).

Echterhoff and colleagues (2008) have previously suggested that the classical SIB effect (evaluative recall bias) could be explained by a higher-level constructive mechanism that relies on information filtering at recall. When asked to retrieve the original target information, people possibly have access to both audience-congruent and audience-incongruent information evenhandedly (stemming from the original text, their own message, or from both), but they might heuristically use their knowledge about the positive vs. negative audience attitude to filter out information that is consistent with the audience attitude. The present results are not easily reconciled with this account: If accessibility for positive and negative target information were the same, there should not be any reaction time differences depending on the audience attitude toward the target. However, we found a clear reaction time advantage for audience-congruent than for audience-incongruent information, specifically on the trait level. Thus, truth related motivation affects cognition on the very basic level of actual mental representation of the target, not only on high-level meta-cognitive mechanisms that determine search processes at recall.

The overall results regarding audience-dependent cognitive accessibility and its relation to the motivated memory bias in the SIB paradigm yielded the hypothesized pattern.

However, we note that our commonality manipulations introduced in Studies 2 and 3 did not produce the expected results. In particular, the commonality manipulation in Study 3 did not exert any effect, and in Study 2, it had effects that are difficult to interpret. As expected, audience-attitude effects on cognitive accessibility were actually stronger in the combined commonality manipulation (“Pictures & Feedback”) than in the single-commonality manipulations (“Pictures” alone or “Feedback” alone). However, this was not the case for the classical SIB effect, where the combined manipulation appeared to be, if anything, even weaker than the single manipulations. Again, the negative influence of the inclusion of the RT task per se on the subsequent measurement of the classical SIB effect may partly play a role here. However, this cannot be a complete explanation because the contribution of the double manipulation to the overall SIB effect was also the weakest one in those participants where the RT task was omitted.

Overall, these findings might suggest that, in standard communication contexts, there is already a sufficiently strong natural inclination of people to establish a shared reality with a communication partner. This view is consistent with the fundamental role of shared reality in the formation of judgments, beliefs, and evaluative representations (Echterhoff & Higgins, 2020). We thus suspect that spontaneous shared-reality motivation cannot be easily further enhanced by additional commonality manipulations, at least not by those used in the present series of experiments.

Regarding the type of communication additionally manipulated in Study 3 (target-related communication about Michael vs. target-unrelated communication about Joe Biden), we found some evidence that the type of communication plays a role, because the expected audience-attitude effects became significant only with but not without target-related communication. However, as there was no significant interaction with the factor type of communication, it is clear that target-unrelated communication also contributed to the overall effects. Previous studies on the role of message production in the SIB paradigm compared the

standard condition (target-related message production) with a condition where no message to the audience was produced at all (Higgins & Rholes, 1978; Higgins et al., 2007). Under these circumstances, the SIB effect did not emerge. Our present findings seem to indicate that communication, even if not related to the target, can contribute to shared reality creation, at least if it refers to a well-known celebrity. Future studies should further vary the content of the message production within the SIB paradigm in order to further specify how different communicative contents of the message can differently affect audience attitude effects.

All in all, the present studies reveal a new facet of communication effects on memory, and illuminate the interplay of cognitive and motivational processes. Our research is consistent with the notion that epistemic motivation and the interpersonal context profoundly condition the way in which social perceivers construct memories of past events. Specifically, the achievement of motivational truth relevance via shared reality harnesses spontaneous, low-level cognitive mechanisms that facilitate the retrieval of biased information about a target person that is not part of the originally encoded material. This conclusion has implications for other domains, such as the detection of unfaithful or biased memories. According to the cognitive-load approach to deceptive memory reports (Vrij et al., 2006), false (vs. faithful) memories are less accessible spontaneously and retrieved with lower ease. In contrast, our findings suggest that biased memories can be accessed with great ease to the extent that they fit the shared reality created via audience tuning. This characteristic allows perceivers to come up quickly and confidently with memories that are not faithful representations of past social events but constructed based on judgments shared with a communication partner. This being said, future research should extend the scope of investigation from target persons to other topics, such as social groups, multi-faceted societal issues, or contested policies (for related propositions, see Jost, Ledgerwood, & Hardin, 2008). It will be exciting to see whether and how people create shared reality about such topics and form corresponding biased memories.

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Table 1: Means of cognitive accessibility measures, message valence and recall valence in the positive vs. negative audience attitude condition in Study 1

	Positive Audience Attitude	Negative Audience Attitude	p value for pairwise comparisons
<i>RT task: Reaction times (ms)</i>			
Traits – positive Items	1457 (384)	1520 (508)	.37
Traits – negative Items	1547 (382)	1436 (443)	.09
Traits – Diff. pos. - neg. Items	-91 (338)	84 (388)	.002**
Behavior – positive Items	2174 (550)	2055 (491)	.15
Behavior – negative Items	2183 (532)	2145 (536)	.65
Behavior – Diff. pos. - neg. Items	-9 (376)	-90 (313)	.14
<i>SS task: Positive choices (%)</i>			
Trait items	58.90 (28.41)	51.69 (29.11)	.11
Behavioral items	51.99 (17.18)	50.94 (13.70)	.66
<i>Text valence</i>			
Message	0.66 (1.93)	-1.04 (2.08)	<.001**
Recall	0.20 (1.03)	0.09 (0.99)	.47

Note. Numbers in brackets indicate standard deviations. Values in bold refer to hypotheses. * $p < .05$,

** $p < .01$

Table 2: Intercorrelations between the different audience attitude effects (AAE) in Study 1

		AAE-RT Traits	AAE-RT Behavior	AAE-SS Traits	AAE-SS Behavior	AAE Message	AAE Recall
AAE-RT Traits	<i>r</i>	1					
	<i>p</i>						
AAE-RT Behavior	<i>r</i>	.02	1				
	<i>p</i>	.82					
AAE-SS Traits	<i>r</i>	.29**	.10	1			
	<i>p</i>	<.001	.20				
AAE-SS Behavior	<i>r</i>	.21**	.06	.29**	1		
	<i>p</i>	.006	.47	<.001			
AAE-Message (Audience Tuning)	<i>r</i>	.26**	.07	.16*	.14	1	
	<i>p</i>	<.001	.39	.04	.08		
AAE-Recall (SIB Effect)	<i>r</i>	.18*	.15	.16*	.17*	.43**	1
	<i>p</i>	.02	.06	.04	.03	<.001	

Note. Values in bold refer to hypotheses. RT = reaction-time task, SS = scrambled-sentence task, SIB = saying-is-believing. N = 165. * $p < .05$, ** $p < .01$

Table 3: Correlations between the different audience attitude effects (AAE) with questionnaires targeting subjective experiences related to shared reality in Study 1

		SRT	Epistemic Trust	Relational Motivation	IOS
AAE-RT Traits	<i>r</i>	.26**	.20*	.12	.04
	<i>p</i>	.001	.01	.12	.61
AAE-RT Behavior	<i>r</i>	.03	.12	.07	-.04
	<i>p</i>	.70	.13	.35	.63
AAE-SS Traits	<i>r</i>	.14	.15	-.03	.01
	<i>p</i>	.08	.06	.75	.86
AAE-SS Behavior	<i>r</i>	.16*	.06	.04	.03
	<i>p</i>	.04	.48	.62	.73
AAE-Message (Audience Tuning)	<i>r</i>	.36**	.20*	.10	.17*
	<i>p</i>	.001	.01	.22	.03
AAE-Recall (SIB Effect)	<i>r</i>	.11	.14	.14	.02
	<i>p</i>	.18	.07	.07	.76

Note. SRT = Shared Reality about a Target (Schmalbach et al., 2019), IOS = Inclusion of Other in the Self (Aron et al., 1992). RT = reaction-time task, SS = scrambled-sentence task, SIB = saying-is-believing. N = 165. * $p < .05$, ** $p < .01$

Table 4: Means of reaction times, message valence and recall valence in the positive vs. negative audience attitude condition in Study 2, collapsed across all three commonality manipulation conditions

	Positive Audience Attitude	Negative Audience Attitude	p value for pairwise comparisons
<i>RT task: Reaction times (ms)</i>			
Traits – positive Items	1328 (339)	1325 (401)	.97
Traits – negative Items	1531 (654)	1281 (361)	.005**
Traits – Diff. pos. - neg. Items	- 203 (550)	44 (280)	<.001**
Behavior – positive Items	2074 (662)	1956 (714)	.31
Behavior – negative Items	2140 (693)	1986 (732)	.20
Behavior – Diff. pos. - neg. Items	- 66 (367)	- 30 (528)	.64
<i>Text valence</i>			
Message	0.92 (1.52)	-0.84 (1.77)	<.001**
Recall overall	0.23 (1.08)	-0.02 (0.93)	.037*
Recall without previous RT task	0.38 (0.86)	0.01 (0.83)	.011*
Recall with previous RT task	0.09 (1.24)	-0.05 (1.03)	.49
<i>Note.</i> Numbers in brackets indicate standard deviations. Values in bold refer to hypotheses. * p < .05, ** p < .01			

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Table 5: Means of reaction times, message valence and recall valence in the positive vs. negative audience attitude condition in Study 2, separately for the three different commonality manipulation conditions

	Positive Audience Attitude	Negative Audience Attitude	p value for pairwise comparisons
<i>RT task: Reaction times (ms)</i>			
Traits – positive Items			
Pictures	1344 (322)	1333 (432)	.92
Feedback	1330 (387)	1362 (447)	.79
Pictures & Feedback	1310 (312)	1280 (322)	.74
Traits – negative Items			
Pictures	1443 (474)	1280 (336)	.18
Feedback	1347 (446)	1312 (443)	.78
Pictures & Feedback	1803 (877)	1252 (296)	.007
Traits – Diff. pos. - neg. Items			
Pictures	-98 (394)	54 (375)	.19
Feedback	-17 (201)	50 (229)	.28
Pictures & Feedback	-493 (774)	27 (220)	.004**
Behavior – positive Items			
Pictures	2021 (625)	2078 (896)	.81
Feedback	2046 (777)	1988 (755)	.79
Pictures & Feedback	2151 (582)	1800 (392)	.018*
Behavior – negative Items			
Pictures	2052 (567)	1977 (598)	.66
Feedback	2105 (776)	2049 (978)	.83
Pictures & Feedback	2255 (718)	1928 (561)	.085
Behavior – Diff. pos. - neg. Items			
Pictures	-31 (288)	100 (760)	.45
Feedback	-59 (358)	-61 (392)	.98
Pictures & Feedback	-104 (443)	-127 (326)	.84
<i>Text valence</i>			
Message			
Pictures	0.96 (1.53)	-0.94 (1.84)	<.001**
Feedback	0.85 (1.55)	-0.80 (1.82)	<.001**
Pictures & Feedback	0.96 (1.52)	-0.77 (1.68)	<.001**
Recall overall			
Pictures	0.17 (1.09)	-0.14 (0.80)	.12
Feedback	0.39 (0.95)	-0.11 (1.10)	.019*
Pictures & Feedback	0.13 (1.19)	0.20 (0.85)	.76
Recall without previous RT task			
Pictures	0.42 (0.69)	-0.23 (0.74)	.003**
Feedback	0.65 (0.73)	0.08 (0.87)	.018*
Pictures & Feedback	0.08 (1.05)	0.19 (0.84)	.70
Recall with previous RT task			
Pictures	-0.09 (1.36)	-0.04 (0.86)	.88
Feedback	0.14 (1.07)	-0.30 (1.28)	.19
Pictures & Feedback	0.19 (1.33)	0.21 (0.87)	.95
<i>Note.</i> Numbers in brackets indicate standard deviations. Values in bold refer to hypotheses. * $p < .05$, ** $p < .01$			

Table 6: Intercorrelations between the different audience attitude effects (AAE) in Study 2

		AAE-RT Traits	AAE-RT Behavior	AAE Message	AAE Recall
AAE-RT Traits	<i>r</i>	1			
	<i>p</i>				
AAE-RT Behavior	<i>r</i>	.21*	1		
	<i>p</i>	.013			
AAE-Message (Audience Tuning)	<i>r</i>	.19*	.27**	1	
	<i>p</i>	.023	.001		
AAE-Recall (SIB Effect)	<i>r</i>	.09	.11	.26**	1
	<i>p</i>	.30	.19	<.001	

Note. Values in bold refer to hypotheses. RT = reaction-time task, SIB = saying-is-believing. N = 144 (except for correlation between AAE-Message and AAE-Recall, which is based on N = 289). * $p < .05$, ** $p < .01$.

Table 7: Correlations between the different audience attitude effects (AAE) with questionnaires targeting subjective experiences related to shared reality in Study 2

		SRT	Epistemic Trust	Relational Motivation	IOS
AAE-RT Traits	<i>r</i>	.24**	.20*	.13	.10
	<i>p</i>	.003	.014	.11	.24
AAE-RT Behavior	<i>r</i>	.05	.15	.10	.20*
	<i>p</i>	.58	.08	.26	.015
AAE-Message (Audience Tuning)	<i>r</i>	.14*	.10	.20**	.29**
	<i>p</i>	.02	.104	.001	<.001
AAE-Recall (SIB Effect)	<i>r</i>	.10	.15*	.09	-.03
	<i>p</i>	.102	.012	.15	.60

Note. SRT = Shared Reality about a Target (Schmalbach et al., 2019), IOS = Inclusion of Other in the Self (Aron et al., 1992). RT = reaction-time task, SS = scrambled-sentence task, SIB = saying-is-believing. N = 144 for RT effect, N = 289 for AAE in Message and Recall. * $p < .05$, ** $p < .01$

Table 8: Means of reaction times, message valence and recall valence in the positive vs. negative audience attitude condition in Study 3, collapsed across all commonality manipulation conditions

	Positive Audience Attitude	Negative Audience Attitude	p value for pairwise comparisons
<i>RT task: Reaction times (ms)</i>			
Traits – positive Items			
Overall	1373 (415)	1421 (470)	.32
Communication about target	1396 (393)	1392 (389)	.94
Communication about Biden	1350 (437)	1449 (539)	.18
Traits – negative Items			
Overall	1445 (456)	1380 (492)	.20
Communication about target	1449 (427)	1310 (402)	.028*
Communication about Biden	1441 (486)	1448 (560)	.93
Traits – Diff. pos. - neg. Items			
Overall	-72 (368)	41 (355)	.004**
Communication about target	-53 (372)	82 (355)	.016*
Communication about Biden	-92 (364)	1 (352)	.09
Behavior – positive Items			
Overall	2018 (637)	2034 (638)	.82
Communication about target	2021 (652)	1956 (506)	.46
Communication about Biden	2015 (624)	2111 (741)	.36
Behavior – negative Items			
Overall	2097 (665)	2016 (597)	.23
Communication about target	2084 (638)	1962 (529)	.17
Communication about Biden	2109 (695)	2069 (656)	.69
Behavior – Diff. pos. - neg. Items			
Overall	-79 (362)	18 (433)	.025*
Communication about target	-63 (360)	-6 (382)	.31
Communication about Biden	-95 (367)	42 (479)	.037*
<i>Text valence</i>			
Message			
Overall			
Communication about target	0.83 (1.46)	-0.98 (1.93)	<.001*
Communication about Biden	-	-	
Recall			
Overall	0.08 (1.28)	-0.32 (1.21)	.004**
Communication about target	0.25 (0.95)	-0.31 (1.12)	.001**
Communication about Biden	-0.10 (1.53)	-0.33 (1.30)	.29
<i>Note.</i> Numbers in brackets indicate standard deviations. Values in bold refer to hypotheses. * p < .05, ** p < .01			

Table 9: Intercorrelations between the different audience attitude effects (AAE) in Study 3

		AAE-RT Traits	AAE-RT Behavior	AAE Message	AAE Recall
AAE-RT Traits	<i>r</i>	1			
	<i>p</i>				
AAE-RT Behavior	<i>r</i>	.24*	1		
	<i>p</i>	.009			
AAE-Message (Audience Tuning)	<i>r</i>	.35**	.22**	1	
	<i>p</i>	<.001	.004		
AAE-Recall (SIB Effect)	<i>r</i>	.18**	.12*	.23**	1
	<i>p</i>	.001	.026	.002	

Note. Values in bold refer to hypotheses. RT = reaction-time task, SIB = saying-is-believing. N = 347 (except for correlation between AAE-Message and AAE-Recall, which is based on N = 174). * $p < .05$, ** $p < .01$.

Table 10: Correlations between the different audience attitude effects (AAE) with questionnaires targeting subjective experiences related to shared reality in Study 3

		SRT	Epistemic Trust	Relational Motivation	IOS
AAE-RT Traits	<i>r</i>	.26**	.18**	.16*	.10
	<i>p</i>	<.001	.001	.003	.06
AAE-RT Behavior	<i>r</i>	.13*	.11*	.01	.05
	<i>p</i>	.014	.034	.86	.38
AAE-Message (Audience Tuning)	<i>r</i>	.27**	.23**	.13	.20*
	<i>p</i>	<.001	.002	.089	.010
AAE-Recall (SIB Effect)	<i>r</i>	.22**	.10	.05	.09
	<i>p</i>	<.001	.058	.40	.080

Note. SRT = Shared Reality about a Target (Schmalbach et al., 2019), IOS = Inclusion of Other in the Self (Aron et al., 1992). RT = reaction-time task, SIB = saying-is-believing. N = 347 (except for AAE for Message, which is based on N = 174). * $p < .05$, ** $p < .01$

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Table 11: Means of reaction times, message valence and recall valence in the positive vs. negative audience attitude condition in Study 3 for participants with target-related communication (communication about Michael), separately for the three different commonality manipulation conditions

	Positive Audience Attitude	Negative Audience Attitude	p value for pairwise comparisons
<i>RT task: Reaction times (ms)</i>			
Traits – positive Items			
Pictures	1393 (393)	1302 (301)	.33
Feedback	1457 (452)	1409 (418)	.67
Standard (Baseline)	1340 (331)	1469 (433)	.21
Traits – negative Items			
Pictures	1505 (432)	1294 (339)	.042*
Feedback	1468 (327)	1274 (421)	.055
Standard (Baseline)	1376 (503)	1367 (451)	.94
Traits – Diff. pos. - neg. Items			
Pictures	-111 (249)	9 (274)	.15
Feedback	-11 (379)	135 (350)	.13
Standard (Baseline)	-36 (394)	103 (430)	.21
Behavior – positive Items			
Pictures	2100 (738)	1868 (442)	.15
Feedback	2099 (694)	2009 (558)	.59
Standard (Baseline)	1866 (494)	1992 (517)	.35
Behavior – negative Items			
Pictures	2097 (689)	1915 (482)	.25
Feedback	2181 (623)	1954 (582)	.16
Standard (Baseline)	1979 (604)	2020 (532)	.79
Behavior – Diff. pos. - neg. Items			
Pictures	3 (332)	-47 (424)	.62
Feedback	-81 (389)	54 (305)	.14
Standard (Baseline)	-113 (361)	-27 (415)	.41
<i>Text valence</i>			
Message			
Pictures	0.75 (1.56)	-0.60 (2.12)	.007**
Feedback	0.76 (1.51)	-1.09 (1.92)	<.001**
Standard (Baseline)	0.97 (1.34)	-1.26 (1.73)	<.001**
Recall			
Pictures	0.18 (1.13)	-0.31 (1.12)	.098
Feedback	0.36 (0.79)	-0.24 (1.01)	.014*
Standard (Baseline)	0.20 (0.91)	-0.37 (1.27)	.054
<i>Note.</i> Numbers in brackets indicate standard deviations. * $p < .05$, ** $p < .01$			

Table 12: Means of reaction times and recall valence in the positive vs. negative audience attitude condition in Study 3 for participants with target-unrelated communication (communication about Joe Biden), separately for the three different commonality manipulation conditions

	Positive Audience Attitude	Negative Audience Attitude	p value for pairwise comparisons
<i>RT task: Reaction times (ms)</i>			
Traits – positive Items			
Pictures	1316 (387)	1445 (591)	.33
Feedback	1370 (440)	1369 (333)	.99
Standard (Baseline)	1364 (494)	1544 (658)	
Traits – negative Items			
Pictures	1474 (517)	1344 (523)	.35
Feedback	1425 (468)	1423 (461)	.98
Standard (Baseline)	1424 (487)	1589 (679)	
Traits – Diff. pos. - neg. Items			
Pictures	-159 (348)	100 (237)	.002**
Feedback	-56 (348)	-53 (313)	.98
Standard (Baseline)	-60 (400)	-45 (467)	.90
Behavior – positive Items			
Pictures	1999 (581)	2101 (917)	.61
Feedback	2022 (644)	2011 (553)	.94
Standard (Baseline)	2024 (666)	2232 (722)	
Behavior – negative Items			
Pictures	-143 (340)	56 (317)	.025*
Feedback	-95 (404)	-7 (407)	.40
Standard (Baseline)	-44 (360)	80 (673)	
Behavior – Diff. pos. - neg. Items			
Pictures	2142 (741)	2045 (776)	.63
Feedback	2117 (641)	2017 (608)	.54
Standard (Baseline)	2069 (724)	2152 (581)	.40
<i>Text valence</i>			
Message			
Pictures	-	-	
Feedback	-	-	
Standard (Baseline)	-	-	
Recall			
Pictures	0.19 (1.31)	-0.45 (1.32)	.069
Feedback	-0.38 (1.47)	-0.32 (1.40)	.86
Standard (Baseline)	-0.09 (1.80)	-0.20 (1.18)	.78

Note. Numbers in brackets indicate standard deviations. Text messages were not rated for valence because their content was predetermined by instruction for target-unrelated communication (see Methods). * $p < .05$, ** $p < .01$

Figure 1: Reaction times for audience-congruent vs. audience-incongruent target-related trait information in the three studies.