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SHARED-REALITY EFFECTS ON MEMORY: COMMUNICATING TO FULFILL EPISTEMIC NEEDS

René Kopietz
University College, London

Jens H. Hellmann
Bielefeld University

E. Tory Higgins
Columbia University

Gerald Echterhoff
Bielefeld University

Communicators' tuning of a message to suit their audience's attitude about a target can bias their subsequent memory of the target. Research shows that this effect occurs to the extent that the message serves the creation of a shared reality with the audience. In two experiments we investigated the motivational processes underlying such audience-tuning memory biases. Experiment 1 found that when audience tuning was motivated by a shared-reality motive (vs. compliance with a blatant demand), the memory bias was found even when the audience-attitude information was provided *after* the target information had already been encoded. In Experiment 2, communicators' epistemic needs were directly manipulated by giving them bogus feedback regarding their ability to form social judgments. Only communicators in the high (vs. low) epistemic-need condition tuned their message to their audience and, by so doing, they attained a confident view of the target, as well as a memory of the target that was consistent with their message.

René Kopietz, University College, London; Jens H. Hellmann and Gerald Echterhoff, Bielefeld University; E. Tory Higgins, Department of Psychology, Columbia University. This research was supported by a grant from the German Research Foundation (DFG, reference number EC 317-2) to the fourth author. We are indebted to Sarah Niemeier for help with the preparation of the manuscript; and to Dominik Illies, So-Rim Jung, Natalija Keck, Kirsten Kreh, Kim Rohwer, Anika Stuppy, and Katharina Weiss for their assistance in data collection, administration, and coding. We are particularly grateful for the help of Christian Kander, Friedrich Funke, and Tobias Richter on an earlier version of this manuscript. Parts of this research were presented at the General Meeting of the European Association of Experimental Social Psychology (EAESP), Opatija, Croatia, in June 2008, and at the International Congress of Psychology, Berlin, Germany, in July 2008.

Correspondence concerning this article should be addressed to René Kopietz, Cognitive, Perceptual and Brain Sciences, University College London, 26 Bedford Way, WC1 0AP, London, UK. E-mail: r.kopietz@ucl.ac.uk.

When discussing some topic, communicators take into account audience characteristics, such as their audience's knowledge or attitude on the topic (e.g., Clark & Marshall, 1981; Krauss & Fussell, 1991), by tailoring their message to their audience—a process referred to as audience tuning (Higgins, 1992, 1999). Intriguingly, such audience tuning often biases communicators' own subsequent memory for the message topic (see Higgins, 1999). For example, when a professor meets a colleague who expresses liking for a new graduate student, she might recount to him the student's behaviors in her class in a favorable light and later remember the student's behaviors more positively, consistent with her audience-tuned message.

This effect was initially demonstrated by Higgins and Rholes (1978) in the "saying-is-believing" paradigm. In the original paradigm, participants were asked to read an essay about a male target person, Donald, and then describe Donald, without mentioning his name, to an audience whose task was to identify the target person being described. The audience presumably knows the target and has the task of identifying him from an array of alternative targets. The essay contains evaluatively ambiguous behaviors (e.g., a behavior that can be labeled as either "persistent" or "stubborn"; for a complete version of the target essay see Echterhoff, Higgins, Kopietz, & Groll, 2008). After learning that their audience either likes or dislikes the target person, participants typically tune their messages to their audience's attitude; that is, they describe the target positively to an audience with a positive attitude and negatively to an audience with a negative attitude. An audience-tuning effect on memory is found when communicators' subsequent memory for the original target information (i.e., the information presented about the target in the essay) matches the evaluative tone of their audience-tuned message. Thus, communicators end up remembering what they said rather than what they originally learned about the target person's behaviors—the "saying-is-believing" effect (Higgins & Rholes, 1978).

The saying-is-believing effect (in the following we also use the term *audience-tuning memory bias* synonymously) has been repeatedly demonstrated (e.g., Higgins & Rholes, 1978; Todorov, 2002; for reviews see Echterhoff, Higgins, & Levine, 2009; McCann & Higgins, 1992). Recently, Echterhoff, Higgins, and colleagues (Echterhoff, Higgins, & Groll, 2005; Echterhoff, Higgins, Kopietz, & Groll, 2008; Higgins, Echterhoff, Crespillo, & Kopietz, 2007) have pointed out the importance of interpersonal and motivational processes underlying the effect. While earlier work on audience-tuning effects on memory focused on more cognitive explanations like *labeling* or *selective rehearsal* for the effect (Higgins & Rholes, 1978; Pasupathi, Stallworth, & Murdoch, 1998, respectively), these authors argue that the driving force behind these effects is the motivated formation of a *shared reality* with the audience about the communication topic (Echterhoff et al., 2009; Higgins, 1992). Consistent with this notion, Echterhoff et al. (2008) found an audience-tuning memory bias when audience tuning occurred in the service of sharing reality with the audience but not when it was motivated by other communication goals, such as tuning just to be rewarded by the audience or to comply with politeness demands.

Importantly, regarding cognitive processes potentially underlying the effect, Echterhoff et al. (2008) also found that audience-tuning effects on communicators' memory were *not* mediated by the rehearsal or accurate retrieval of the original input information, nor by the ability to discriminate between the original and the message information. However, although this research successfully ruled out these alternative cognitive accounts, two important questions remain. To date,

participants in saying-is-believing studies have learned about their audience's attitude *before* reading the original target information; that is, they encoded the input material knowing their audience's attitude, which could have affected how this information was represented (cf. Sedikides, 1990). Thus, the first open question is whether knowing the audience's attitude when encoding the original target information is a necessary boundary condition for the audience-tuning effect on memory.

The second question relates to a pivotal postulate of shared-reality theory (Echterhoff et al., 2009): That communicators' need for epistemic certainty underlies the motivation to share reality that produces the saying-is-believing effect. It is assumed that the ambivalent (i.e., evaluatively ambiguous) original target information used in the saying-is-believing paradigm elicits the need to gain epistemic certainty about the target person. However, the role of epistemic needs has never been directly examined in an experiment. Thus, the second open question is whether the audience-tuning effect on memory actually depends on communicators' epistemic needs. The goal of the present research is to answer these two open questions.

The next two sections provide a fuller background discussion for these two open questions. The first section addresses the question about the role of epistemic needs in the motivation to share reality. The second section addresses the question about the role of knowing the audience's attitude as affecting the encoding of the original target information vs. affecting audience tuning in the service of creating a shared reality.

THE ROLE OF EPISTEMIC NEEDS IN THE MOTIVATION TO SHARE REALITY

In one of his earlier works, Leon Festinger proposed that "the less 'physical reality' there is to validate the opinion or belief, the greater will be the importance of the social referent, the group, and the greater will be the forces to communicate" (1950, p. 273). Consistent with this as well as other classic research emphasizing the interpersonal nature of world knowledge (e.g., Bar-Tal, 1990; Heider, 1958; Lewin, 1947; Schütz, 1967; Sherif, 1936), shared reality is conceptualized as the product of creating a commonality between one's own and another person's thoughts and feelings about a target (see Echterhoff et al., 2009; Hardin & Higgins, 1996; Higgins, 1992). With experiences often being ambiguous, sharing the views of appropriate and relevant others allows people to construct an understanding of the world with sufficient certainty. Although not the only way of achieving a shared reality, a central and frequent way is by communicating about these ambiguous experiences to other people. Shared-reality theory assumes that by creating a shared reality people can satisfy fundamental epistemic needs (see also Festinger, 1950; Kruglanski, Pierro, Mannetti, & De Grada, 2006; Sherif, 1936).

In the example of Donald, assume that Donald prefers to solve problems by himself and does not rely much on others' opinions. This behavior could indicate that he is independent and self-reliant (positive traits) or aloof and unsociable (negative traits). Creating a shared view with another person is one means by which perceivers can disambiguate this behavioral information. Shared-reality theory (Echterhoff et al., 2009; Hardin & Higgins, 1996; Higgins, 1992) assumes

that this happens in audience-tuning studies. The evaluative ambiguity inherent in the behavioral input information in these studies elicits epistemic needs, which can be satisfied by creating shared reality through communication. In the course of tuning messages to an audience, communicators are able to: (a) construct an audience-congruent representation of the target, and (b) attain a greater sense of certainty about what the target is actually like.

EFFECT OF KNOWING THE AUDIENCE'S ATTITUDE DURING INPUT ENCODING VS. AUDIENCE TUNING EFFECT

It is notable that all of the relevant evidence regarding the audience-tuning memory bias is based on experimental manipulations of audience attitude and goals that have been employed *before* communicators received the target input information. Specifically, both audience attitude and audience-tuning goals have always been manipulated before participants encoded the input information, that is, *pre-encoding*. It is clearly important to examine the effects on memory bias of *post-encoding* manipulations of audience attitude for at least two reasons. The first reason is that in everyday life people often, perhaps *mostly*, become aware of an audience's attitude *after* exposure to some target information. For instance, the professor from our initial example would probably talk about the graduate student *after* having observed the student's behaviors in class. And it is even more likely that the communication goals would be activated after the input information had already been encoded.

Often people simply *cannot* activate communication goals prior to exposure to input information. For instance, it is unlikely that the professor from our initial example could anticipate communicating with her colleague about the student *before* having even witnessed the student's behaviors, let alone anticipating that she would want to share reality with the colleague (or, alternatively, get her colleague to like her), by tailoring her message to suit her colleague's attitude toward the student. Indeed, it is unlikely that the professor would even know her colleague's attitude toward the student before initiating a conversation about the student. Thus, demonstrating post-encoding effects on the memory bias would extend the generality of the existing evidence and corresponding theorizing.

The second reason to examine post-encoding effects on memory from knowing the audience's attitude is that in the standard pre-encoding paradigm communicators have the audience's attitude already in mind when encoding the ambivalent target passages. Thus, due to the knowledge of the audience's attitude they may not even be able to form a personal view that is independent of the audience's view of the target person. In contrast, under post-encoding conditions communicators will necessarily form an independent view of the target person before they learn about the audience's attitude and engage in audience tuning. To tune their message to their audience's attitude, they then have to reorganize the encoded material, which is relatively more effortful. Furthermore, learning about the audience's attitude toward the target after encoding of the original target information should render the audience's social influence relatively salient. Therefore, using a post-encoding manipulation of both audience attitude and communication goal is a rigorous test of our general shared-reality proposal, and the occurrence of an audience-tuning memory bias under such conditions would testify to the strength

of communicators' motivation to create a shared reality, as well as the power of the saying-is-believing effect.

In sum, finding a memory bias from audience tuning under conditions where communicators learn about the audience's attitude *after* they have already encoded the original target information would indicate that a much greater range of memories can be shaped by audience-tuned communication. Evidence from research outside the saying-is-believing domain suggests that such a post-encoding effect is possible. For example, studies have found that schemata activated after the encoding of input information can lead to schema-congruent memories (Anderson & Pichert, 1978; Hasher & Griffin, 1978; Snyder & Uranowitz, 1978). Thus, perceivers can apparently reorganize information in the light of retrospectively activated schemata. There is also evidence that a post-encoding audience-attitude manipulation can produce biased impressions of the target (see Sedikides, 1990; also see below). Regarding a goal manipulation, it has been found that communication goals can shape perceivers' organization and interpretation of an event after the encoding of target information (e.g., Brock & Fromkin, 1968; Thompson, Roman, Moskowitz, Chaiken, & Bargh, 1994; also see Guerin & Innes, 1989; cf. Harkins, Harvey, Keithly, & Rich, 1977). Overall, these studies suggest that effects on memory as a function of audience attitude and communication goal should not be restricted to cases of pre-encoding activation of these factors.

THE PRESENT RESEARCH

The above discussion of pre-encoding vs. post-encoding effects of knowing about the audience's attitude highlights the importance of examining whether a memory bias from audience tuning will be found even when knowledge of the audience's attitude occurs only after the original target information has already been encoded. Until now, only Sedikides (1990) investigated the effect of audience tuning when the information about the audience attitude is received *after* exposure to the original target information (post-encoding). He found for this post-encoding condition that participants did form an audience-congruent *impression* of the target person when writing down what they privately thought of him. However, compared to memory, impressions may be much more susceptible to control processes and response biases (e.g., Echterhoff et al., 2005). In this sense, impressions are more similar to the messages themselves (Higgins, 1999). Thus, from Sedikides' post-encoding effect for impressions, one cannot conclude that one would find a post-encoding effect for memory. Experiment 1 was conducted to address this question.

Another aim of Experiment 1 was to examine more fully than previous studies whether communicators' *own certainty* about their view of the target is increased by audience tuning, as shared-reality theory would predict. In line with recent findings of greater social sharing under low (vs. high) confidence (e.g., Fu, Morris, Lee, Chao, Chiu, & Hong, 2007; Kruglanski et al., 2006; Lun, Sinclair, Whitchurch, & Glenn, 2007), we assumed that audience tuning would lead to communicators having a more confident view of the target person when the audience tuning was motivated by wanting to create a shared reality vs. simply to comply with a blatant demand. In Experiment 2 we addressed the second open question regarding the motivational conditions for the saying-is-believing effect: Does the effect depend

on communicators' needs for epistemic certainty? Taken together, these two studies address key remaining issues surrounding the postulated role of shared-reality motivation in audience-tuning effects on memory.

EXPERIMENT 1

To explore what happens when audience attitude is manipulated *after* receiving the target input information, we conducted a pilot study ($N = 37$) using the standard paradigm (e.g., Echterhoff et al., 2005, 2008; Higgins & Rholes, 1978) but with a post-encoding manipulation of audience attitude. We found that participants did tune their messages to their audience's attitude in a post-encoding situation, $t(35) = 4.52$, $p < .001$, $d = 1.47$—which is a critical precondition for our studies. Furthermore, there was an audience-tuning memory bias, $t(35) = 3.78$, $p < .001$, $d = 1.24$. Notably, and consistent with classic findings (e.g., McCann & Higgins, 1992), participants' recall bias depended on their audience-tuned message rather than on just their knowledge about the audience's attitude toward the target person (as indicated by a significant mediation of the audience-attitude effect on recall valence via message valence; $ab = .41$, $z = 2.77$, $p < .01$; Sobel, 1982). Thus, it was established that even after a post-encoding manipulation of audience attitude, audience-tuned *messages* can bias later representations of the communication topic. Following this encouraging initial evidence, we conducted the larger experiment described below with audience attitude, audience-tuning goal, and the timing of these two manipulations as independent variables. Shared-reality theory emphasizes the motivational underpinnings of the audience-tuning effect. Drawing on this motivational account, we predicted that what matters is the shared-reality goal per se rather than the timing of the audience-attitude or goal-activation manipulation (pre-encoding vs. post-encoding).

METHOD

Participants and Design. Participants were 156 students at Bielefeld University (85 female, 71 male; mean age = 23.5, $SD = 5.9$), compensated with Euro 5 or course credit. In a postexperimental suspicion check, participants were first asked to guess the purpose of the study and then probed for their acceptance of the cover story ("Did you think that your audience would read your message?"). Four participants who exhibited strong suspicion were excluded from the analyses, resulting in the sample described above. The experiment was based on a 2 (audience attitude: positive vs. negative) x 2 (audience-tuning goal: shared-reality vs. compliance) x 2 (timing of manipulations: pre-encoding vs. post-encoding) between-participants design. The main dependent variables (DVs) were the valence (i.e., evaluative tone) of the message and recall protocols.

Procedure and Materials. Based on the saying-is-believing paradigm, the experiment was ostensibly about interpersonal perception and communication. Participants were told they would read a short essay about the target person *Michael*, who supposedly was a student volunteer in a long-term research project on interpersonal perception, and that they were to describe Michael to another student volunteer (the audience) without mentioning Michael's name. The audience's task

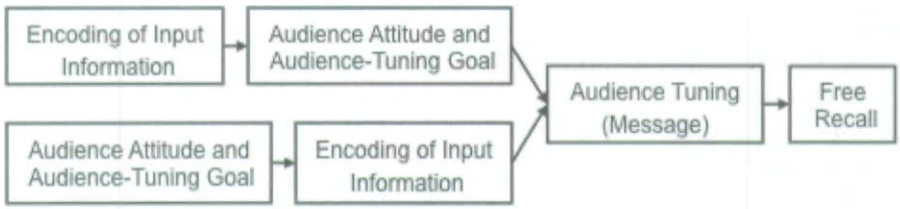


FIGURE 1. Sequence of the main stages of the procedure (see text for explanations).

would be to identify Michael as the referent of their description among 30 project participants.

The main stages of the procedure are shown in Figure 1. A computer-based administration was designed using MediaLab (Jarvis, 2005) to guide participants through the stages of the study and to register their responses (as in Echterhoff et al., 2008). Because instructions were pre-recorded, the delivery of experimentally relevant information (such as the audience's attitude) was held constant. (All verbal materials described in the following are translated from German.)

Regarding the communication-goal manipulation, participants in the *compliance-goal* condition were explicitly told to adapt their description of the target person to the audience's attitude; that is, to describe the target person in a positive or negative way, depending on the audience-attitude condition (Echterhoff et al., 2008, Exp. 3). Participants in the *shared-reality-goal* condition received no additional information. Previous research has indicated that without additional goal instruction, audience tuning in the standard paradigm does serve the creation of shared reality (Echterhoff et al., 2005, 2008, 2009; Higgins et al., 2007).

Both audience attitude and communication goal were manipulated either *before* participants read the input information (pre-encoding timing) or *after* participants had read the input information (post-encoding timing). The input information describing the target person consisted of six evaluatively ambiguous passages used in previous research (see Echterhoff et al., 2008). Other than the timing of manipulations, the procedure was identical to Echterhoff et al. (2008, pp. 5-6).

After an unrelated 2-minute filler task, participants typed their description of "Michael" (the message). Presumably, this message could be sent electronically to the audience by clicking a button labeled *send to addressee*. Participants were informed that their message had been successfully transmitted.

After message production and an unrelated 10-minute filler task, participants indicated their *certainty regarding their own view of the target person* on three rating items ("Could you form an unambiguous view of Michael?" "Were you able to form a clear impression of Michael?" "Do you think you could extract a clear idea about Michael from the text describing his behaviors?"; ranging from 1 = *not at all* to 7 = *very much*).

Participants were then asked to recall, as accurately as possible, the original input information about the target person in a free, written format. We finally administered a *manipulation check* to assess the extent to which communicators' felt their audience tuning was motivated by external demands ("To what extent did

you take into account external motives when you wrote your description of the target person?"; rating from 1 = *not at all* to 8 = *very much*).

Measures. As in previous studies (Echterhoff et al., 2005, 2008), two coders blind to the condition of the respective participant rated the overall valence of the message and recall protocols on an 11-point scale, ranging from -5 (*extremely negative*) to +5 (*extremely positive*). Protocols were presented to the coders in random order, each coder receiving a different order, with the constraint that the two protocols from the same participant be separated by at least five other protocols. Coders broke down each protocol into passages corresponding to the passages in the target essay and assigned scores for positive or negative distortions to each passage (for examples see Echterhoff et al., 2008). Using these scores for each protocol's passages, they then assigned an overall valence rating to each protocol. Intercoder correlations for message and recall valence ($r = .96$, and, $r = .84$, respectively) were sufficiently high. Means of the two coders' scores for each variable were used for subsequent analyses.

Unipolar bias measures were calculated to capture the *magnitude* of the audience-tuning valence bias of message and recall independent of audience attitude (referred to as message and recall bias). To obtain these measures, valence scores in the negative attitude condition were multiplied by -1 whereas valence scores in the positive attitude condition remained unchanged. Thus, the more message and recall were biased in the direction of the audience's attitude, the more positive were the unipolar bias scores (see Echterhoff et al., 2005, 2008).

The audience-tuning recall bias might be reduced to the extent that communicators exhibit better rehearsal and more accurate retrieval of the content of the input information (see Echterhoff et al., 2008). To assess both accuracy of rehearsal and retrieval, we coded the number of accurate reproductions of the input information in both message protocols (representing rehearsal) and recall protocols (representing retrieval). In studies employing post-encoding manipulations, it is particularly important to consider these accuracy measures: The interval between input encoding and message production is shorter with post-encoding (vs. pre-encoding) manipulations. Thus, with post-encoding manipulations the input information could be available in memory in a more accurate form at the time of message production, permitting more accurate rehearsal of the input information. We scored as accurate reproductions idea units that preserved the propositional content of an idea unit from the original target essay (Echterhoff et al., 2008; also see Van Dijk & Kintsch, 1983). For instance, the idea unit *Michael tries to avoid spending money* was scored as an accurate reproduction of the proposition *Michael tries to save money* from the original essay. Two coders, blind to the experimental conditions, counted the number of accurate reproductions. Scores from the two coders were sufficiently correlated ($rs > .83$), and were averaged to yield single measures of accurate reproductions in message and recall protocols.

Finally, the reliability of the 3-item epistemic certainty measure was sufficiently high (Cronbach's $\alpha = .88$), allowing the calculation of one mean score for further analyses.

RESULTS AND DISCUSSION

We report all results based on 2 x 2 x 2 analyses of variance (ANOVA) with *audience attitude* (positive vs. negative), *communication goal* (shared reality vs. compliance), and *timing of manipulations* (pre-encoding vs. post-encoding) as the independent variables (IVs). Also, we report partial Eta-squared and Cohen's *d* (Cohen, 1988) as effect-size measures. All *p*s are two-tailed, unless noted otherwise.

Manipulation Check. Participants in the compliance-goal condition reported to a greater extent that their audience tuning was motivated by external demands ($M = 5.18$, $SD = 2.02$) than did participants in the shared-reality-goal condition ($M = 3.82$, $SD = 2.00$), $t(154) = 4.23$, $p < .001$, $d = 0.68$. Importantly, there was no evidence that complying with external demands predicted the audience-tuning memory bias, $r(154) = .02$, *ns*.

Message and Recall Valence. Participants tuned their message to their audience's attitude (Table 1), as indicated by a significant audience-attitude main effect in the ANOVA, $F(1, 148) = 144.45$, $p < .001$, $\eta_p^2 = .49$. Separate planned contrasts confirmed the audience-attitude effect in *every* communication-goal and encoding condition (all *t*s > 3.04, *p*s < .001, *d*s > 0.89). Stronger audience tuning in the compliance-goal (vs. shared-reality-goal) condition was reflected by a significant Audience Attitude x Communication Goal interaction, $F(1, 148) = 27.66$, $p < .001$, $\eta_p^2 = .16$. No other main effects or interactions reached significance, *F*s < 2.96, *p*s > .09.

The ANOVA for the measure of recall valence yielded a marginal audience-attitude main effect, $F(1, 148) = 2.57$, $p = .11$, $\eta_p^2 = .09$, which was qualified by a significant Audience Attitude x Communication Goal interaction, $F(1, 148) = 13.72$, $p < .001$, $\eta_p^2 = .09$. Despite significant audience tuning in both communication-goal conditions, recall valence was biased toward the audience's attitude *only* in the shared-reality-goal condition, as confirmed by planned contrasts; $t(75) = 3.73$, $p < .001$, $d = 0.95$ for the shared-reality-goal; and $t(77) = 1.49$, *ns*, $d = 0.32$ for the compliance-goal condition. The 3-way interaction including timing of manipulations was nonsignificant, $F < 1$. Importantly, the Audience Attitude x Communication Goal interaction was significant for *both* encoding conditions in two separate ANOVAs, $F(1, 75) = 8.60$, $p < .01$, $\eta_p^2 = .10$, and $F(1, 73) = 5.45$, $p < .05$, $\eta_p^2 = .07$, for the pre-encoding and post-encoding condition, respectively. Thus, there was no evidence that the timing of manipulations moderated the significant 2-way interaction. No other main effects or interaction reached significance, *F*s < 2.7, *p*s > .11.

Therefore, the obtained effects were *not* constrained by the timing of the manipulations. Although this extension of boundary conditions is a positive finding in itself, we also critically examined the negative finding, that is, the lack of effects for the timing of manipulations. To this end, we calculated the post hoc power for detecting possible effects. Based on a Type I error threshold of .05 and our sample size, the power to detect an effect of the same size as was obtained for the significant Audience Attitude x Communication Goal interaction was .97. The power to detect an effect of the same size as has been found for encoding differences (pre-encoding vs. post-encoding) in similar studies ($\eta_p^2 = .13$, in Rothbart, Evans, & Fulero, 1979; $\eta_p^2 = .19$, in Harkins et al., 1977) was greater than .99. The power to detect a medium-size effect ($\eta_p^2 = .06$), as classified by Cohen (1988), was .88. Thus, regardless of the different assumptions of the effect size, the power for detecting possible effects of timing of manipulation was satisfactory. Consistent with earlier research (e.g., Echterhoff et al., 2008) and the above findings, addi-

TABLE 1. Experiment 1: Valence of Message and Recall Protocols as a Function of Audience Attitude (Positive vs. Negative), Communication Goal (Shared Reality vs. Compliance) and Time of Manipulations (Pre-Encoding vs. Post-Encoding)

	Time of Manipulations															
	Pre-Encoding								Post-Encoding							
	Protocol															
	Message				Recall				Message				Recall			
	Audience Attitude															
	Positive		Negative		Positive		Negative		Positive		Negative		Positive		Negative	
Communication Goal	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Shared reality	1.50	1.19	-0.58	2.18	1.05	0.83	-0.29	1.13	0.68	1.89	-1.03	1.95	0.50	1.27	-0.24	1.11
Compliance	2.18	1.78	-2.57	1.77	0.34	1.30	0.55	1.34	1.98	1.60	-2.95	1.47	-0.25	1.22	0.37	1.46

Note. Message valence and recall valence were coded on an 11-point scale, ranging from -5 (extremely negative) to +5 (extremely positive). Shared reality/post-encoding/positive, $n = 20$, shared reality/post-encoding/negative, $n = 19$; compliance/post-encoding/positive, $n = 19$; compliance/post-encoding/negative, $n = 21$; Shared reality/pre-encoding/positive, $n = 19$, shared reality/pre-encoding/negative, $n = 19$; compliance/pre-encoding/positive, $n = 20$; compliance/pre-encoding/negative, $n = 19$.

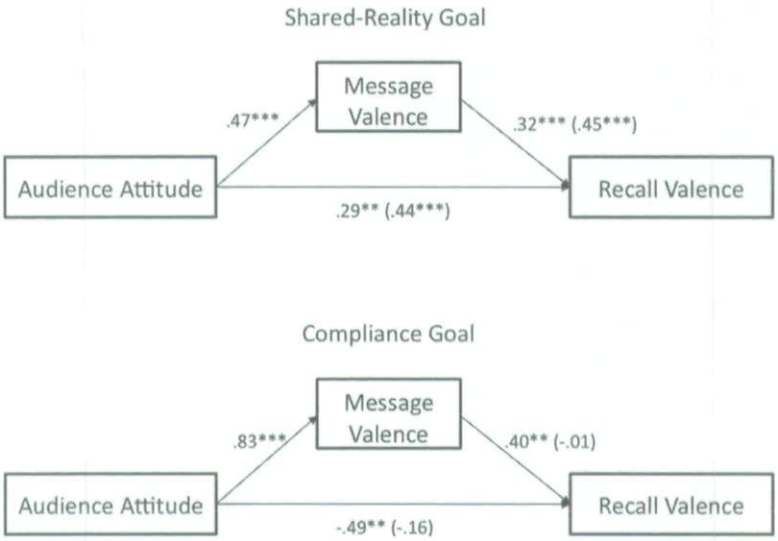


FIGURE 2. Mediation analyses for the shared-reality-goal condition (top panel; n = 77) and compliance-goal condition (bottom panel; n = 79) with audience attitude as IV (positive = +1, negative = -1), message valence as mediator, and recall valence as the DV. Path coefficients are standardized β-coefficients from (multiple) regression analyses. The numbers in parentheses represent the direct effect (bivariate β-coefficients) of each of the two predictors (audience attitude and message valence) on recall valence prior to the inclusion of the other predictor. $^{**}p < .01$, $^{***}p < .001$.

tional correlational analyses revealed that the association between message and recall valence was significantly higher in the shared-reality-goal condition than in the compliance-goal condition; $r(75) = .45$, $p < .001$ vs. $r(77) = -.01$, *ns*, respectively; $z = 3.03$, $p < .01$, for the test of difference between the correlations.

Given that audience tuning was stronger in the compliance (vs. shared-reality) goal condition, one may suspect that the missing recall bias in the former condition could be due to a contrast effect in participants who produced extremely tuned messages (Echterhoff et al., 2008; also see Herr, Sherman, & Fazio, 1983). If communicators perceived their messages as biased and corrected for this bias by contrasting their recall away from their messages, then the memory bias would be eliminated in the compliance-goal condition. To explore this possibility, we divided participants in the compliance-goal condition into high-tuners and low-tuners based on a median split for message bias (Mdn = 2.50). If high-tuners contrasted their recall away from their messages, the correlation between message and recall valence should be negative. However, we found that for high-tuners this correlation was *not* negative, $r(37) = .13$, *ns*. Indeed, if anything, it was more positive than it was for low-tuners who had a negative correlation, $r(38) = -.24$, *ns*. These findings are inconsistent with the notion of a contrast correction. This was also true for analyses restricted to post-encoding conditions, $rs > .11$, $ps > .41$.

Mediation Analysis. To further examine the role of the message in the obtained effects, we tested for mediation of the audience-attitude effect on recall valence via message valence (see Figure 2). Because, as reported above, the audience-attitude

effect on message valence depended on participants' communication goal, we examined mediation separately for the two communication-goal conditions.

In the shared-reality-goal condition, the four criteria for mediation suggested by Baron and Kenny (1986) were fulfilled. Consistent with the findings from the above ANOVA, (1) the IV audience attitude (contrast coded: positive = +1; negative = -1) had a significant effect on the DV recall valence, $\beta = .44$, $t(75) = 4.18$, $p < .001$, and (2) on the proposed mediator (message valence), $\beta = .47$, $t(75) = 4.54$, $p < .001$. Also, (3) the proposed mediator significantly predicted the DV, $\beta = .45$, $t(75) = 4.38$, $p < .001$. Most importantly, (4) in a multiple regression with both audience attitude and message valence as predictors, the effect of the message remained significant, $\beta = .32$, $t(75) = 2.83$, $p < .01$, and the effect of audience attitude was reduced, $\beta = .29$, $t(75) = 2.55$, $p < .01$. The indirect effect *ab* of the IV through the mediator on the DV was significant in both the Sobel test of mediation (Sobel, 1982; $ab = .18$, $Z = 2.36$, $p < .01$, one-tailed) and in an alternative bootstrapping procedure (Preacher & Hayes, 2004) based on 3.000 resamples, with the 95% confidence interval for *ab* ranging from 0.03 to 0.36. Thus, consistent with previous findings (see McCann & Higgins, 1992), the effect on recall valence was apparently driven—at least partially—by the audience-tuned message.

In the compliance-goal condition, two criteria of mediation proposed by Baron and Kenny (1986) were *not* met: As reported above, audience attitude had no significant, and if anything a reversed, effect on message valence, $\beta = -.16$, $t < 1.5$, *ns*, and message did not predict recall valence, $\beta = -.01$, *ns*.

Accurate Reproductions in Message and Recall Protocols. Correlations between recall bias and accurate reproductions in message and recall were low and *not* negative; both in the complete sample, $r(154) = .18$, $p < .05$ and $r(154) = .09$, *ns*, and within the post-encoding conditions only, $r(75) = .21$, $p = .07$ and $r(75) = -.02$, *ns*.[1] Thus, there was no evidence that a lower recall bias was associated with more accurate rehearsal or retrieval of the target input information.

Confidence in Own View of the Target. Participants in the shared-reality-goal condition reported higher confidence in their own view of the target person ($M = 5.23$, $SD = 1.57$), which was elicited after message production, than did participants in the compliance-goal condition ($M = 4.78$, $SD = 1.71$), as indicated by a significant communication-goal effect for "confidence in own view of the target" in a *t*-test for independent samples, $t(154) = 1.71$, $p < .05$, one-tailed, $d = 0.27$.

Importantly, greater audience-tuning message bias (see *Measures*) was significantly correlated with greater confidence in own view about the target in the shared-reality-goal condition, but not in the compliance-goal condition, $r(75) = .31$, $p < .01$ vs. $r(77) = -.03$, *ns*, respectively; $z = 2.12$, $p < .05$, for the test of difference between the correlations. Furthermore, the same pattern of results was found for the positive association between participants' confidence in their own view about the target and their audience-tuning recall bias, $r(75) = .29$, $p < .01$ vs. $r(77) = .19$, *ns*, respectively. Together, these results are consistent with the notion that participants in the shared-reality-goal condition, but not those in the compliance-goal condition, formed a confident view of the target by reducing uncertainty through audience tuning.

1. Analogous to these results, in the pilot study the audience-tuning recall bias was not significantly correlated with accurate reproductions in either the message or recall protocols (*ps* > .32).

Taken together, the pilot study and Experiment 1 are the first studies demonstrating that the audience-tuning memory bias can occur even when the audience-tuning goal is activated *after* the target input information has already been encoded. These findings emphasize the importance of the motivational processes involved in the occurrence of the effect: The fact that communicators in the shared-reality-goal condition not only were *able to* but actually *did* flexibly re-organize the original target information in an audience-congruent manner is fully in line with our motivational account of audience-tuning effects on memory.

Notably, while we successfully extended the existing paradigm using a post-encoding manipulation of audience attitude and audience-tuning goal, we did not present these two independent variables separately. Thus, there are two more conditions that one could potentially look at in future studies: participants may learn about their communication goal *before*, and learn about the audience's attitude only *after*, encoding the target information and vice versa. Such variations can certainly happen in real life. However, given that the participants in our studies were willing and able to reorganize their representation of the original information, we would expect similar results with such alternative manipulations of communication goal and audience attitude (i.e., manipulations that disentangle the timing).

The present study is also the first that measured communicators' confidence in their own view of the target. Until now it was only hypothesized that communicators might use audience tuning to reduce uncertainty about the target person. However, Experiment 1 clearly demonstrates that audience tuning to create a shared reality (vs. to comply with a blatant demand) leads to a more confident view of the target, and that the size of both the message and recall bias is positively correlated with communicator's confidence in their own view of the target.

EXPERIMENT 2

Our shared-reality account emphasizes epistemic motives driving audience tuning. That is, audience-tuned communication is thought to reduce the uncertainty that arises from the evaluative ambiguity of the original input information about the target. However, existing research in the saying-is-believing paradigm has not yet examined directly the role of communicators' need to gain epistemic certainty (Higgins & Pittmann, 2008). Although findings from several studies (Echterhoff et al., 2005, 2008; Higgins et al., 2007; Kopietz, Echterhoff, Niemeier, Hellmann, & Memon, 2009) are generally consistent with this shared-reality account, it has never been tested whether the audience-tuning memory bias actually occurs *to the extent to which* communicators satisfy their need for epistemic certainty by tuning messages to their audience's view of the target. The present research was conducted to remedy this shortcoming by manipulating, for the first time, communicators' need for epistemic certainty in the saying-is-believing paradigm. We assumed that when communicators experience high (vs. low) need for (epistemic) certainty concerning their social judgments they would be motivated to construct audience-congruent representations of the target through audience tuning.

To manipulate participants' need for epistemic certainty directly, they were asked to respond to pictures with people in various social settings requiring the formation of personal impressions in a TAT-type task. This task supposedly assessed participants' ability to form reliable judgments about other people. To in-

duce different levels of epistemic need for certainty about their ability to form social judgments, we provided participants with bogus feedback about their performance. Specifically, participants who received negative feedback about their ability to form reliable social judgments should be epistemically motivated to create a shared view about the target person with their audience in the subsequent referential communication task. This motive should be less present in participants who received positive feedback about their ability to form reliable social judgments (i.e., who experienced a low need for epistemic certainty). In sum, we expected in Experiment 2 that only participants who experienced a strong need to satisfy their epistemic motives, that is, participants in the high need for epistemic certainty condition, should engage in audience tuning. Furthermore, based on their audience-tuned message, these participants should then form a confident view of the target.

METHOD

Participants and Design. Participants were 74 students at Bielefeld University (36 female, 38 male; mean age = 22.9, *SD* = 3.6), who received a compensation of 5 (about U.S. $7). Based on suspicion probes three participants were excluded, resulting in the above described sample. The experiment was based on a 2 (audience attitude: positive vs. negative) x 2 (need for epistemic certainty: low vs. high) between-participants design.

Procedure and Materials. The procedure and materials were analogous to the ones used in Experiment 1 with the following exceptions: Before the communication task, participants were first asked to provide judgments and impressions about characters depicted in ambiguous social interaction settings and then received feedback about their ability to form reliable social judgments. This task was employed to manipulate participants' domain-specific confidence, specifically, confidence in their ability regarding social judgment and impression formation. We selected five pictures showing ambiguous social interactions from the Multi-Motive Grid (MMG; Schmalt, Sokolowski, & Langens, 2000; Sokolowski, Schmalt, Langens, & Puca, 2000), a diagnostic instrument modeled after the Thematic Apperception Test to assess individuals' motivational preferences (for an example, see Appendix). These pictures allow different interpretations and judgments about the depicted characters. For each of the pictures, which were presented in a fixed order (MMG pictures 4, 3, 8, 10, 2), participants had to choose 1 out of 5 brief statements that they thought best described the characters in the scene (see Appendix, bottom). The original MMG statements were slightly modified to focus more directly on social judgments and impressions.[2] Shortly after completion of the social judgment task, participants received performance feedback, which served as an

2. In a pretest of the initial confidence manipulation, 20 participants, who received the ambiguous behavioral passages about the target person's behavior, provided ratings on two relevant measures described above, (a) their reliance on their intuitive judgments about other people's inner qualities, and (b) their epistemic certainty about their impressions of the target person (based on the three above items; Cronbach's alpha = .87). Mean ratings for both measure (a) and (b) were significantly higher in the low-need condition ($M = 4.10$, $SD = 1.52$; and $M = 5.80$, $SD = 1.35$, respectively) than in the high-need condition ($M = 2.90$, $SD = 1.20$; and $M = 4.73$, $SD = 1.13$, respectively), $t(18) = 1.96$, $p < .05$, $d = 0.88$, and $t(18) = 1.91$, $p < .05$, $d = 0.86$, respectively. Thus, the pretest indicated that the manipulation was suitable for the present purpose.

experimental manipulation and, hence, was not related to the participants' actual responses. At the top of the screen, the feedback was presented as an analysis of the individual participant's responses, which presumably allowed inferences with a statistical error probability of no more than 5%. Participants in the *high need for epistemic certainty condition* read the following feedback:

> "Relative to other test takers, your ability to form reliable social judgments and impressions is below average (low). To achieve a sufficiently appropriate impression of other people you probably need supplementary information from other sources. This result can be taken to indicate that you should not feel too confident about your own social judgments."

Participants in the *low need for epistemic certainty condition* read the following feedback:

> "Relative to other test takers, your ability to form reliable social judgments and impressions is above average (high). To achieve a sufficiently appropriate impression of other people you probably do not need supplementary information from other sources. This result can be taken to indicate that you can feel confident about your own social judgments."

To reduce possible confounds of this manipulation (e.g., with mood), participants received additional feedback on a second performance aspect, which was irrelevant to confidence concerning social judgment and impression. This second piece of bogus feedback concerned an index of "motor reaction," which supposedly reflected "the speed of transferring complex cognitions into motor responses." Participants in the high-need condition were told that their index of motor reaction was *above* average, whereas participants in the low-need condition were informed that their index of motor reaction was *below* average. Thus, all participants overall received mixed (i.e., both positive and negative) feedback about their task performance. However, only the feedback regarding social judgment and impressions was critical for the present study. To check for potential mood effects, we added two mood measures. After receiving the feedback, participants were given the same referential communication task as in Experiment 1. In contrast to Experiment 1, Experiment 2 used the standard pre-encoding manipulation of audience attitude.

Measures. We used the same measures as in Experiment 1 with the following exceptions. Participants indicated their mood on two 7-point rating scales ("Are you presently in a good or bad mood?" and "How do you feel right now?" ranging from 1 = *very bad* to 7 = *very good*). These two measures were highly correlated, $r(72) = .89$, $p < .001$, and therefore averaged for the subsequent analyses. Participants were also asked to rate their confidence in the accuracy of their social judgments ("Typically I feel confident that I can correctly judge other people's qualities," ranging from 1 = *not at all* to 7 = *very much*). This rating was included as a manipulation check of the confidence manipulation.

Furthermore, we collected the time communicators needed to produce their message. The recording of the time for message started when the textbox for inserting the message opened on the screen and ended when the participants clicked on the *send* button.

TABLE 2. Experiment 2: Valence of Message and Recall Protocols as a Function of Audience Attitude and Need for Epistemic Certainty

	Protocol							
	Message				Recall			
	Audience Attitude							
	Positive		Negative		Positive		Negative	
Epistemic Need	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
High	0.74	2.26	-1.45	2.03	1.08	1.70	-0.70	1.21
Low	-0.65	2.49	-0.61	2.34	1.28	1.49	-0.29	1.66

Note. Message valence and recall valence were coded on an 11-point scale, ranging from -5 (extremely negative) to +5 (extremely positive). High need/positive attitude, $n = 19$; high need/negative attitude, $n = 20$; low need/positive attitude, $n = 18$; low need/negative attitude, $n = 17$.

As in Experiment 1, intercoder correlations for our valence measures were high, $r = .96$, and $r = .91$, for message and recall, respectively. Also, the scores from the two accuracy codings were sufficiently correlated ($rs > .82$, $ps < .001$). Thus, means of the coders' valence as well as accuracy ratings served as DVs in the subsequent analyses. Furthermore, the reliability of the 3-item measure of epistemic certainty *regarding their own view of the target person* (see Experiment 1 for the items) was sufficiently high (Cronbach's $\alpha = .88$) to permit the calculation of a single mean score.

RESULTS AND DISCUSSION

We report all results based on 2 x 2 ANOVAs with *need for epistemic certainty* (high vs. low) and *audience attitude* (positive vs. negative) as the IVs.

Manipulation Check. Participants in the low-need condition ($M = 3.77$, $SD = 1.52$) felt more confident about the accuracy of their judgments of other people than did participants in the high-need condition ($M = 3.08$, $SD = 1.38$), as indicated by a main effect of epistemic need in the ANOVA, $F(1, 70) = 4.11$, $p < .05$, $\eta_p^2 = .06$. The main effect for audience attitude and the interaction effect were nonsignificant, $Fs < 1$.

Mood. Mood can have various effects on memory (e.g., Bower, 1981; Ellis & Ashbrook, 1988), and the negative feedback in the high-need condition (vs. the positive feedback in the low-need condition) might potentially decrease participants' mood. Although, as explained above, all participants were provided with mixed (i.e., positive and negative) feedback after the social judgment task to prevent effects on mood, we still examined if there were any mood differences between conditions. No such differences were found: The ANOVA for the mean mood rating as DV yielded no significant effects, $Fs < 1$.

Message and Recall Valence. Importantly, the valence of participants' messages about the target person was biased in the direction of their audience's attitude *only* in the high-need condition, but not in the low-need condition (see Table 2, left panel), as indicated by a significant Audience Attitude x Epistemic Need interaction, $F(1, 70) = 4.11$, $p < .05$, $\eta_p^2 = .06$. As predicted, participants in the high-need condition tuned their message to their audience's attitude about the target person, $F(1, 70) = 8.98$, $p < .01$, $\eta_p^2 = .11$, whereas no such effect was found in the low-need condition, $F < 1$, *ns* (calculated with planned contrasts). Message tuning in the high-need condition was sufficiently strong to lead to a significant main effect of audience attitude, $F(1, 70) = 4.39$, $p < .05$, $\eta_p^2 = .06$. There was no significant main effect of epistemic need, $F < 1$.

For recall valence as DV (see Table 2, right panel), the ANOVA yielded a significant main effect of audience attitude, $F(1, 70) = 22.43$, $p < .001$, $\eta_p^2 = .24$. In contrast to the previous analyses for message valence, this effect was significant in both the high-need condition, $F(1, 70) = 13.37$, $p < .001$, $\eta_p^2 = .16$, and the low-need condition, $F(1, 70) = 9.37$, $p < .01$, $\eta_p^2 = .12$, as calculated with planned contrasts. The main effect of epistemic need and the interaction effect were nonsignificant, $Fs < 1$, *ns*.

However, despite the audience-attitude effect on recall bias in the low-need condition and consistent with Experiment 1, correlational analyses revealed that the message valence and recall valence were positively associated in the high-need

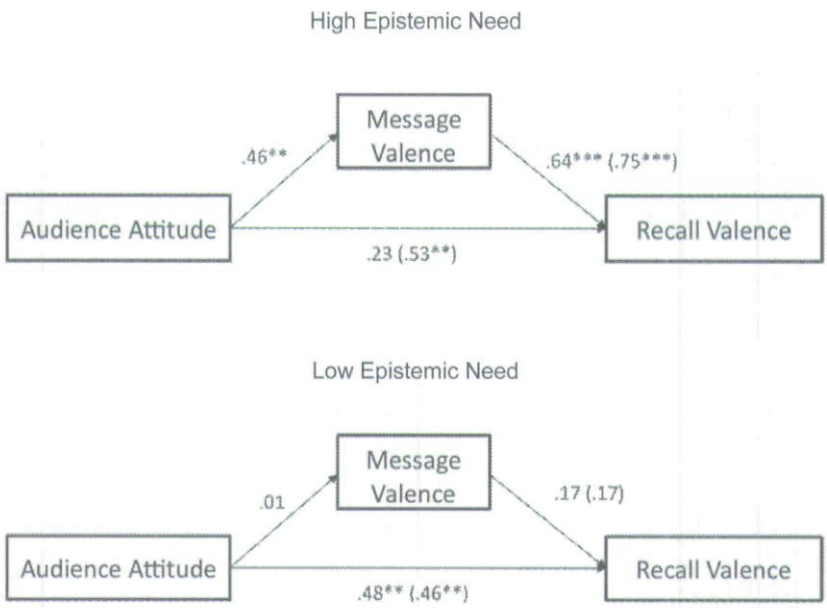


FIGURE 3. Mediation analyses for the high need condition (top panel; n = 39) and low need condition (bottom panel; n = 35) with audience attitude as IV (positive = +1, negative = -1), message valence as mediator, and recall valence as the DV. Path coefficients are standardized β-coefficients from (multiple) regression analyses. The numbers in parentheses represent the direct effect (bivariate β-coefficients) of each of the two predictors (audience attitude and message valence) on recall valence prior to the inclusion of the other predictor. $^{**}p < .01$, $^{***}p < .001$.

condition, but not in the low-need condition; $r(37) = .75$, $p < .001$ vs. $r(33) = .17$, *ns*, respectively; $z = 3.30$, $p < .001$, for the test of difference between the correlations.

Mediation Analysis. Analogous to Experiment 1, we examined mediation separately for the high- and low-need condition (see Figure 3). Consistent with the findings from Experiment 1, the first three conditions for mediation were satisfied in the high-need condition, $\beta s > 0.46$, $ts > 3.18$, $ps < .01$. Again, when both audience attitude and message valence were entered into a multiple regression as predictors for recall valence, the effect of the message reached significance, $\beta = 0.64$, $t(37) = 5.43$, $p < .001$, and the effect of audience attitude was reduced to marginal significance, $\beta = 0.23$, $t(37) = 1.94$, $p = .06$. Furthermore, the indirect effect *ab* was significant in both the Sobel test of mediation (Sobel, 1982; $ab = .50$, $z = 2.71$, $p < .01$) and in an alternative bootstrapping procedure (Preacher & Hayes, 2004) based on 3.000 resamples, with the 99% confidence interval for *ab* ranging from 0.09 to 1.06. Thus, consistent with Experiment 1 and previous findings (see McCann & Higgins, 1992), in the high-need condition the effect on recall valence was driven by the audience-tuned communication.

In the low-need condition, on the other hand, three criteria of mediation proposed by Baron and Kenny (1986) were *not* met: Audience attitude had no significant effect on message valence, $\beta = 0.01$, $t < 1$, *ns*, message valence was not significantly associated with recall valence, $\beta = 0.17$, $t < 1$, *ns*, and when audience attitude and message valence were entered simultaneously into the multiple regression analysis there was virtually no change in any of the beta coefficients.

Accurate Reproductions in Message and Recall Protocols. As in Experiment 1 and our previous studies (e.g., Echterhoff et al., 2008), there was no evidence that a higher audience-tuning recall bias could be explained by less accurate rehearsal during message production. If anything, the opposite pattern was obtained: The correlation between number of accurate reproductions in participants' messages and recall bias was slightly, although nonsignificantly, positive, $r(72) = .15$, $p = .21$. There was also no evidence that the magnitude of the recall bias was a result of a potentially worse memory for the original target material in the free recall task as indicated by a nonsignificant correlation between recall bias and the amount of accurate reproductions in the recall, $r(72) = .05$, *ns*.

Time for Message Production. According to shared-reality theory, communicators in the high-need condition achieve epistemic certainty during message production, specifically by engaging in audience tuning. In contrast, participants in the low-need condition do not need to achieve certainty through message production. Thus, participants in this condition can afford to spend less time for message production. Consistent with standard procedures for analyzing response latencies, message production times that were at least two standard deviations above the mean (304,187 ms) were regarded as outliers and recoded to 675,924 ms, which equaled the mean plus two standard deviations. Because the distribution of these scores was significantly different from a normal distribution (Kolmogorov-Smirnov $z = 1.56$, $p = .02$), all scores were log-transformed. The distribution of the log-transformed scores did not differ significantly from normality (Kolmogorov-Smirnov $z < 1$, *ns*). An ANOVA revealed a significant main effect of epistemic need, $F(1, 70) = 3.21$, $p < .05$, $\eta_p^2 = .04$, reflecting that participants with a low need for epistemic certainty ($M = 260{,}254$, $SD = 131{,}301$) took *less* time to produce their message than did participants with a high need for epistemic certainty ($M = 325{,}274$, $SD = 168{,}320$). The main effect of audience attitude and the interaction effect were nonsignificant, $Fs < 1.3$.[3]

Certainty Regarding Own View of the Target. In contrast to Experiment 1 we did not expect mean differences for participants' certainty regarding their view of the target. While participants in the low-need condition should be confident in their view even before communication (due to the bogus feedback), participants in the high-need condition should have gained epistemic certainty through their audience-tuned communication. Indeed, we found no differences between the conditions, as calculated with a *t*-test for independent samples, $M = 4.50$, $SD = 0.97$ vs. $M = 4.59$, $SD = 1.20$, respectively, $t < 1$.

However, analogous to Experiment 1 and consistent with our prediction, greater audience-tuned message bias was significantly correlated with greater confidence in own view about the target *only* in the high-need (vs. low-need) condition, $r(37) = .31$, $p < .05$ (one-tailed) vs. $r(33) = .01$, *ns*, respectively. Like in Experiment 1, the same pattern of results was also found for the association between participants' confidence in their own view and their audience-tuning recall bias, with a positive significant effect found *only* in the high-need (vs. low-need) condition, $r(37) = .35$,

3. We also investigated whether or not the association between message valence and recall valence would be moderated by the time communicators needed to produce their message. This was not the case ($b = .08$, $t < 1$). Thus, it was shown that time of message production per se (i.e., due to longer and/or deeper processing of the original target information) does not predict the effect.

$p < .05$ vs. $r(33) = .01$, *ns*, respectively. Together, these results are consistent with the notion that communicators, when motivated by shared reality, will form a more confident view of the target by reducing uncertainty through audience tuning.

In sum, Experiment 2 was the first study to directly manipulate communicators' motivation to share reality with their audience. Only participants in the *high need for epistemic certainty* condition were motivated to achieve a reliable view of the target person through audience tuning. Their audience-tuned messages were not only the mediator for the audience-attitude effect on memory, but they were also associated with communicators' confidence in their own view of the target. In contrast, participants that received the bogus feedback that they are highly capable to form their own impressions of, and social judgments about, other people (without the need for supplementary information from others) did not exhibit audience tuning at all.

Although participants in the low need for epistemic certainty condition showed no audience-*tuning* memory bias, their later recall was nevertheless consistent with their audience's attitude. This is an unexpected finding, which raises questions about the nature of the recall bias in this condition. Is it the result of a shared reality? Although this is possible, it is not very likely for the following reasons. Communicators in the low-need condition ignored their audience's attitude in their message production. In other words, these communicators did not establish a commonality with their audience's view in communication. Thus, it is unlikely that they interacted with the audience to create a shared reality. Furthermore, in the low-need condition there was no association between communicators' confidence in their own view of the target and their biased representation of the target (i.e., the audience-tuning recall bias). Thus, what helped these communicators to achieve epistemic certainty about the target was apparently *not* the assimilation of their own view of the target to their audience's view. However, independent of needing or having a shared reality with their audience, it is possible that the audience's attitude toward the target was treated as relevant extra information about the target. (We discuss this issue again below.)

GENERAL DISCUSSION

In our studies, the *audience-tuning memory bias* occurred when communicators were epistemically motivated to create a shared reality with their audience, but not when audience tuning was motivated by another goal or when there was no epistemic need to share reality with their audience through audience tuning. Consistent with shared-reality theory (Echterhoff et al., in press; Hardin & Higgins, 1996), only communicators who felt an epistemic need for informational help from others used audience tuning as a way to satisfy their *need for certainty concerning the target person*. Additional mediation analyses confirmed the important role of the audience-tuned message (also see Higgins & McCann, 1984). For the first time, our findings directly demonstrate that when communicators are motivated to create a shared reality with their audience about a target person in the service of increasing epistemic certainty, then greater audience tuning is associated with higher personal confidence in their own view of the target person. That is, communicators' audience tuning to create a shared reality does work to increase epistemic certainty.

Experiment 1 also addressed the question of the role in audience-tuning memory bias of *when* the information about the audience attitude is received. In the only prior study that used a post-encoding manipulation of audience attitude, Sedikides (1990) found that participants did form an audience-congruent *impression* of the target person when writing down what they privately thought of him. But impression reports are more susceptible to strategic processes precisely because they are like messages themselves, which is not the case for participants who are given memory instructions to recall, as accurately as possible, the original input information about the target person. In our case, participants were *trying to be fully accurate* in their reproduction of the information details, and thus they exhibited the audience-tuning memory bias *involuntarily*. That means that even when they wanted to access the original input information they could not do so anymore (Higgins, 1999). In contrast, when participants give a biased impression of the target person, it is not clear whether, if asked, they could or could not provide an unbiased reproduction of the original information.

The results from Experiment 1, including the pilot study, have potentially far-reaching consequences because they greatly extend the range of experiences that can be subject to audience-tuning effects on memory. These findings may be especially important for applied research, such as the phenomenon of eyewitness memory. Eyewitnesses may achieve a sense of confidence about aspects of a witnessed incident (e.g., a suspect's actions) by tuning their retelling of the incident to a co-witness (or an expert on what happened) who expresses his or her belief that the suspect is guilty or not guilty. Under the circumstances identified in our research, this could result in a shared reality with the co-witness, which may later impact the eyewitness's own memory of and testimony about the event (also see Kopietz et al., 2009).

Consistent with the burgeoning literature on adaptive social cognition (e.g., Sinclair & Kunda, 1999; Smith & Semin, 2007), our findings suggest that people can flexibly reprocess or reorganize information when sufficiently motivated (Chaiken, Giner-Sorolla, & Chen, 1996; Thompson et al., 1994; Wyer, 2004). Also, from a shared-reality perspective, the timing should not matter. Thus, when communicators tune to their audience to create a shared reality, their construction of their view on the topic need not be constrained by how they initially represented the input information about the topic. Rather, given that they are motivated to achieve a shared reality, they can adapt their memory processes in ways that help them to attain this goal. In contrast, when participants are not motivated by shared reality but rather by alternative goals, such as to be polite or comply with a demand, there will be no motive to establish a new audience-congruent memory even if they tune their messages to the audience for these goals. In sum, our findings indicate that to establish a socially shared reality, it is not important *when* you get the input information—motivationally, what matters is *whether* you want to establish a shared reality.

In everyday life, people often try to reduce uncertainty about some previous event, such as a job candidate's behavior or the speech of a political candidate, by communicating about such experiences with a relevant audience; an audience with whom they can create a shared reality about the event and thereby achieve a sense of certainty or "objectivity" (e.g., Festinger, 1950; Hardin & Higgins, 1996). Although this notion is as old as shared-reality theory itself, it has never been fully investigated. Our experiments fill this gap. In the present studies, audience tuning

to create a shared reality not only biased communicators' memory of the target but also increased their personal confidence in their view of the target. Intriguingly, this was only the case when communicators experienced a need for epistemic certainty that sharing reality with others could provide. When their need for epistemic certainty was already fulfilled, there was no reason to create a shared reality with the audience through communication.

We should also note that our data do not support several alternative accounts. First, we examined the possibility that the memory bias was eliminated in the compliance-goal condition because communicators perceived their messages as biased and corrected for this bias by contrasting their recall away from their messages. However, the data were not consistent with this account (see Experiment 1). Second, there was no evidence that accurate rehearsal or retrieval of the original input information led to a reduction of the audience-tuning memory bias (see Experiments 1 & 2).

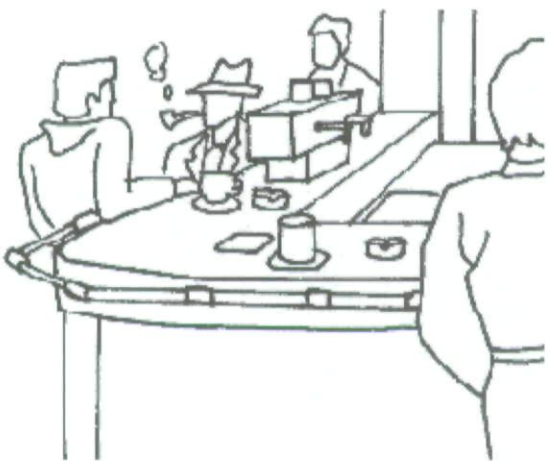
Third, our findings cannot be explained by accounts invoking dissonance reduction (Festinger, 1957) or forced compliance (e.g., Brehm & Cohen, 1962). Such accounts would predict that the more participants feel that they constructed their message in order to comply with external demands, the more they can justify what they did as externally determined—thus adding consonant cognitions and reducing dissonance. Therefore, if dissonance were the mechanism underlying the effects found in our study, the audience-tuning memory bias would be weaker the more participants felt they were complying with external demands when they constructed their message. However, Experiment 1 found that the correlation between participants' belief that they complied with external demands and the size of the audience-tuning memory bias was essentially zero (see *Manipulation Check*). (For further arguments against accounts invoking dissonance reduction, see Echterhoff et al., 2005, 2009).

Fourth, the results of Experiment 2 do not support an explanation of audience-tuning effects on memory just in terms of communicators trusting their own view of the target more under some conditions than others, such as trusting themselves more when their communication goal was to share reality than when it was simply to comply with a demand or to be polite. Notably, communicators trusting their own view of the target would still involve epistemic certainty but it would not necessarily involve a shared-reality mechanism. However, in stark contrast to this account, in Experiment 2 it was precisely those communicators who had *less* trust in their epistemic knowledge of the target person (i.e., communicators in the high-need condition) who showed the stronger audience-tuning effect on memory. Indeed, those participants who had the highest trust in their own view of the target person (i.e., communicators in the low-need condition) showed no audience-tuning memory bias at all.

The present findings suggest new and promising avenues for future research. For example, given that communicators can use different sources of epistemic input to achieve a confident view about a target (see Kruglanski et al., 2005), under what conditions do they use these alternative sources? In our paradigm, there are three potential epistemic inputs: (1) *communicators' own opinion* of how to evaluate the target person from their impression of the target after reading the input information; (2) the *audience's opinion* of how to evaluate the target person based on the audience's past experiences with the target; and (3) the opinion of the target that is contained in the *audience-tuned message* about the target.

According to shared-reality theory, the impact of (3) on epistemic certainty, which in turn influences the evaluative tone of communicators' memory of the target, depends on whether or not the message is experienced as a shared reality with the audience about the target (e.g., Echterhoff et al., 2005, 2008). Other research (Higgins et al., 2007) suggests that there are conditions where (3) might not be necessary for an audience-tuning memory bias, such as when the audience is a group rather than an individual, and the group by itself has sufficient epistemic authority. In the low-need condition of Experiment 2, the communicators also exhibited an audience-congruent memory bias despite the fact that they did not tune their message to their audience, which suggests that some combination of (1) and (2) was sufficient to create epistemic certainty. What exactly was this (1) plus (2) mechanism that produced an audience-congruent memory bias without an audience-tuning mechanism needs to be investigated in future research. More generally, future research is needed to understand more fully the conditions under which communicators use the alternative sources of epistemic certainty to arrive at epistemic confidence about the world.

APPENDIX. EXAMPLE OF A PICTURE USED AS STIMULUS MATERIAL IN THE INITIAL SOCIAL JUDGMENT AND IMPRESSION TASK



(Taken from the Multi-Motive Grid; Schmalt et al., 2000. Copyright 2000 by Harcourt Test Services GmbH. Reprinted with permission.)

Participants chose 1 out of the following 5 descriptions:

(1) The man at the end of the counter is excluded.
(2) The man with the pipe is pleased.
(3) Someone could lose their face in this situation.
(4) The man with the hood is listening attentively.
(5) All people in this situation feel relaxed.

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