SHARED REALITY EFFECTS OF TUNING MESSAGES TO MULTIPLE AUDIENCES

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Our study explores how communicating with audiences who hold opposite opinions about a target person can lead to a biased recall of the target's behaviors depending on whom a shared reality is created with. By extending the standard "saying-is-believing" paradigm to the case of two audiences with opposite attitudes toward a target person, we found that communicators evaluatively tune their message to the attitude of each audience. Still, their later recall of the target's behavior is biased toward the audience's attitude only for the audience with whom they created a shared reality. Shared reality creation was manipulated by receiving feedback that, based on the communicator's message, an audience was either able (success) or unable (failure) to successfully identify the target person, with the former creating a shared reality. These results highlight the importance of shared reality creation for subsequent recall when communicating with multiple audiences on a topic.

Over the last two decades, numerous studies have shown how communicators' creation of a *shared reality* with an audience about a target topic impacts communicators' memory of the target (for a review, see Echterhoff & Higgins, 2017). Interpersonal communication, however, is certainly not restricted to the case of communicating to a single audience (Case, 2002; Wilson, 2000). On almost any given topic, people exchange information with others holding similar or different opinions. Could the memory of the information on the topic be affected by the experience of sharing common feelings or beliefs about the topic with one audience but not the other? Could the order of those similar or distant opinions affect

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the recollection of the original information exchanged on the topic? The present study addresses these questions through the lens of shared reality theory (Echterhoff et al., 2009; Hardin & Higgins, 1996).

In the shared reality literature, very few studies have explored the effect of communicating with multiple audiences (Mata & Semin, 2020; McCann et al., 1991). To our knowledge, no study has investigated how communicators' memory of an issue is affected by communicating to multiple audiences with different opinions but establishing a shared reality with only one audience and not the others. The present study addresses this matter using the standard "saying-is-believing" shared reality paradigm (Echterhoff et al., 2005; Higgins & Rholes, 1978).

SHARED REALITY IN INTERPERSONAL COMMUNICATION

Shared reality is a motivated process defined as experiencing with another person a commonality of thoughts, feelings, or concerns (i.e., inner states) about something (Echterhoff et al., 2009). People seek to share realities with others either to fulfill a *relational* motive (connecting over a shared opinion) or an *epistemic* motive (validation of a "truth" about the world; Higgins, 2019). The saying-is-believing paradigm has often been employed to study shared reality in interpersonal communication (Higgins, 1992). It has participants read a short essay about a target person's behaviors. Then, without mentioning the target's name, they describe the target to an audience whose task is to identify it. The brief essay usually contains evaluatively ambiguous behavioral descriptions of the target (Echterhoff et al., 2005). Because essays are evaluatively ambiguous, participants are more inclined to use the audience's attitude to validate their perception and, in doing so, create a shared reality with the audience (Echterhoff & Schmalbach, 2018). Finally, after the message production, participants are asked to recall the original information they read about the target.

A wide range of studies demonstrates that participants, in producing their description of the target's behaviors, tune their message to evaluatively match the audience's attitude toward the target ("audience-tuning"). The subsequent recall of the original information is evaluatively biased to match the audience's attitude, producing the "sharing-is-believing" effect. Over the last 20 years, research has established that experiencing the creation of a shared reality with the audience is the necessary condition for the subsequent memory to be biased (Echterhoff & Higgins, 2017). In the typical paradigm, the perceived shared reality between the audience and the communicator is not measured directly. Based on a large body of work, shared reality researchers demonstrate that under normal conditions, the communicator's production of an audience attitude-congruent message represents the communicator's creation of a shared reality with the audience (Echterhoff & Higgins, 2020). However, even within this paradigm, as noted by Echterhoff and Schmalbach, " . . . message production is not necessary for the memory effect in this paradigm because shared reality can be created without it" (2018, p. 58). It can be created when the audience is perceived by the communicator as having

epistemic authority—the communicator's epistemic trust in the audience (see Echterhoff & Higgins, 2017). Moreover, audience tuning is not sufficient because the communicator needs to believe that the message was actually successful in creating a shared reality with the audience (Echterhoff et al., 2005). Once created, the shared reality with the audience affects the communicator's later memory of the target and biases it toward the audience's attitude: the sharing-is-believing effect (cf. Cornwell et al., 2017; Higgins, 2019).

MULTIPLE COMMUNICATIONS AND ORDER EFFECT

Imagine investigating a specific issue and communicating with two acquaintances who hold opposing opinions on the matter. Most likely, you will tailor the first message on the issue to the first audience. You will create a first mental representation of the issue. Will this mental representation and initial tuning to the first audience affect your second communication or carry any weight on how you recall information on the issue?

A great deal of past research in many domains has focused on communication order effects and, in particular, on the primacy effect, which is characterized by a more significant impact carried by the communication presented first, as opposed to last (second in our case), and the recency effect where the last communication has the more significant impact (e.g., impression formation: Asch, 1951, and Forgas, 2011; consumer research, and beliefs updating: Hovland et al., 1957, and Hogarth & Einhorn, 1992). Still, findings related to the present study, i.e., studies designed with two opposing messages from two different audiences, have shown mixed results (e.g., Crano, 1977; Igou & Bless, 2003; Lana, 1963; Petty et al., 1995). Additionally, in order-effect studies, participants tend to be passive recipients of opposing information. Instead, in the shared reality paradigm, participants play an active communicator role for audiences with opposing attitudes. In the existing literature, only McCann et al. (1991) and Mata and Semin (2020) used a modified version of the saying-is-believing paradigm to study instances of participants producing messages to multiple audiences with different attitudes. Relevant to the present research, in the McCann et al. (1991) study, participants communicated at a brief time interval (15 minutes) with two different audiences holding different attitudes toward a target. The authors found that communicators tuned their message to the audience's attitude for *both* audiences but displayed recency effects. However, the study focused on subjects' attitudes toward the target instead of their memory of the original information about the target, and measures were taken a week after the communications.

Mata and Semin's (2020) study, in a similar condition of brief delay (15 minutes) between the communications to each audience, doesn't support either a primacy or a recency effect. Unlike the present study, however, Mata and Semin (2020) assessed participants' memory of the original information after each audience-tuning communication. They did not investigate the effect on memory of communicating to multiple audiences when shared reality is created with one audience but not the other.

THE PRESENT RESEARCH

In our study, communicators produced two messages about the target person's behaviors: one for an audience that liked the target person and one for an audience that disliked the target person. Consistent with the shared reality literature (see Echterhoff & Higgins, 2020), we conceptualized the communicators' audience-tuned message and its success in forming a common belief with the audience about the target as the creation of a shared reality between them, as assessed by its producing an audience-congruent bias in the communicator's recall of the target's behaviors (i.e., a sharing-is-believing effect). To establish a shared reality with one of the audiences but not the other, all communicators, after producing the messages, were told that one of the two audiences successfully identified the target person, and the other failed to do so.

We predicted, consistent with previous research (McCann et al., 1991), that participants would tune to *both* audiences (regardless of message order). More importantly, we predicted that even though participants communicated and tuned to both audiences, their recall would be more biased toward the audience-congruent message when they believed that a shared reality had been created with an audience (Higgins, 1992, 1996). Both audiences in our study were set up as valid sources of information about the target subject. Still, we predicted that the audience failing to identify the target person successfully would most likely be perceived by the participants as an unreliable source of information. No matter what the order in which the audience-congruent message was created and delivered, the shared reality that was successfully created for one audience would generate trust in that audience's attitude toward the target person. The successful audience's view and its audience-congruent message, we predicted, would become the definitive truth about the target person, as reflected in the memory reconstruction of the original information about the target.

METHOD

Participants

A power analysis conducted in G*Power 3.1 (Faul et al., 2009) revealed a necessary sample size of $N = 142$ to detect audience attitude effects on recall (recall valence being the primary dependent variable). The optimal sample size was determined by leveraging the most conservative finding based on previous research of partial $\eta^2_p = .07$ for the effect size (see previous effect: Echterhoff et al., 2005, 2013; Kopietz et al., 2010), a power of .90, and a Type I error threshold of $\alpha = .05$. The final sample consisted of 151 students at Columbia University (63% female, mean age was 22 years, $SD = 5.2$ years). They were tested individually and received compensation of either $12 or course credits for their participation. They were recruited for a study on online communication and impression formation about another person.

At the end of the experiment, we administered an attention and suspicion check by asking participants to guess the study's purpose and report anything unusual

about the study. Two separate coders evaluated all participants' answers, and participants whose responses were rated as suspicious by the coders, as well as those that clearly stated that they didn't believe that the two audiences were real, were excluded from the analyses (36 participants), resulting in the sample above. Of these participants, 109 completed a second *additional* recall task online a week after the lab session.

Materials and Procedure. As in the typical saying-is-believing paradigm, all participants read a short essay describing James (the target subject). The essay contained four evaluatively ambiguous passages, similar to the majority of the saying-is-believing studies. In addition, we included four evaluatively positive and four evaluatively negative descriptions of the target, patterned after Higgins & Rholes (1978) and McCann et al. (1991), to enhance the material's ecological validity. The positive, negative, and ambivalent passages were presented in randomized order.

Participants were led to believe that the study was the continuation of a previous experiment. Specifically, participants were told that 30 students had gotten to know each other by interacting in a chat room for about a month as part of the previous experiment. Once in the laboratory, participants were asked to read an essay about James (the target person), one of the students who ostensibly took part in the previous experiment. They were told that the essay was a collection of "James' behaviors and impressions about him" written by the previous experimental participants at the end of the online chat interaction. Before reading it, participants were also informed that their task would be to describe James—*without mentioning his name*—to two other students who had been part of the same group in the previous experiment. Those students were supposedly remotely connected with the laboratory, waiting to participate in the study.

Participants were told that the two other participants (the two "audiences") not only knew James, but they each had their distinct impression of him: one audience liked him, and the other disliked him. In turn, participants were told that the ostensible audiences' task was to guess who among the group members taking part in the first experiment was described in the message. Participants then read the essay and were asked to write a message to each audience describing the target. Participants wrote each message in a randomly assigned order. They wrote either first to the audience who liked James (positive attitude) and then to the audience who disliked him (negative attitude) or first to the audience who disliked James (negative attitude) and then to the audience who liked him (positive attitude). Before writing the message to each audience, participants were told the audience's attitude toward the target.

Participants typed the target person's description into what appeared to be a chat screen on the computer and then sent their message to the first audience. Then they repeated the same process for the second audience. About 10 minutes after the second message was supposedly sent to the second audience, participants were given feedback that indicated for each audience whether the target identification was correct (success feedback) or incorrect (failure feedback). By random assignment, participants received the feedback that either the first audience

identified the target correctly and the second audience did not, or the reverse. After this feedback, a recall test was given. Participants were asked to recall as much as possible of the *original information* they had read about the target person, just as it was initially presented. After completing the first recall in the laboratory, participants completed a second identical recall online 1 week later.

We used a two-way ANOVA factorial design. The first factor was the order in which the audiences were presented to participants: first audience with a positive attitude (second, negative attitude)/first audience with a negative attitude (second, positive attitude). The second factor was audience feedback, which audience identified the target successfully and which audience failed to do so: positive audience success feedback (negative audience failure feedback)/negative audience success feedback (positive audience failure feedback), see Figure 1.

Messages and Recalls Coding. The saying-is-believing coding procedure (e.g., Echterhoff et al., 2005) was followed. Two coders blind to the participant's condition rated the *overall valence* of the messages sent to the audience about the target referent. The ratings were based on a bipolar 11-point scale, ranging from −5 (extremely negative) to +5 (extremely positive). Also, coders broke down each message into passages corresponding to the target essay's passages and assigned scores for positive or negative distortions to each passage. Using these scores for each message's passage, they then assigned an overall valence rating to each message. The intercoder reliability were sufficiently high: message 1 valence $\alpha = .95$, message 2 valence $\alpha = .95$, recall 1 valence $\alpha = .88$, and recall 2 valence $\alpha = .90$. The means of the two coders' ratings served as the dependent measures in the subsequent analyses.[1]

RESULTS

Analysis. The primary dependent measures were the immediate recall (recall 1) and the communicators' messages (message 1 and message 2) valence. Additionally, we also analyzed the recall a week after the lab session (recall 2). Data were analyzed with the R software package. We report all measures, manipulations, and exclusions in this study.

Message Valence. Regarding the *first message valence*, as expected, we found a significant main effect for audience order: After reading the essay, participants tuned their messages to the attitude of their first audience $F(1, 147) = 36.6$, $p < .001$, $\eta^2_p = .20$. On average, the message valence for participants in the first audience positive condition ($M = 1.62$, $SD = 1.93$) was significatively different from the first audience negative condition ($M = -0.41$, $SD = 2.17$). No other effects reached significance, $Fs < 2.46$, *ns*. Similarly, with respect to the *second message valence*, we also found a significant main effect of second audience attitude on the second message valence $F(1, 147) = 64.39$, $p < .001$, $\eta^2_p = .30$. On average the message valence for

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1. We also tracked the number of negative, positive, and ambiguous passages—independently of their valence—recalled by participants in each condition, but we didn't find any significant differences between conditions.
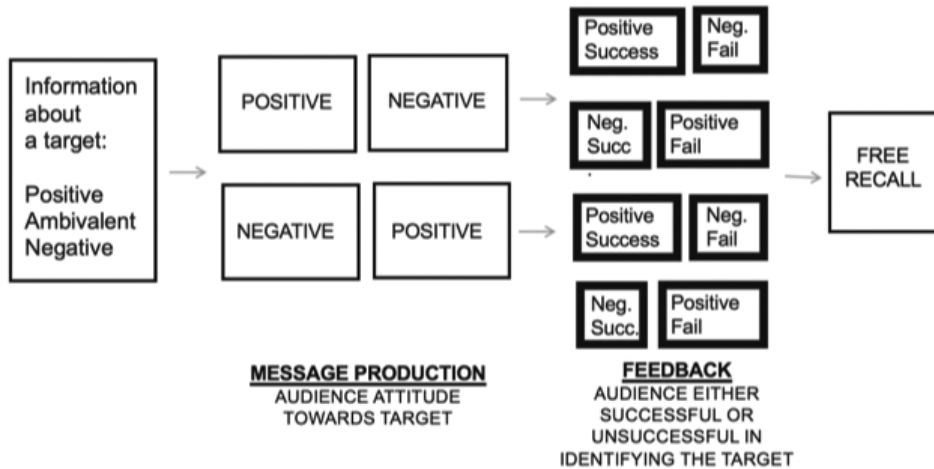
FIGURE 1. The sequence of the main stages of the procedure.

participants in the second audience positive condition (M = 1.74, SD = 1.99) was significantly different than the second audience negative condition (M = −0.97, SD = 2.15). No other effects reached significance, Fs < 1.37, ns.

Recall Valence. As for the valence of the *first memory recall* (Figure 2), the ANOVA revealed a main effect of audience identification feedback, $F(1, 147) = 7.45$, $p = .007$, $\eta^2_p = .05$. On average, the recall valence of participants in the audience feedback: positive success (negative failure) condition (M = 0.66, SD = 1.47) was significantly more positive than the valence of participants in the negative success (positive failure) condition (M = −0.01, SD = 1.62). This result would suggest, as we hypothesized, that if a shared reality is created with the audience that likes the target, the recall is biased in the positive direction compared to the recall when the shared reality is produced with the audience that disliked the target. The main effects of audience order $F(1, 146) = 1.13$, $p = .29$, $\eta^2_p = .01$ and the interaction $F(1, 146) = 2.57$, $p = .11$, $\eta^2_p = .02$ were not significant.

Finally, we also analyzed the *second recall taken a week later* (the delay recall). The *second recall* and the *first recall* were found to be weakly correlated, $r(108) = .26$, $p < .01$ but our ANOVA didn't reveal any main or interaction effects: Fs < 1.13, p_s > .30, $\eta^2_p < .01$.

Additional Analyses. Earlier analyses of saying-is-believing effects established that the communicators' message's valence mediated the relationships between the audiences' attitude and the communicators' recall. Since we had two communicators' messages, one for each audience, we matched each success-feedback audience (either positive or negative) with the corresponding message produced for each of the successful audiences (independently of the order in which it was produced) and investigated if the corresponding message's valence mediated the effect of
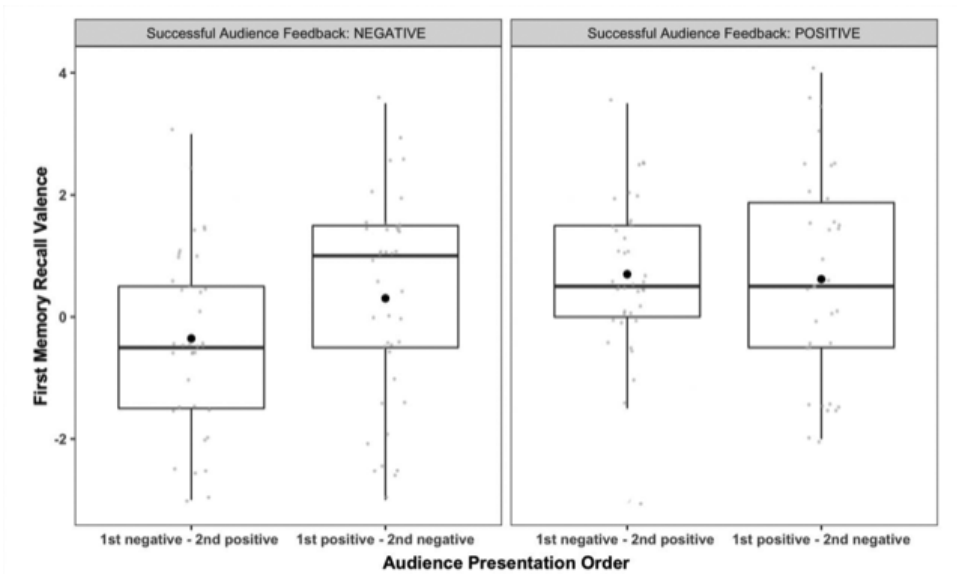
Note. Boxplot and Scatterplot of four conditions (from the left): audience order 1st negative (2nd positive) and 1st positive (2nd negative) in the condition where the audience with a negative attitude successfully identified the target (i.e., shared reality being established between the participant and the audience that dislikes the participant), followed by audience order 1st negative (2nd positive) and 1st positive (2nd negative) where the audience with a positive attitude successfully identified the target (i.e., shared reality being established between the participant and the audience that like the participant). The bolded line represents the median, while the bold dot represents the mean.

FIGURE 2. Scatterplot and boxplot of the four conditions.

the success-feedback audience's attitude on communicators' recall. The regression coefficient between the success-feedback audience and the communicators' recall was significant, $b = .67$, $t(149) = 2.65$, $p = .01$, and the regression coefficient between the communicators' message produced for the success-feedback audience and the recall message was also significant, $b = 2.29$, $t(149) = 6.50$, p < .001. In contrast, the indirect effect was 0, bootstrapped 95% CI [−0.34, 0.22], $p = .74$, *ns*. We also investigated the possibility that success-feedback audience congruent memory bias was affected by both messages produced by communicators. For each communicator, we averaged the messages' valence and tested if the messages' average valence mediated the effect of the success-feedback audience attitude on communicators' recall. In this case also the indirect effect was 0, bootstrapped 95% CI [−0.07, 0.05], $p = .83$, *ns*. Therefore, success-feedback audience attitude (either positive or negative) directly affected communicators' subsequent memories without mediation by communicators' message valence.

GENERAL DISCUSSION AND CONCLUSIONS

Within the shared reality theoretical framework, our study examined how multiple communications with audiences who hold opposing beliefs on a topic affect

communicators' recall of the topic information. We examined shared reality creation in interpersonal communication to explore the audience-tuning effect and a potential message order effect and to investigate whether or not the memory effects of such social tuning depended on whether a social tuning had or had not created a shared reality with an audience.

Our initial results concerning the audience-tuning effects confirmed the findings in McCann et al. (1991). When people communicate with two audiences, they tailor their communications to both audiences, independently of any order effect and even when those audiences hold opposing views. Our analysis revealed no difference between the tuning of communicators in the first and the second message.

Our findings show that, independent of the audiences' attitude, their order of presentation and the audience-tuning, the success identification feedback received by participants from one audience but not the other affected communicators' recall memory, as reflected in the recall being biased in the direction of the attitude of the success-feedback audience but not the other audience. In our multiple-communication extension of the standard one-communication paradigm, we relied on the shared reality creation as conceptualized and established in the shared reality literature: Communicators produced audience-tuned messages and achieved a shared reality with an audience that successfully identified a target referent from their tuned message. As such, the attitude of the success-feedback audience directly affected communicators' subsequent memories due to the shared reality that had been created between them.

It should be noted that in previous saying-is-believing studies (e.g., Echterhoff et al., 2005), the impact of the attitude of the success-feedback audience on the communicators' recall was found to be mediated by the valence of the audience-tuned message, a mediation we did not find in our study. However, there have been studies in the shared reality literature (see Haussmann et al., 2008; Higgins et al., 2007) showing that under specific conditions—that is, when there is strong epistemic trust in the audience's attitude about a target—the audience-tuned message production is not necessary for the communicator to create a shared reality with the audience about a target (for a review, see Echterhoff & Higgins, 2017). We posit that producing two audience-tuned messages opposite in valence is similar to not having an audience-tuned message because there is no consistent message about the target person. Faced with that uncertainty, communicators would be motivated to establish a shared reality with the success-feedback audience and, because of epistemic trust in that audience, accept that audience's attitude as the truth about the target person. The shared reality created with that audience would further generate trust in that audience's attitude toward the target person and impact recall.

Notably, participants' epistemic trust in each of the different audiences was not measured, and other mechanisms could be at play. For example, findings in social cognition emphasizing the role of knowledge activation and accessibility in response to social stimuli (e.g., Bargh et al., 1986, and Srull & Wyer, 1979; for a review, see Higgins, 1996) could also provide an alternative account of our results. Being notified that one audience (but not the other) has successfully identified the target could

lead the communicator to experience that success-feedback audience and the message tuned toward that audience as being motivationally relevant, which in turn could increase the accessibility of that audience and message (see Eitam & Higgins, 2010). If this were the case, one might have expected the message to mediate the biased recall effect. Nonetheless, what is needed is more direct evidence supporting our proposed mechanism of epistemic trust creating the shared reality effect. Future research should measure communicators' epistemic trust in each of the two audiences and test whether epistemic trust mediates the recall bias effect.

Additionally, we would like to highlight that, in comparing the two success-feedback conditions, we found that the aggregate mean of the negative audience success feedback is effectively 0 (versus an aggregate mean of 0.66 in the positive condition). A positive-negative valence asymmetry effect is consistent with some past findings. Echterhoff et al. (2008) found that participants were more willing to share reality with an audience who likes the target than with an audience who dislikes the target, perhaps because they wanted to connect more closely to the former audience. Thus, the effect created by shared reality can be stronger in the positive audience success feedback than the negative audience success feedback.

Our study also found that the memory biases became weaker over time. The second memory recall, 1 week after the experimental session, was only weakly correlated with the first recall. Further research is needed to understand the temporal parameters of the memory bias from shared reality creation. It is possible that the memory bias would remain if the relationship between the communicator and the audience with whom shared reality was created also remains over time. Future research should investigate this possibility.

Our study complements previous studies and further extends the saying-is-believing paradigm's applicability to everyday communication exchanges. Mata and Semin (2020) recently increased the paradigm's ecological validity by having multiple communications and using different lengths of delay between them to examine their effects on audience tuning and memory. With a shared reality perspective, we honed in on the case where people communicate on a topic with others who have opposing views on the topic and experience creating a successful shared reality with one audience but not another audience. While our study may capture a more limited subset of everyday conversations, it illustrates how the process of creating a shared reality on a topic with one audience but not another can affect our memory of information about the topic.

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