Reinforced self-affirmation as a method for reducing eyewitness memory conformity: An experimental examination using a modified MORI technique

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Summary
The manuscript describes an experimental investigation of one possible technique that may reduce memory conformity: the reinforced self-affirmation procedure (RSA). While previous studies have already demonstrated the RSA’s effectiveness in reducing other memory distortions (e.g., the misinformation effect and interrogative suggestibility), this has not been tested in the context of the co-witness memory conformity effect. To this end, we will utilize the well-known MORI technique to study co-witness memory conformity under well-controlled experimental conditions. While viewing different versions of the same movie, pairs of participants will sit beside each other, believing that they are viewing the same version. Next, they will answer questions collaboratively, which will guide them to discuss conflicting details. Finally, participants will take a recognition test individually, but in the experimental condition, this will be proceeded by the RSA procedure, which is expected to be an effective way of eliminating the effect of memory conformity. If reinforcing one’s own confidence reduces the plausible memory conformity effect, it may be then argued that the mechanism underlying this phenomenon is the participants’ lack of confidence relating to quality of their memory. As argued in the present paper, these results will open up a set of interesting questions for future research.

KEYWORDS
co-witness suggestibility effect, eyewitness memory, memory conformity, post-event conversation, reinforced self-affirmation

INTRODUCTION

Intensive research on the reliability of eyewitness testimony is conducted mostly because it often seems to be fundamental (Graham, 2003) and persuasive (Vollen & Eggers, 2005) evidence that allows the circumstances of a crime to be proved; therefore, it is reasonable to ask how reliable eyewitness testimony is. For example, Huff, Rattner, and Sagarin (1996) suggested that the most common reason for the conviction of innocent people was, in fact, false and unreliable eyewitness testimonies. Many studies have also shown that even witnesses convinced of their memories may simply fail to accurately describe the crime event (e.g., Brewer & Wells, 2011; Luna & Martín-Luengo, 2012). This should not be surprising given that eyewitness testimony depends on the sometimes imperfect human ability to remember, maintain and retrieve information relating to crime scenes (e.g., Wonsowicz, 2012). In addition, crimes are also frequently witnessed by two or more people, and co-witnesses of crimes often discuss the event shortly afterwards (e.g., Paterson & Kemp, 2006a; Skagerberg & Wright, 2008). For instance, Paterson and Kemp (2006a) demonstrated that around 86% of witnesses discussed the event with
their co-witnesses. Thus, it may be argued that one plausible source of false eyewitness testimony might be the phenomenon known as memory conformity; namely, the fact that co-witnesses integrate elements of each other’s version of events into their own report of the shared experience (Wright, Self, & Justice, 2000). Indeed, many studies have shown that such discussion may easily distort people’s memory (e.g., Garry, French, Kinzett, & Mori, 2008; Kanematsu, Mori, & Mori, 1996/2003; see Condon, Ritchie, & Igou, 2015; Ito et al., 2019, for a comprehensive review).

Given the importance of the problem of distortions of witness testimony, the main aim of the present project is to explore the possibility of attenuating memory conformity by means of a technique called reinforced self-affirmation (Szpatalak, 2012). Apart from this, we aim to provide some insight into its possible mechanisms. We start by briefly describing the most important paradigms in memory conformity research, and then we mention existing methods of immunizing against it and present our approach to such immunization, its theoretical rationale and the method—reinforced self-affirmation.

There are several approaches to studying memory conformity. For example, in some studies (e.g., Paterson & Kemp, 2006b; Reysen, 2005), participants watched footage of a crime while being paired with a confederate who provided misinformation. Alternatively, in a study by Gabbert et al. (Gabbert, Memon, & Allan, 2003; also, in Garry et al., 2008; see Wright, Memon, Skagerberg, & Gabbert, 2009 for a review), participant pairs familiarized themselves with an event by watching a video on separate screens but (unbeknown to them) watched different versions of the footage. Thus, when the individuals studied the event on their own, they believed that the co-witness had watched exactly the same material. The materials, however, differed in some critical details. Subsequently, participants discussed the crime event (solving the disagreement by discussion) and completed an individual memory test concerning the details. These types of studies demonstrated that people more commonly provide correct answers to questions, which were not discussed with a partner, as opposed to discussed issues that were related to critical elements. Importantly, the findings also suggest that people are prone to agreeing with information provided by a co-discussant who is perceived as a source of more accurate information (Wright et al., 2000). Finally, there is an approach to studying the co-witness suggestibility effect that uses the Manipulation of Overlapping Rivalrous Images technique (henceforth called the MORI technique; Mori, 2003, 2007). Since this approach and replication of its effectiveness is the main focus of the present study, we further introduce it below.

The MORI technique allows projection of two different movies to two groups of viewers without them noticing the duality. Importantly, the two different versions are displayed on the same screen. Therefore, while participants appear to be watching the same event, the movies differ with regard to a set of critical details (e.g., the colour of a cap). Half of the critical details are discussed, whereas the other half are not discussed; therefore, the undiscussed half is used as the control questions during the individual memory test. The percentage of correct answers given to questions about undiscussed details is then compared with the percentage of correct answers to questions about details that have been discussed. The MORI technique uses two rear-projected video projectors. The displayed images are polarized, so one projector transmits light waves on a horizontal plane, whereas the other transmits light in a vertical plane. Participants wear polarized glasses, which look like regular sunglasses but which actually block one of the possible versions of the movie. Importantly, while participants in other co-witness procedures may become suspicious about the manipulation (especially when they disagree on some details), the MORI technique seems to significantly reduce this possibility. For this reason, it may be argued that the MORI technique is one of the closest experimental approximations to everyday life situations in which people witness the same event and discuss it afterwards.

Several studies using the MORI technique have successfully provided solid evidence for the co-witness suggestibility effect (French, Garry, & Mori, 2008, 2011; Garry et al., 2008; Kanematsu et al., 1996/2003; Mori & Kitabayashi, 2009; Mori & Mori, 2008; Mori & Takahashi, 2012; Tainaka, Miyoshi, & Mori, 2014). Importantly, this effect seems to be robust and common to many cultures (e.g., Ito et al., 2019). In general, the findings demonstrated that people more often provide correct answers to questions about details not discussed with a co-witness than to details that were discussed. Finally, only a small percentage of people who agreed with their partner during the discussion did not conform to their partner during the individually performed memory test (Garry et al., 2008).

The existing research into immunizing against the memory conformity effect is scarce. Actually, only one method was explored: warning that the co-witness may be wrong. In a series of studies by Paterson, Kemp, and Forgas (2009), it was found that warning a witness that a co-witness may be misleading them did not prevent co-witness conformity, neither when the witness was warned a week after the discussion nor when the witness was warned immediately after the discussion. The warning, however, proved to be successful when participants were instructed to ignore and not report information gleaned from co-witnesses. In addition, Bodner, Musch, and Azad (2009) claimed that the warning significantly reduced the number of mistakes. Meade and Roediger (2002) also proved that these warnings might reduce but not completely eliminate the effect of memory conformity. Finally, co-witness suggestibility is also especially powerful when one does not have a clear memory or when a co-witness is perceived as a more reliable source of information (Wright et al., 2009).

In the present project, a different approach is proposed: it is hypothesized that enhancing subjects’ self-confidence about the quality of their memories would make them rely less on the (mis)information provided by the co-witness and instead base their memory reports on their own recollections. We rationalize this hypothesis on the basis of the following: the possible mechanisms of memory conformity; the existing results concerning a phenomenon related to memory conformity, namely, the misinformation effect and the existing results concerning a trait related to self-confidence (self-esteem).
First of all, we justify our hypothesis by making some assumptions concerning the possible mechanisms of memory conformity. The exact mechanisms remain to be determined, but some ideas about them do exist.

Wright et al. (2009) discussed three processes that may cause the memory conformity effect. These are: (a) normative impact, which is yielding to someone because of social rules; (b) informational influence, which is yielding to someone in the belief that they are right and (c) false memories. We assumed that normative impact is unlikely, given the fact that the final memory test does not include any element of pressure: participants work on their own and do not compare their answers with anybody. Therefore, the cost of disagreeing is zero. As for false memories, they are possible on the basis of the reasoning and data presented by Wright et al. (2009). In this case, we do not expect that boosting self-confidence about the quality of one’s own memory would make a memory report less contingent on false information provided by a co-witness. In contrast, a participant who is convinced that their memory is good may be especially prone to reporting its content, including false information.

Our hypothesis is related to informative impact, in the case of which a participant weighs the relative likelihood of the other person being correct versus himself being correct (Wright et al., 2009). This of course relates only to the participants who are aware of the discrepancies between the original film and the content of the answers provided by the co-witness. In other words, we are speaking about participants who correctly monitor both the source of information and its content. Such participants may choose one of two options: answer in accordance with what they remember about the film themselves (this would be the correct answer) or base their answer on what their partner said (which happens to be the wrong answer). We assume that participants who choose to give answers that are consistent with what their partner said instead of giving an answer that is consistent with their own memory about the film do so because of lack of confidence in the quality of their memories. We finally assume that in the case of such participants, enhancing their confidence in their own memory would diminish their tendency to give answers consistent with what their partner said and instead give a correct answer based on their own memory. Using the distinction explored by French et al. (2011), we may say that enhancing self-perceived credibility relative to the credibility of the partner would diminish memory conformity. Obviously, if this prediction is not confirmed, then at least one of our assumptions listed above is false.

The results of similar research into the memory misinformation effect form the second basis for the hypothesis that increasing self-confidence about the quality of one’s own memory would reduce memory conformity. In the memory misinformation effect paradigm, (seminal research: Loftus, Miller, & Burns, 1978) participants watch some original material, for example, a series of slides or a video clip. After some time, they are presented with some post-event material, for example, a description of a video that in the experimental group contains some details that are incongruent with the content of the video. After another time delay, the participants give a memory report about the original video clip. In research using various versions and modifications of this basic paradigm, it is now well established that misled subjects include the misinformation in their memory reports more often than non-misled control participants (for review, see Loftus, 2005). This paradigm is similar to memory conformity as it includes all its three core elements: there is a presentation of some original information (in the MORI technique, a video clip), then misinformation is presented (in the form of erroneous memory reports provided by the partner in the pair) and there is a final memory test about the video.

In fact, some authors noted that the mechanisms of the misinformation effect and of co-witness memory conformity may be similar (Garry et al., 2008). Whether other similar mechanisms underlie memory conformity and the misinformation effect is, of course, a question that only empirical research can answer. Currently, some authors admit that they may be similar (Garry et al., 2008). Some even merged memory conformity and the misinformation effect in the title of their paper (Wright et al., 2000, "Memory conformity: Exploring misinformation effects when presented by another person"). Szpitalak, Polak, Polczyk, and Duka (2015) compared three ways of delivering misinformation: impersonal—a typed summary of the original material (most often used in research on the misinformation effect); parasocial—a hand-written summary, seemingly created and signed by another participant and social—delivered by the confederate. Using the Bayesian method, Szpitalak et al. (2015) found no differences in the number of answers consistent with misinformation delivered via all of these three methods. Similarly, Meade and Roediger (2002) found no significant difference between social and para-social conditions, and nor did Blank et al. (2013). In contrast, Gabbert et al. (2003) found a stronger misinformation effect in the group with the confederate than with the typed and signed protocol. In sum, it seems that the differences in the magnitude of yielding to false information between memory conformity and the misinformation effect are not substantial. Of course, the similarity of effect size does not necessarily imply equivalence of mechanisms.

The third reason to expect that enhancing self-confidence may help to reduce memory conformity is the fact that people with low self-esteem seem particularly prone to misinformation, both in the memory conformity paradigm (Tainaka et al., 2014) and the misinformation effect (Saunders, 2012). Of course, self-esteem and self-confidence are not identical phenomena, but they are related and empirically correlated (e.g., Coudevyly, Gernigon, & Martin Ginis, 2011).

Finally, it may be also plausible that enhancing self-confidence plays some role even in the case of the normative impact. We mentioned above that normative impact is unlikely in the case of the standard memory conformity procedure because while doing the final memory test, the participants work on their own and do not compare their answers with anybody; therefore, there is no social pressure and no costs of disagreeing. However, it is not entirely impossible that normative influence plays some role during collaborative remembering: giving answers consistent with what the partner said may have been caused by social mechanisms. It is possible that these wrong answers make their way to the memory of a given participant who
later gives a wrong answer. Enhanced self-confidence should diminish the tendency to agree with the answers in collaborative phase, thus reducing memory conformity.

The method for enhancing self-confidence that we plan to use in the present research is reinforced self-affirmation (RSA). This method includes two elements for boosting self-confidence: self-affirmation and positive feedback. The concept of self-affirmation was elaborated by Steele and Liu (1983), who postulated that it is a means of protection against cognitive dissonance and that it boosts self-confidence. The positive impact of self-affirmation on self-confidence has also been confirmed experimentally (Petruzzello & Corbin, 1988; Sherman & Cohen, 2006; Takai, 2011). Also, as for positive feedback (the second element of RSA), the idea that it boosts self-confidence was based on existing research (e.g., Adler, 1990; Brabender & Boardman, 1977; McCarthy, 1986; Morocco, 1978; Petruzzello & Corbin, 1988).

In existing research, RSA has repeatedly been proved to reduce the classical memory misinformation effect (Szpitalak, 2012; Szpitalak & Polczyk, 2013, 2015, 2019a, 2019b). In two experiments (Szpitalak & Polczyk, 2016; Szpitalak & Polczyk, under review), it was also shown to reduce interrogative suggestibility, another paradigm relating to memory suggestibility (Gudjonsson, 1997). Interrogative suggestibility consists in including in one's answers information stemming from suggestive leading questions (this is called Yield) and in the tendency to change answers after being given negative feedback relating to the quality of testimony, called Shift (Gudjonsson, 1997). Shift was effectively reduced in both experiments (Szpitalak & Polczyk, 2016; Szpitalak & Polczyk, under review), whereas Yield was diminished in one of them (Szpitalak & Polczyk, 2016). In one experiment, it was confirmed that RSA was effective mainly in the case of participants who were aware of the discrepancies between the original and post-event materials (Szpitalak & Polczyk, 2015, Experiment 2). This, in a way, is a promising result for similar research on memory conformity. (The detailed procedure of the RSA is presented below in the Method).

Apart from analyses concerning the replication of the memory conformity effect and the efficacy of the RSA, a mediation analysis is planned in order to verify one of the main assumptions of the planned study, which states that RSA affects results on the final memory test via increased self-confidence. Thus, self-confidence is expected to be a significant mediator of the impact of RSA on the final memory test. Also, a moderation effect is hypothesized that relates to general susceptibility to social influence. Namely, in a group of very compliant people, self-confidence would be less effective. The generalized tendency to rely on the opinions of others may overcome the benefits of situationally increased self-confidence. In contrast, people who do not have a tendency to yield to the influence of others may take more advantage of enhanced self-confidence. Therefore, a moderation effect was hypothesized: the impact of RSA on memory conformity should be moderated by the general tendency to yield to social influence—the higher this tendency, the less the reduction of memory conformity caused by RSA. Finally, we expected that RSA would increase the confidence in the answers given in the final memory test.

In all analyses, RSA will take place after the participants discuss the movie, which is important from the "ecological" point of view. In reality, virtually no method that aims to improve testimony can be applied before the witness has been exposed to possible misinformation from various sources. In practice, any method that immunizes against misinformation may only be applied just before the interrogation. Therefore, in the planned research, RSA was placed after the "misinformation" phase and before the final memory test.

In sum, the following hypotheses will be tested as part of the present project: (a) The memory conformity effect will be replicated; (b) RSA will reduce the memory conformity effect; (c) self-confidence about the quality of memory will mediate the impact of RSA on memory conformity; (d) susceptibility to social influence will moderate the impact of RSA on memory conformity; and (e) RSA will increase the confidence in the answers given in the final memory test.

2 | METHOD

The University Research Ethics Committee has already approved the usage of the MORI technique (2007). Written consent for participation will be obtained prior to data collection.

2.1 | Power and sample size analysis

The sample size analysis was estimated for the three most important effects of the present study: (a) replication of the memory conformity effect; (b) the efficacy of the RSA procedure in reducing memory conformity; and (c) the mediation effect. RSA > confidence > memory conformity. The analysis of the first two points was performed by means of the G*Power software (Faul, Erdfelder, Lang, & Buchner, 2007), and the third was based on the results of a simulation study by Fritz and MacKinnon (2007).

As for the replication of the memory conformity effect, the expected effect size of 1.92 (Hedges g) can be based on existing results for a Polish sample in research in which the same procedure was used as that planned in the proposed study (Ito et al., 2019). This is a very large effect size, and the sample size required for 80% power at alpha level = 0.05 when comparing two independent samples is about N = 12. Actually, the power would be even higher as the memory conformity analysis is based on a paired design. Thus, it should be easy to detect the memory conformity effect if it exists.

There are no available data related to the efficacy of the RSA in the context of memory conformity. The analysis was therefore based on the typical effect sizes (Cohen d) that are usually considered small, medium and high, respectively: 0.2, 0.5 and 0.8 (Cohen, 1988). The required sample sizes for 80% power for the one-tailed test are 620, 102 and 42, respectively. A sample size of about 100 participants was assumed sufficient to detect a medium effect.

As for the mediation, Fritz and MacKinnon (2007) provided information about sample sizes needed for 80% power for various tests of mediation for four effect sizes concerning the predictor > mediator.
and mediator > dependent paths: 0.14, 0.26, 0.39 and 0.59. For the present study, the percentile bootstrap test for the mediation will be applied, which is possible to calculate by means of the PROCESS 3 software (Hayes, 2018). In the worst case, when both paths are smallest, the required sample size is 558. For an effect size of 0.26 for both paths, a required sample size of 162 is more realistic; for an effect size of 0.39, 78 participants are required.

The sample size for the moderation effect was performed by means of the G*Power software (Faul et al., 2007). For a small, medium and high increase of $R^2$ due to interaction, the required sample sizes were 395, 55 and 25, respectively.

In sum, a sample size of about 100 participants was assumed to be necessary to detect effects of about medium size. Finally, this sample size was increased to 112 (56 participants per group) to take into account the possibility that some participants may drop out of the study or/and the risk of getting invalid or missing data (e.g., due to technical problems).

2.2 | Participants

The sample size will be set at 56 per group. In general, 112 participants (half of them women, half men) will be randomly assigned to the two experimental conditions: control condition ($N = 56$; 28 pairs) and experimental RSA condition ($N = 56$; 28 pairs). The subjects recruited to the study will be 18–35 years of age. While all the participants in the RSA condition will undergo the RSA manipulation, no RSA will be applied in the control condition. The participants will be recruited via advertisements in media and on the internet.

2.3 | Materials

2.3.1 | Manipulation of overlapping rivalrous images (MORI)

The experiment will employ a modified procedure based on the study by Garry et al. (2008), which was the first experiment using the MORI technique outside of Japan that demonstrated the co-witness suggestibility effect; unless otherwise specified, we will strictly follow the original design. Briefly, participants in the control condition will watch the video created by Takarangi, Parker, and Garry (2006), as was used by Garry et al. (2008). The movie of the crime lasts 6 min and 34 s and does not contain any sound. There are two versions of the same clip, which are identical except for eight critical details. For instance, Eric wears a cap that is red in one version and black in the other. All materials relating to the MORI technique are available on the OSF page. Importantly, the MORI technique has already been successfully translated into Polish (Ito et al., 2019).

Both versions of the video will be projected onto the back of a translucent projection screen. The screen is made of a 5-mm-thick pane of plain ground glass ($45 \times 60$ cm). We will use two LED projectors (TAXAN, KG-PL021X) mounted on a stand, one above the other, with one tilted slightly upward and the other slightly downward, so that the two images overlap on the screen. The images will be about 30 $\times$ 40 cm in size on the screen, located at a distance of approximately 170 cm from participants. Polarizing filters will be attached in front of the lens of each projector, one placed vertically and the other horizontally. For each pair of participants, one set of glasses allows the wearer to view the vertically polarized image while blocking the horizontally polarized one, and the other set of glasses does the opposite.

2.3.2 | Reinforced self-affirmation (RSA)

RSA is a procedure designed to enhance self-confidence, especially self-confidence relating to memory (Szpitalak, 2012; Szpitalak & Polczyk, 2013, 2015). It consists of two parts: (a) the participants write about their greatest life successes for 4 min and (b) positive feedback after a memory task that consists in remembering and recalling a list of words for 4 min. In the control condition (RSA manipulation), participants will be instructed to describe their way from home to the study room for 4 min. After recalling the list of words, participants will not receive any feedback.

2.3.3 | Manipulation check for RSA

After RSA, a manipulation check will be applied to determine its efficacy. It will consist of a 100-mm visual-analogue scale with the instruction "Please mark with a vertical line on the following line how much you feel at this point that you remember the movie well." This measure will also be used in the planned mediation analysis to verify the mediation: RSA > confidence about memory > memory conformity.

2.3.4 | Measure of susceptibility to social influence (MSSI)

This is a 34-item tool designed to assess three possible responses to social influence pressure: independence (Principled Autonomy), conformity/compliance (Social Adaptability) and anticonformity (Social Friction) (Bobier, 2002; polish adaptation: Polczyk, 2007). The questions are answered on a five-point Likert scale, from "strongly disagree" to "strongly agree." Cronbach’s alphas for the three dimensions in previous study done so far with this tool were .80, .82 and .67, respectively (Polczyk, 2017).

Gudjonsson Compliance Scale (GCS, Gudjonsson, 1999; Polish adaptation: Wilk, 2004) was designed to measure compliance, defined as the tendency to conform to requests made by others, particularly people in authority, in order to please them or to avoid conflict and confrontation. It consists of 20 statements answered true or false, for example, "I give in easily when I am pressured." The reliability of this tool in previous study done so far was .80 (Polczyk, 2017).
2.4 Procedure

An overview of the procedure is shown in Figure S1. Participants will be informed that the experiment is about the sensory perception of people with different visual acuity and that they have been assigned to the condition with 95% acuity. We will use the following instructions (translated into Polish by a native speaker with good knowledge of English):

“We are interested in people’s sensory impressions at different levels of visual acuity. Visual acuity basically means how well you can see. So, for example, right now you all should have 100% visual acuity, either because your eyes work properly or because you have corrective glasses on. We want to know what happens to people’s sensory impressions when their visual acuity is degraded by different amounts. Today, you will both be in the 95% visual acuity condition. I will give you each a pair of 95% acuity glasses, which will degrade your vision slightly. If you already wear glasses, the acuity glasses should fit over the top.” (Garry et al., 2008, p. 433)

Then, participants will be randomly given horizontal or vertical polarizing sunglasses. Then, participants will be told:

“I am going to show you a short movie of a tradesman called Eric working in a house. Please make sure you watch the movie through the glasses (no peeking over the top or around the side) and keep your sunglasses on until I ask you to remove them. We find that people often see best when they keep their head straight rather than tilted.” (Garry et al., 2008, p. 434)

The experimental session will consist of seven phases. In Phase 1, participants will watch the movie, which will contain eight critical details, four of which will be discussed later on in the third phase. Subsequently, participants will be asked to work on the MSSI for 10–15 min. In the third phase, which will be audio-recorded, participants will take part in a collaborative recognition test. They will answer 12 questions displayed in a PowerPoint presentation on a laptop. The participants will have 60 s to answer each question aloud. If the participants do not respond in first 50 s, then the experimenter will ask for the answer one more time. If participants do not agree with each other’s answers, the researcher will write down both answers. Out of 12 questions, four questions will be the critical ones and eight questions will be the control ones. For example, participants will be asked about a beverage the movie character drank. Participant 1 will see Coke, whereas the second one will see Pepsi. This will be one of four critical details discussed during this phase of the study. Next, participants will be asked to complete the GCS questionnaire. This phase will take about 7 min. In Phase 5, which lasts 8 min, participants in the experimental group will be provided with reinforced self-affirmation which consists of (a) recalling their greatest successes and (b) positive feedback about the wordlist learning performance. At the same time, participant pairs in the control group will be asked to describe their way from home to the study room, and after remembering and recalling a list of words, they will not receive any feedback. The instruction for the first part of the RSA procedure (which is recalling one’s greatest successes) sounds as follows:

“I will now give you a sheet of paper and would like you to write down all of the greatest life successes you have achieved.”

At this time, participants in the non-RSA condition will be told:

“Now, I will give you a sheet of paper and would like you to describe your way from home to this study room.”

This part will take 4 min. Subsequently, participants in both conditions will be asked to remember and recall a list of words. They will receive a list of 60 words. The page will be put face down. They will be told:

“I will now give you a list of words. I would like you to try to remember as many words as you can. You will have 2 min for this. Turn over the page on my word. Is everything clear? Now, turn over the page to start studying the list of words.”

After 2 minutes, participants will be told:

“Time is up, turn your pages.”

Next, the participants will be asked to recall as many words as they remember in any order. The ones in the RSA condition will receive a sheet of paper with the numbers 1–60 printed on it (so they can see how many words they can remember), whereas the participants in non-RSA condition will have a sheet without any numbers. This part will take 2 min. The instruction for both groups sounds as follows:

“Try to write down, in any order, as many words you remember.”

After 2 min, the participants finish this part of the procedure. They will receive feedback that in experimental group will be “Thank you for taking part in this part of our study. The average amount of recalled words is 9.3.” This number will be false in order to give positive feedback. In reality, this figure is about 1.5 SD lower than the real average that was noted in a previous study (Szpitalak & Polczyk, 2013). In the control group, the feedback will be “Thank you for taking part in this part of the study.” If a participant in an experimental group recalls less than 10 words, they will be excluded from the analyses as the feedback will not be positive for them. Participants
who do not write about their life successes (this will be checked after they finish the task) will also be excluded from the analyses. If a participant finishes task earlier, they will be asked to wait for the next stage of the experiment.

Next, as a manipulation check of RSA efficacy, participants will immediately rate on a 100-mm VAS scale how confident they feel that they remember the story (i.e., the movie) well. In Phase 7, participants will be asked to complete an individual recognition test consisting of 20 two-alternative forced-choice questions, eight of which will contain critical details that were different in the movie for each participant from the pair. After each question, the participants will indicate their subjective confidence in the answer on a scale from 0% (not at all confident, guessing) to 100% (absolutely confident).

Finally, at the end of the study, participants will be asked a question concerning the purpose of the study. Those who correctly guessed its hypotheses will be excluded from the analysis and replaced by other participants so the required sample size \((N = 112)\) is achieved. Finally, the participants will be debriefed about the true purpose of the study. The experimenter will also ask whether they noticed any anomalies during the video presentation. Participants who report anomalies to the extent that they are judged to have intuited the critical manipulation will also be excluded and replaced by other participants so the required sample size \((N = 112)\) is achieved. The experimental session will take about 50–60 minutes.

3 | RESULTS

3.1 | Analysis plan

We expect that participants in the reinforced self-affirmation condition will conform to their partner less frequently during the recognition task by providing more correct answers to questions concerning critical discussed and non-discussed details than pairs from the control group (in which self-confidence will not be manipulated). In this context, self-affirmation will increase the participants’ level of confidence about their own memory recollection (for the manipulation, see the materials and procedure section). In addition, it is expected that participants in an individual memory test will give more correct answers that are consistent with the version of the movie they watched. This means that the difference between the number of correct answers for the questions relating to discussed (and thus possibly influenced by the co-witnesses’ recollection) and non-discussed details should be lower in the experimental group than in the control group.

We will examine the co-witness suggestibility effect following the procedure of Garry et al. (2008, also, Ito et al., 2019). Like Garry et al., we will analyse the final test accuracy scores for the critical questions using analysis of variance (ANOVA). We will look at the average final test accuracy on the filler, non-discussed and discussed questions.

More precisely, when scoring final test accuracy on critical discussed questions, we will differentiate participants’ answers between “discussed” and “non-discussed” ones. If, during the discussion phase, one participant reports a detail they saw in the movie and the second participant does not dispute that report, we will then mark this answer as “non-discussed.” When each member of the pair gives the answer they saw in their own version of the movie, then the answer will be marked as “discussed.” The difference between these two types of answers is that in the first situation only one participant of the pair gives the answer to a question, whereas the second person says nothing. In the second situation, both participants actually answer the question according to what they saw in the movie. That is why, in some pairs, one member will not be exposed to any co-witness details during the collaboration phase (e.g., because they might report the details they witnessed, and their co-witness appears to go along with these answers without discussing them). Thus, we can differentiate between discussed critical items for which only one co-witness answered and those for which both co-witnesses said the answers differently in the collaborative phases, as Garry et al. did. For this purpose, we will audio-record the collaboration phases. While coding the co-witnesses’ answers as “non-discussed” and “discussed,” we will use the coding sheet provided in Appendix 1. This way, we will be able to look at the frequency of errors for genuinely discussed critical items in the final test. We will conduct a mixed-design ANOVA on the final test accuracy score for the critical questions, with discussion (non-discussed vs. discussed) as the within-subjects factor, and condition as the between-subjects factor.

Apart from analyses concerning the replication of the memory conformity effect and the efficacy of the RSA, a mediation analysis is planned to verify the assumption that RSA affects the results on the final memory test via self-confidence. More precisely, RSA should increase it, and the higher the confidence, the lower the difference between non-discussed and discussed items on the final test should be, that is, memory conformity should be lower.

The moderation effect postulated in Hypothesis 4 will be analysed by means of two measures relating to susceptibility to social influence: Measure of Susceptibility to Social Influence (MSSI; Bobier, 2002) and Gudjonsson Compliance Scale (GCS, Gudjonsson, 1997). As they measure slightly different aspects of yielding to influence, separate analyses will be performed for them. As elaborated in Introduction, it is expected that the higher social susceptibility, the lower the reduction of memory conformity generated by RSA.

The planned mediation and moderation analyses will be performed with the PROCESS 3 software (a macro for SPSS; Hayes, 2018) by means of a percentile bootstrap test.

3.2 | Exclusions

We will exclude participants in the case of any technical problems during the experimental session. In addition, participants who are not exposed to co-witness details at all will be excluded from the analyses concerning the final test accuracy score of the critical questions. Also, participants who remembered less than 10 words
or did not write about their successes in the RSA procedure will be excluded.

3.3 | Timeline for completion of the study

The study will be conducted in years 2020–2021. If the Stage 1 review is accepted, the resubmission should be done no later than 2022.

4 | CONCLUSIONS

Real-world judicial practice and the studies mentioned in the introduction show that witnesses’ testimonies are not always the most accurate source of evidence. The present study aims to examine one possible technique that may reduce memory conformity: the reinforced self-affirmation procedure. While previous studies have already demonstrated the RSA’s effectiveness in reducing other memory distortions (e.g., the misinformation effect or interrogative suggestibility; Gudjonsson, 1997; Szpitalak & Polczyk, 2016), this has not been tested in the context of the co-witness memory conformity effect. To fulfil this goal, we will utilize the well-known MORI technique to study co-witness memory conformity under well-controlled experimental conditions. We expect the RSA to be an effective method for eliminating the effect of memory conformity.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

Data Availability Statement: All relevant data will be in the paper and its Supporting Information files.

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ENDNOTES

1 See also photos and movies of the experimental procedure published at https://osf.io/zktpa/?view_only=97938744f2c140f7bc2f2bc75ef97b76c.

2 https://osf.io/zktpa/?view_only=97938744f2c140f7bc2f2bc75ef97b76c.

3 Full list of critical details included in movie is available in Table 1 in Appendix 2.

REFERENCES


SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.