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Deconstructing Rich False Memories of Committing Crime: Commentary on Shaw and Porter (2015)

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For 20 years, scientists have created a vast range of false autobiographical memories. Variations of the powerful "lost-in-the-mall" paradigm have led ordinary adults to appear to remember nonexistent childhood hospital visits, animal attacks, classroom pranks, and hot-air balloon rides (for a summary, see Newman & Garry, 2013). An analysis of published lost-in-the-mall studies suggests that, over time, the overall rate of false beliefs—but not false memories—generated in these studies has increased (see Fig. S1 in the Supplemental Material available online). Yet a recent demonstration was nonetheless surprising: When Shaw and Porter (2015) suggested to young adults that, as adolescents, they had committed a crime resulting in a brush with police, 70% constructed "rich false memories." As Shaw told PBS's NOVA on the "Memory Hackers" episode, the false memories "just kept coming and coming and coming" (Bicks & Strachan, 2016, 4 min, 13 s).

Yet that 70% finding should give researchers pause, because it is markedly outside the central tendency of the lost-in-the-mall literature. In a recent mega-analysis comprising 423 memory reports, 22% of subjects were classified as having developed "full" or "robust" false memories (Scoboria et al., 2017). How, then, did Shaw and Porter create so many false memories? In this Commentary, we provide evidence that they did not.

In lost-in-the-mall studies, two or more independent judges typically read transcripts of subjects' memory reports to determine whether subjects reject the suggestion outright, appear to believe the suggestion, or even seem to remember something about the false event. To date, 13 of 16 of these studies have distinguished between people who appear to develop false beliefs and those who appear to develop false memories.[1] Although different labs have defined and classified beliefs and memories differently, the gist of the distinction is this: People with false beliefs appear to accept that the false event occurred, or they imagine or speculate about it. People with false memories provide further evidence that they "genuinely" remember the event. For instance, they might elaborate on the suggested event, talk about emotions, or confidently state that they "remember the event occurring."

Shaw and Porter said they did not distinguish between false beliefs and memories in their research. Nor did they use any one of several established coding schemes that distinguish between false beliefs and false memories, because they feared that these schemes might not meaningfully differentiate among their subjects' reports. Instead, they developed a new coding scheme that they described as "very conservative" (p. 295). At first glance, this new coding scheme does indeed look conservative: Subjects had to meet six criteria to be judged as reporting a false memory. For instance, subjects had to report details about the event in the final interview session, including "critical pieces of false information" (p. 295), and provide a basic account of how the event occurred. During debriefing, subjects had to indicate that they genuinely came to believe they had forgotten about the event, that it really did happen, and that they had not talked to their family members about the study.

But consider the consequences if Shaw and Porter's 70% finding included a mix of subjects who appeared to (falsely) remember the crime, as well as those who simply accepted the suggestion and then speculated about the details. After all, we know that false memories

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and beliefs are qualitatively different and so should be reported separately (Bernstein, Scoboria, & Arnold, 2015; Clark, Nash, Fincham, & Mazzoni, 2012; Scoboria, Boucher, & Mazzoni, 2015; Smeets, Telgen, Ost, Jelicic, & Merckelbach, 2009). In one lost-in-the-mall study, subjects rated false memories, but not false beliefs, as being phenomenologically similar to real memories (Lindsay, Hagen, Read, Wade, & Garry, 2004). Thus, there are good reasons to distinguish between subjects who appear to believe an event occurred and those who appear to genuinely remember it. By eliminating this distinction, Shaw and Porter's "conservative" coding scheme may actually have been liberal.

To address this possibility, we recoded the memory reports of Shaw and Porter's subjects using three different coding schemes. We used Shaw and Porter's own scheme to make sure we could reproduce their results. We also used Lindsay et al.'s (2004) scheme and Scoboria et al.'s (2017) scheme because they both distinguish between false beliefs and memories, yet each uses a different approach to make the distinction.

Two independent, highly trained judges, unfamiliar with Shaw and Porter's study and blind to our hypotheses, reclassified Shaw and Porter's memory reports. Judges agreed on 80%, discussing and then resolving 79% of the others into the more conservative category (say, from the equivalent of a false memory into a false belief) and 21% into the more liberal category (say, from the equivalent of a false belief into a false memory). When we resolved all disputes into the more liberal (i.e., false memory) category, the patterns we report below did not change.[2] Details about judges' training and the criteria they used appear in the Supplemental Material. Table 1 shows the criteria for each coding scheme and our results.

When we recoded Shaw and Porter's data using their own scheme, we replicated their 70% result. When we recoded Shaw and Porter's data using Lindsay et al.'s (2004) scheme, 30% of subjects met the criteria for false memories and 43% met the criteria for false beliefs (in Lindsay et al.'s parlance, "images but not memories," p. 151). Combining 30% with 43% yields 73%—close to Shaw and Porter's 70%. When we recoded Shaw and Porter's data using Scoboria et al.'s (2017) scheme, 26% of subjects met the criteria for false memories (in Scoboria et al.'s scheme, this figure also includes a more fervently held level of false memories). Another 43% met the criteria for accepting the event but said they did not remember it. Combining 43% with 26% yields 69%—again, close to Shaw and Porter's 70%. Taken together, these findings suggest that many of Shaw and Porter's subjects did not demonstrate signs of remembering but simply accepted the suggestion, speculated about it, or conjured up mental images.

At this point, the skeptical reader might ask, "So what?" Thus far, we have merely established that two other coding schemes produced results similar to each other—results that were more conservative than Shaw and Porter's. It does not necessarily follow that those two schemes did a better job of tapping into real-world notions of remembering a false event. And, as Neisser (1978) sharply reminds us, we must not be so enamored of the laboratory that we neglect the real world. If laypeople's view of remembering accorded with one of the more conservative coding schemes, that would provide some evidence of converging validity.

Therefore, we conducted two experiments in which we told over 300 Mechanical Turk workers (Experiment 1: $N = 102$; Experiment 2: $N = 214$) about Shaw and Porter's procedure. We asked these laypeople to read transcripts randomly selected from those our judges had reclassified, using the Lindsay et al. (2004) scheme, as reporting the equivalent of (a) false memories, (b) false beliefs, and (c) no memories. Importantly, Shaw and Porter themselves had classified each of these transcripts as a false memory. We said nothing to these laypeople about how the transcripts had been classified; instead, we simply asked, "How confident are you that the participant had an experience of remembering the event that was suggested to them?" (0 = *Not at all confident*; 100 = *Extremely confident*). We reasoned that to the extent Shaw and Porter's definition of a false memory reflects real-world understanding of what it means to remember, then laypeople's confidence ratings should be high for all transcripts, regardless of their Lindsay et al. reclassification.

We summarize the basic findings here, but provide full details in the Supplemental Material. In both experiments, laypeople's mean confidence ratings did not align well with Shaw and Porter's definition of false memory and, in fact, converged with Lindsay et al.'s (2004) definition. Consider the memory reports that both Lindsay et al. and Shaw and Porter classified as false memories: Laypeople concurred, being reasonably confident that the reports showed evidence of remembering—Experiment 1: $M = 65.59$, 95% confidence interval (CI) = [61.49, 69.69]; Experiment 2: $M = 52.39$, 95% CI = [48.13, 56.66]. But more important, for reports that Shaw and Porter classified as a false memory and our judges reclassified as the equivalent of a false belief, laypeople did not concur with Shaw and Porter; instead, laypeople expressed low confidence that those reports showed evidence of remembering—Experiment 1: $M = 17.10$, 95% CI = [13.00, 21.20]; Experiment 2: $M = 22.34$, 95% CI = [18.87, 25.80]. In Experiment 1, for the sole report that Shaw and Porter had classified as a false memory and our judges had reclassified as "no memory," laypeople were even less confident, $M = 6.12$, 95% CI = [2.02, 10.22].

Table 1. False Memory Coding Schemes Applied to Shaw and Porter's (2015) Data

Scheme and category	Definition (quotation from published article)	Final categorization of Shaw and Porter's data	
		Criminal event	Emotional event
Shaw and Porter (2015)			
False memory	1. "The individual had to indicate that he or she remembered the suggested event during the final interview by reporting details about it" (p. 295) 2. "The participant's report by the third interview had to include the critical pieces of false information presented by the interviewer (including at least the location and the name of the friend who was supposedly there when asked, 'Where exactly did the event occur?' and 'Who was present during the event)" (p. 295) 3. "The individual had to provide a basic account of the false event in response to the instruction 'tell me everything you remember from start to finish,' and this account had to include more details than those provided by the experimenter (at least 10 unique details in total)" (p. 295) 4. "The participant could not have recalled the false event immediately upon its initial presentation" (p. 295) 5. "The participant had to indicate that he or she had not talked to his or her primary caregivers about any part of the parental memory questionnaire (i.e., during debriefing, answered 'no' to the question 'Did you talk to your parents?')" (p. 295) 6. "After being informed that the false event had not actually happened (during debriefing), the participant had to answer 'yes' to the question 'Did you believe that you had forgotten the event and that it actually happened?'" (p. 295)	21 (70%)	22 (73%)
Acceptance (similar to "false belief")	"Participants who provided fewer than 10 details but claimed at debriefing that they had believed the event actually happened were classified as being accepting of the false memory event" (p. 295)	3 (10%)	3 (10%)
Compliance	"Participants who provided 10 or more details of the false event but did not claim at the debriefing that they had believed the event actually happened were classified as compliant" (p. 294)	4 (13%)	3 (10%)
No memory	"Participants who provided fewer than 10 details and asserted at debriefing that they had not believed the event happened to them were classified as having no memory of the false event" (p. 295)	2 (7%)	2 (7%)
Lindsay, Hagen, Read, Wade, and Garry (2004); see also Desjardins & Scoboria, 2007; Hessen-Kayfitz & Scoboria, 2012)			
False memories	"Judges were to classify a report as memories only if the subject appeared to believe that he or she was remembering the suggested event" (p. 151)	9 (30%)	6 (20%)
Images but not memories (similar to "false beliefs")	"applied to cases in which the subject described images associated with the suggested event but did not appear to experience those images as memories of the event per se" (p. 151)	13 (43%)	16 (53%)
No images or memories	All other cases	8 (27%)	8 (27%)

(continued)

Table 1. *(continued)*

Scheme and category	Definition (quotation from published article)	Final categorization of Shaw and Porter's data: Criminal event	Final categorization of Shaw and Porter's data: Emotional event
Scoboria et al. (2017)			
Robust false memory	"high level of acceptance of the suggestion and moderate imagery and elaboration" (p. 153)	7 (23%)	6 (20%)
Full false memory	"moderate acceptance with moderate elaboration and moderate imagery" (p. 153)	1 (3%)	1 (3%)
Partial false memory	"moderate acceptance with any level of elaboration and any imagery" (p. 153)	0 (0%)	4 (13%)
Accepted (similar to "false belief")	"accepted the suggestion as true to some degree but did not meet the criterion for remembering" (p. 154)	13 (43%)	6 (20%)
Rejected	"Regardless of whether the event met the criteria for partial, full, or robust memory, if the participant stated at the end of the interview that s/he did not have a memory of the event, we coded the event as 'rejected'" (p. 154)	3 (10%)	6 (20%)
No memory	"cases for which acceptance of the suggestion was coded as zero" (p. 154)	6 (20%)	7 (23%)

Note: For each coding, the table gives the number of participants followed by the percentage of the sample. For the Shaw and Porter coding scheme, we were unable to apply Criteria 5 and 6 to the data set ourselves because Shaw and Porter did not record the debriefing, and the data were unavailable. Thus, we assumed that all of the subjects met Criterion 5 and did not discuss the critical events with their caregivers. For Criterion 6, Shaw and Porter provided us with a spreadsheet that contained subjects' responses to the qualifying question, "Did you believe that you had forgotten the event and that it actually happened?" We used these data to apply the criterion. Note that half of Shaw and Porter's 60 subjects were led to believe that they committed a crime, and half were led to believe they experienced an emotional event during adolescence. We recoded the data from this "emotional event" condition as well and present the findings in the far-right column.

Shaw and Porter reported creating "rich false memories" in 70% of their subjects. But when we recoded these memory reports using two other coding schemes, those schemes produced results similar to each other yet far more conservative than Shaw and Porter's. These recoded results now sit squarely in the central tendency of the literature. Moreover, when laypeople evaluated the reports, their assessment of "remembering" was better aligned with a conservative coding approach, a finding we take as evidence of converging validity. We suggest, therefore, that a better interpretation of Shaw and Porter's data is not that 70% of their subjects showed evidence of false memories but that 26% to 30% did.

Of course, even if only 26% to 30% of Shaw and Porter's (2015) subjects falsely remembered committing a crime, such a finding warrants concern about memories that arise during a suspect's questioning. Their findings show that suggestive techniques such as context reinstatement and imagination exercises, fused with a heavy dose of social demand, can lead people to generate personal memories of stealing or assaulting another person (see also Laney & Takarangi, 2013, for similar results).

Still, it is worth noting that Shaw and Porter (2015) developed their new coding scheme because, as they reported, more established ones would have inflated their rate of false memories. Yet we found just the opposite. When researchers forgo an established approach to coding subjects' memory reports in favor of one they claim is new and improved, their colleagues should be able to see the data coded both ways, to better determine what is new—and what, if anything, is improved.

We know that people can develop wholly false memories—sometimes with tragic consequences. It is precisely because this issue is so important in the justice system, and in people's lives, that as scientists we must be meticulous about measuring, interpreting, and communicating our results. We ourselves have occasionally been guilty of being unwittingly imprecise in what we have said and how we have said it. When researchers are not precise, it fuels skepticism of memory research and detracts from the understanding of real-world behavior (see Brewin & Andrews, 2017; but see also Nash, Wade, Garry, Loftus, & Ost, 2017).

Action Editor

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Author Contributions

K. A. Wade, M. Garry, and K. Pezdek developed the study concept, and K. A. Wade oversaw the coding and analyzed

the data. K. A. Wade and M. Garry drafted the Commentary, and K. Pezdek provided critical revisions. All authors approved the final version of the manuscript for submission.

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Declaration of Conflicting Interests

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Supplemental Material

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Open Practices

All data have been made publicly available via the Open Science Framework and can be accessed at https://osf.io/nmt5f/. The complete Open Practices Disclosure for this article can be found at http://journals.sagepub.com/doi/suppl/10.1177/0956797617703667. This article has received the badge for Open Data. More information about the Open Practices badges can be found at http://www.psychologicalscience.org/publications/badges.

Notes

1. Studies distinguishing between false beliefs and memories include Desjardins and Scoboria (2007); French, Sutherland, and Garry (2006); Garry and Wade (2005); Hessen-Kayfitz and Scoboria (2012); Hyman and Billings (1998); Hyman, Husband, and Billings (1995); Hyman and Pentland (1996); Lindsay et al. (2004); Ost, Foster, Costall, and Bull (2005); Otgaar, Scoboria, and Smeets (2013); Porter, Yuille, and Lehman (1999); Wade, Garry, Nash, and Harper (2010); Wade, Garry, Read, and Lindsay (2002; cf. Heaps & Nash, 2001; Loftus & Pickrell, 1995; Pezdek, Finger, & Hodge, 1997).

2. Using Scoboria's (2017) coding scheme, 33% were classified as false memories and 40% as accepting the event (a combined total of 73%); using Lindsay's et al.'s (2004) coding scheme, 43% were classified as false memories and 30% as images but not memories (a combined total of 73%). Therefore, judges' resolution toward the lower category does not account for the discrepancy between our results and Shaw and Porter's results.

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