

Research Report

Memory for Fact, Fiction, and Misinformation

The Iraq War 2003

Stephan Lewandowsky,¹ Werner G.K. Stritzke,¹ Klaus Oberauer,² and Michael Morales³

¹University of Western Australia, Crawley, Australia; ²Universität Potsdam, Potsdam, Germany; and ³Plattsburgh State University of New York

ABSTRACT—*Media coverage of the 2003 Iraq War frequently contained corrections and retractions of earlier information. For example, claims that Iraqi forces executed coalition prisoners of war after they surrendered were retracted the day after the claims were made. Similarly, tentative initial reports about the discovery of weapons of mass destruction were all later disconfirmed. We investigated the effects of these retractions and disconfirmations on people's memory for and beliefs about war-related events in two coalition countries (Australia and the United States) and one country that opposed the war (Germany). Participants were queried about (a) true events, (b) events initially presented as fact but subsequently retracted, and (c) fictional events. Participants in the United States did not show sensitivity to the correction of misinformation, whereas participants in Australia and Germany discounted corrected misinformation. Our results are consistent with previous findings in that the differences between samples reflect greater suspicion about the motives underlying the war among people in Australia and Germany than among people in the United States.*

Media coverage of the Iraq War of 2003 was characterized by frequent corrections, retractions, and disconfirmations of tentative earlier information. Although typical of news reports (Millis & Erdman, 1998), this piecemeal updating of information may amplify two known limitations of human information processing, namely, people's propensity to remember falsely things that are implied but never presented and people's inability to discount corrected information.

Address correspondence to Stephan Lewandowsky, School of Psychology, University of Western Australia, Crawley, W.A. 6009, Australia; e-mail: lewan@psy.uwa.edu.au.

False memories can be readily induced in the laboratory (e.g., Roediger, 1996; Roediger & McDermott, 1995). For example, false memory for the nonpresented word *sleep* occurs reliably following study of a list of associates such as *blanket*, *pillow*, *dream*, and *night*. In a real-life analogue, the Iraq War gave rise to many reports of the possible discovery of weapons of mass destruction (WMDs). Although the initial reports were usually identified as tentative and were always followed by explicit disconfirmations, these qualifications may have been insufficient to prevent false memories for the discovery of WMDs.

In other instances, war-related information was unexpectedly corrected after first being presented as factual. For example, Prime Minister Blair's claim that the Iraqis executed coalition prisoners of war after they surrendered (March 27, 2003) was substantially qualified by United Kingdom defense officials the next day. Similarly, during the first days of the war, reports that an entire Iraqi division had surrendered to coalition forces were later corrected by official sources. If information that was initially presented as factual is subsequently retracted by a high-credibility source, people should discount the original version of events.

However, there is much evidence that people continue to rely on misinformation even if they demonstrably remember and understand a subsequent retraction (e.g., Johnson & Seifert, 1994, 1998; Seifert, 2002; Wilkes & Reynolds, 1999). For example, Johnson and Seifert (1994) found that when people read a story about a hypothetical jewelry theft, they continued to infer the guilt of a person initially presented as a suspect even though the story later provided an alibi for that person. This persistent reliance on misinformation occurred despite the fact that virtually all participants correctly recalled the alibi. Moreover, reliance on discredited information is not confined to text processing: Mock jurors continue to rely on inadmissible evidence even when instructed to disregard it (e.g., Fein, McCloskey, & Tomlinson, 1997; Kassin & Sukel, 1997).

Misinformation is most likely to be discounted if the retraction also provides people with an alternative to the initial message, either by direct suggestion or by inducing suspicions about the ulterior motives underlying the misinformation. For example, if a story about a jewelry theft concludes with an alternative culprit being arrested, people no longer infer that the original suspect is guilty (Johnson & Seifert, 1994). Similarly, if jurors are made suspicious of inadmissible evidence (e.g., if a judge notes that its introduction might represent a deliberate attempt to manipulate the jury), verdicts are unaffected by the discredited information (Fein et al., 1997).

It follows that corrections of war-related misinformation may not have been fully effective, except in cases in which people were suspicious about the motives underlying its dissemination. By implication, corrections may have been less effective in coalition countries—especially the United States, where the public was largely supportive of the war—than in countries that opposed the war, in which the public was generally suspicious of the stated reasons for and all issues surrounding the war.

We examined the extent to which people resisted false memories and discounted misinformation by querying memory for and beliefs about war-related events in two coalition countries (Australia and the United States) and one country that opposed the war (Germany). The critical manipulation involved the type of event: We asked about events that were thought to be true, events that were initially presented as true but then retracted, and freely invented fictional events.

METHOD

Participants

Participants were 872 members of our university communities (plus another campus in Germany) who voluntarily completed a questionnaire about war-related events between mid-April and early May of 2003 (President Bush officially declared major combat over on May 1, 2003). Responses were collected in Australia ($n = 158$; mean age = 24.6, $SD = 10.5$; 44% female), the United States ($n = 302$; mean age = 22.3, $SD = 5.4$; 65% female), and Germany ($n = 412$; mean age = 23.1, $SD = 4.5$; 78% female). Data were collected at two locations in Germany: Potsdam-Berlin ($n = 232$) and Münster ($n = 180$).

Questionnaire

There were three types of critical items (four of each type): T (true) items, which involved events thought to be true; FR (false retracted) items, which involved events that were retracted or corrected after first being presented as factual; and F (fictional) items, which were freely invented but plausible given the political circumstances. All T and FR items were verified with reference to major on-line news archives (e.g., CNN's Web site at <http://www.cnn.com>) and were intended to be balanced with respect to emotional valence and political slant (see Table 1).

TABLE 1

Critical Items Presented to All Samples

True (T)	Kuwait City was hit by an Iraqi missile during the first week of the war which caused damage to a shopping centre.
	A 19-year-old female U.S. Prisoner of War was rescued from an Iraqi hospital by Special Forces and flown out of Iraq for medical treatment.
	U.S. troops mistakenly fired at a van that approached an allied checkpoint south of Baghdad and killed 7 women and children. Several U.S. soldiers were killed when a suicide bomber blew himself up in a car that had approached a checkpoint south of Najaf.
False retracted (FR)	The allies captured an Iraqi general during the first 1–2 weeks of the war.
	Allied POW's (Prisoners of War) were executed by the Iraqis after being captured and/or surrendering.
	Toward the end of the first week of the war, there was a significant civilian uprising against the Iraqi Baath Party militia in Basra. During the first few days of the war, an entire Iraqi division (some 8,000 soldiers) was captured and/or surrendered to the allies.
Fictional (F)	Iraqi troops poisoned a water supply station before withdrawing from the outskirts of Baghdad.
	The U.S. offered an amnesty to Iraqi officers, even if they ordered use of weapons of mass destruction, provided that they surrendered with their divisions.
	Captured Iraqi militia led allied forces to a store of plastic explosives fitted inside bicycle frames to be detonated by suicide bombers at allied checkpoints.
	A division of oppositional Iraqi forces trained in Hungary crossed the border from Turkey to Iraq and joined up with Kurdish opposition fighters near Mosul in Northern Iraq.

Participants responded to critical items twice. They first rated their memory for each event and the likelihood of it being true or false. On a second occasion, on later pages of the same questionnaire, respondents who acknowledged hearing of an event indicated their certainty regarding whether the information had been retracted subsequent to its first publication (people who had not heard of the event skipped the retraction rating). Participants were not permitted to refer to their first responses when providing retraction ratings. All response scales ranged from 0 (*definitely false/not heard before/not been retracted*) through 4 (*definitely true/heard before/been retracted*). The midpoint (2, *unsure or unsure if heard before*) represented the boundary between affirmation and rejection.

We created four versions of the questionnaire that orthogonally counterbalanced the order of critical items (one random sequence presented in forward or backward order) and the polarity of the response scale (affirmation on the left or right). Questionnaire versions were randomly assigned to participants.

In addition, one item queried whether WMDs had been discovered in Iraq at any time during or after the war (4-point scale ranging from *definitely not* to *definitely yes*). Another item asked

TABLE 2
Mean Ratings of the Importance of Proposed Reasons for the Iraq War

Proposed reason	Sample		
	Germany	Australia	U.S.
Destroy weapons of mass destruction	1.96 (0.06)	2.38 (0.11)	3.14 (0.06)
Change the regime in Iraq	3.13 (0.05)	3.11 (0.09)	3.04 (0.06)
Bring democracy to the Middle East	1.83 (0.05)	1.86 (0.11)	2.26 (0.07)
Secure oil supplies for Western nations	3.37 (0.05)	2.83 (0.10)	2.87 (0.07)
Finish first Gulf War	2.27 (0.07)	2.13 (0.11)	2.10 (0.08)
Protection from Al Qaeda (or other terrorists)	1.97 (0.06)	1.80 (0.10)	2.58 (0.07)

Note. Standard errors are in parentheses. Responses were made on a scale from 0 (*not at all important*) to 4 (*extremely important*). Respondents could generate additional reasons (not reported here).

people to rate their agreement (on a scale from 0 to 4) with a set of six potential reasons for the war (see Table 2).

RESULTS AND DISCUSSION

Data Examination

We first examined the data to ascertain their validity and generalizability and to check the main manipulation. The critical mean responses were highly correlated between the two German subsamples ($r = .982$), and the results reported here were obtained within each subsample. Accordingly, we concluded that our results hold across two culturally quite different sites within Germany, and we did not differentiate between the two German subsamples in the remaining analyses.

Given that gender balance varied considerably across the three samples, we analyzed the data separately for male and female respondents. These analyses replicated the results of the combined analysis, and we therefore report only the combined analysis here.

The manipulation check involved comparing the memory ratings between item types. The top panel of Table 3 shows that respondents on average affirmed memory for T events ($M = 2.77$ overall; all data based on averages for each item type and participant) but indicated that they had not heard of F events ($M = 1.14$). Australians¹ and Americans affirmed memory for FR events ($M = 1.99$), whereas Germans tended not to have heard of these items (largest $SEs \approx 0.06$). To control for memorial differences among samples and individuals, in the remaining analyses we considered only those T and FR items for which a participant acknowledged prior knowledge on the second occasion and thus provided a retraction rating.

Finally, cross-cultural comparisons can be affected by cultural biases in the use of response scales, such as differences in subjective midpoint and differences in the tendency to use extreme responses (known as acquiescence and extreme re-

sponse style, respectively; e.g., Cheung & Rensvold, 2000). Examination of the truth ratings for T items (bottom panel of Table 3) revealed virtually identical scale use across samples. Analysis of the underlying distribution (by rounding each participant's mean response and classifying it according to the original 0 to 4 scale) revealed no differences among the samples, $\chi^2(6, N = 859) = 7.68, p > .10$, Cramer's $V = .067$. We conclude that the samples used the scales in a similar manner, thus obviating the need for any rescaling.²

Discounting of Corrected Information

If people are sensitive to the correction of misinformation, greater certainty of retraction should be associated with lower truth ratings. We conducted separate regression analyses for T and FR items and for each sample, using memory and retraction ratings as predictors and truth ratings as the dependent variable. The results are shown in Table 4. For T items, as should be expected, memory was a stronger predictor of truth ratings (i.e., yielded greater standardized regression weights) than was belief in the items' retraction for all three samples. For FR items, whose retraction is their crucial attribute, one would expect the relative strength of the two predictors to reverse. However, only German and Australian participants showed this expected reversal. For Americans, retraction was unrelated to truth ratings, and memory for the event was as strong a predictor as it was for the (nonretracted) T items.

To further explore the differences across samples for the FR items, we focused on truth ratings provided by those people who affirmed memory for the events in their initial reports and who were aware of the correction of the events (i.e., memory ratings > 2 and retraction ratings > 2). This conditional analysis controlled for individual differences and also partially controlled for differences in media coverage between countries. As

¹Labels for samples and respondents refer to the location in which participants were tested rather than to their nationality or ethnicity. We use national labels (e.g., "Americans") merely as a convenient shorthand for "participants tested in . . ."

²The distributional analysis showed that samples differed slightly for F items, $\chi^2(6, N = 872) = 23.42, p < .0007$, Cramer's $V = .12$ (see the bottom half of Table 3). Although these differences were small, we repeated all analyses after adjusting FR truth ratings for Australians and Americans downward by their respective mean difference from Germans on the F truth ratings. This rescaling did not alter any of the conclusions.

TABLE 3
Means of Memory and Truth Ratings for the Three Types of Items

Item type	Sample		
	Germany	Australia	U.S.
Memory ratings			
True	2.82	3.12	2.52
False retracted	1.71	2.33	2.21
Fictional	1.03	1.17	1.29
Truth ratings			
True	3.02	3.13	3.02
False retracted	1.98	2.16	2.51
Fictional	1.59	1.68	1.83

Note. Items within each type were averaged for each participant. $SE_{\max} = 0.068$ for memory ratings and $SE_{\max} = 0.061$ for truth ratings. Truth ratings for true and false retracted items are included only if participants acknowledged having heard of the item and provided a retraction rating on the second occasion.

shown in Figure 1, German ($n = 50$) respondents did not believe in events that they knew to have been corrected (i.e., truth ratings < 2), $t(49) = -3.78$, $p < .001$, $d = -0.53$. The Australian truth ratings ($n = 29$) were numerically similar to the German responses but, perhaps owing to the small sample size, did not differ significantly from the midpoint, $t(28) = -1.63$, $p \approx .10$, $d = -0.30$. American respondents ($n = 62$), by contrast, notwithstanding their knowledge that the items had been retracted or corrected, considered FR events to be true, $t(61) = 10.57$, $p < .001$, $d = 1.34$.

Discounting and Suspicion

Given that people's readiness to discount misinformation increases if they are suspicious of the motives underlying its dissemination (e.g., Fein et al., 1997), the observed differences among the samples may reflect varying degrees of suspicion

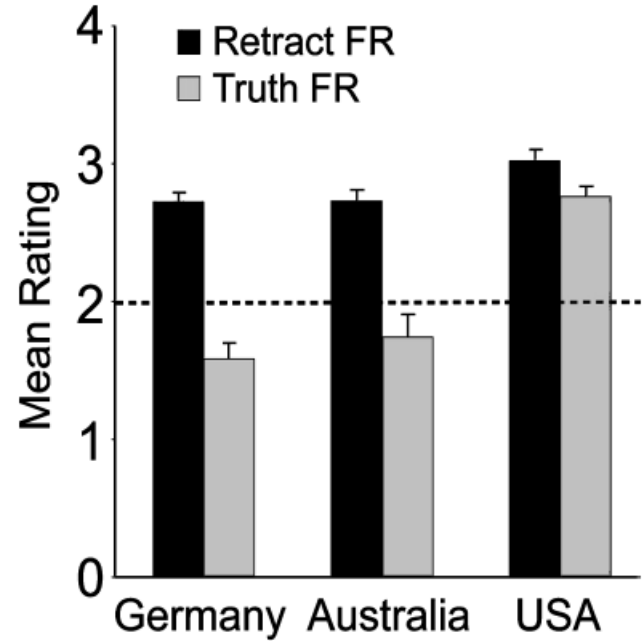


Fig. 1. Ratings of perceived truth and certainty of retraction of false retracted (FR) items for respondents who affirmed memory for the original events (i.e., memory ratings > 2) and acknowledged that the initial version of events had been corrected (i.e., retraction ratings > 2). Error bars indicate 1 SE. The dotted line indicates the boundary between affirmation and rejection.

about war-related information or the war in general. This interpretation is supported by respondents' beliefs about the reasons for the war (Table 2). Although the three samples agreed on some reasons (e.g., "regime change"), they diverged on others, with the most extreme differences involving the proposition that the war was fought to "destroy WMDs." Whereas Americans nominated this reason as being most important, in line with official U.S. policy, Germans considered it to be of little importance (Australians fell in between those

TABLE 4
Standardized Regression Coefficients (β) and Associated t Statistics From Multiple Regression Analyses Using Memory and Retraction Ratings as Predictors and Truth Ratings as the Dependent Measure

Predictor	Sample					
	Germany		Australia		U.S.	
	β	t	β	t	β	t
True (T) items						
Memory	.57	14.22***	.62	9.53***	.73	18.25***
Retraction	-.22	-5.52***	-.15	-2.34*	-.07	-1.79
False retracted (FR) items						
Memory	.23	5.08***	.14	1.70	.69	15.76***
Retraction	-.42	-9.44***	-.27	-3.34**	-.02	-0.36

Note. The largest absolute β in each analysis is in boldface.
* $p < .05$. ** $p < .01$. *** $p < .001$.

TABLE 5
Standardized Regression Coefficients (β) and Associated t Statistics From Multiple Regression Analyses of Truth Ratings for False Retracted Items

Predictor	Model					
	1		2		3	
	β	t	β	t	β	t
Memory	.38	12.59***	.38	12.94***	.36	12.09***
Retraction	-.07	-1.95	—	—	—	—
Suspicion \times Retraction	-.32	-9.52***	-.35	-11.78***	-.20	-5.51***
Australia \times Retraction ^a	—	—	—	—	-.20	-5.13***
Germany \times Retraction ^a	—	—	—	—	-.27	-5.42***
U.S. \times Retraction ^a	—	—	—	—	-.01	-0.36

Note. In these analyses, data from all three samples were combined. Adjusted $R^2 = .31, .31, \text{ and } .35$ for Models 1, 2, and 3, respectively.

^aThese predictors were equal to the retraction ratings for participants in the sample involved in the product and zero otherwise, thus providing a separate estimate of the effects of retraction for each sample.

*** $p < .001$.

extremes). We take this disbelief of official policy to be indicative of suspicion about the war, which may have enabled Germans and Australians to discount corrected misinformation.

It follows from this hypothesis that discounting should increase with suspicion, irrespective of nationality. We constructed an index of suspicion by reverse-coding people's agreement that the war was fought to destroy WMDs (i.e., a higher score was taken to indicate greater suspicion). The product of this suspicion index and retraction ratings for FR items ($S \times R$) was entered into three multiple regression models with FR truth ratings as the dependent variable (see Table 5). Comparison of Models 1 and 2 shows that retraction ratings explained no variance beyond that captured by $S \times R$, affirming that retraction was related to truth ratings only if people were suspicious. Model 3 reintroduced retraction ratings in addition to $S \times R$ but included a separate parameter for each sample. Comparison of Models 1 and 3 shows that although retraction ratings accounted for variance independently of suspicion for Germans and Australians—but not Americans—the overall increase in explained variance was modest (4%). We conclude that suspicion about the motives underlying the war was a principal modulating variable that affected respondents' discounting behavior irrespective of nationality.

False Memories

Participants' ratings of certainty that WMDs had been discovered also differed among the samples, with ratings of 0.50 ($SE = 0.04$), 0.97 (0.10), and 1.68 (0.08), respectively, for Germans, Australians, and Americans. All means were significantly below the midpoint, confirming that on average people resisted the creation of false memories.

However, the distribution of responses differed strikingly across the samples. The proportion of people who falsely remembered that WMDs had been discovered in Iraq (rating > 2) was .34 among Americans, .17 among Australians, and .05

among Germans, $\chi^2(8, N = 867) = 149.51, p < .0001$, Cramer's $V = .29$.

SUMMARY AND CONCLUSIONS

The results are readily summarized. First, German and Australian respondents were sensitive to corrections of misinformation. This is evident from (a) the negative relationship between certainty of retraction and truth ratings for FR items and (b) the fact that truth ratings were below the midpoint for FR items that respondents had heard of and knew to have been retracted. Second, Americans showed no sensitivity to corrections of misinformation, even when they knew that an event had been retracted. We suggest that the differences among the samples reflect different degrees of suspicion about the motives underlying the war. This conclusion is supported by a regression analysis that identified suspicion as a modulator of people's discounting behavior. Finally, although all samples on average correctly indicated that no WMDs had been found in Iraq, a substantial minority of Americans exhibited false memory that they were discovered.

We draw three pragmatic conclusions: First, the repetition of tentative news stories, even if they are subsequently disconfirmed, can assist in the creation of false memories in a substantial proportion of people. Second, once information is published, its subsequent correction does not alter people's beliefs unless they are suspicious about the motives underlying the events the news stories are about. Third, when people ignore corrections, they do so irrespective of how certain they are that the corrections occurred.

Acknowledgments—We thank Gordon Brown for comments on an earlier version of the manuscript and Leo Roberts, Charmaine Jones, Claire Nulsen, Daniel Little, Elizabeth Newnham, Emma Walters, Matthew Dermody, Mike Smith, Melanie

Newton, Tom Olsen, Oliver Wilhelm, Ralf Schulze, Michelle Hurley, Mike Pitaro, Nichole Christiansen, Ruth Starke, Rheta Vann, Chad Alder, Garrett Alder, Ferne Pinard, Jeanne Valerio, Michelle Forkey, and Liliya Endres for assistance during data collection. We thank Davina French for guidance about the literature on cross-cultural scale use.

REFERENCES

- Cheung, G.W., & Rensvold, R.B. (2000). Assessing extreme and acquiescence response sets in cross-cultural research using structural equations modeling. *Journal of Cross-Cultural Psychology, 31*, 187–212.
- Fein, S., McCloskey, A.L., & Tomlinson, T.M. (1997). Can the jury disregard that information? The use of suspicion to reduce the prejudicial effects of pretrial publicity and inadmissible testimony. *Personality and Social Psychology Bulletin, 23*, 1215–1226.
- Johnson, H.M., & Seifert, C.M. (1994). Sources of the continued influence effect: When misinformation in memory affects later inferences. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 20*, 1420–1436.
- Johnson, H.M., & Seifert, C.M. (1998). Updating accounts following a correction of misinformation. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 24*, 1483–1494.
- Kassin, S.M., & Sukel, H. (1997). Coerced confessions and the jury: An experimental test of the “harmless error” rule. *Law and Human Behavior, 21*, 27–46.
- Millis, K.K., & Erdman, B.J. (1998). Comprehending news articles: Updating the news. *Poetics, 25*, 343–361.
- Roediger, H.L., III. (1996). Memory illusions. *Journal of Memory and Language, 35*, 76–100.
- Roediger, H.L., III, & McDermott, K.B. (1995). Creating false memories: Remembering words not presented in lists. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 21*, 803–814.
- Seifert, C.M. (2002). The continued influence of misinformation in memory: What makes a correction effective? In B.H. Ross (Ed.), *The psychology of learning and motivation: Advances in research and theory* (Vol. 41, pp. 265–292). San Diego, CA: Academic Press.
- Wilkes, A.L., & Reynolds, D.J. (1999). On certain limitations accompanying readers’ interpretations of corrections in episodic text. *Quarterly Journal of Experimental Psychology: Human Experimental Psychology, 52A*, 165–183.

(RECEIVED 12/8/03; REVISION ACCEPTED 3/8/04)