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Comparing the influence of directly vs. indirectly encountered post-event misinformation on eyewitness remembering



Hartmut Blank *, James Ost *, Jo Davies, Georgina Jones, Katie Lambert, Kelly Salmon

University of Portsmouth, United Kingdom

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ABSTRACT

Some research has found a stronger influence of directly (face-to-face; co-witness; 'social') vs. indirectly (through written reports, 'non-social') encountered post-event misinformation on eyewitness memory reports, whereas other research finds no (big) difference. We argue and demonstrate that a crucial but so far neglected variable underlying this difference is memory for the misleading information itself. In a study with N = 120 participants who encountered misinformation directly or indirectly, we found misinformation retention (as assessed in a separate test) to be positively associated with a broad range of misinformation effects. Influence type (direct vs. indirect), however, did not moderate the misinformation effect in terms of memory for original details, and misinformation endorsement was even weaker in the direct influence condition. In our view, these findings reflect differential conversion of retained misinformation into test performance. Other than this, influence type had essentially no effects on remembering; nor did an additional post-warning manipulation.

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1. Introduction

It has been known for decades that eyewitness reports can be distorted by misleading information encountered after observing an event (Loftus, Miller, & Burns, 1978; see Belli & Loftus, 1996; Zaragoza, Belli, & Payment, 2006, for overviews). In most of this 'traditional' research on the post-event misinformation effect, misleading information about the event has been introduced *indirectly*, through embedding it in an initial set of questions about the event (e.g., Loftus et al., 1978) or in a post-event narrative describing the event (e.g., McCloskey & Zaragoza, 1985).

More recently, researchers have explored other, more ecologically valid, forms of introducing misinformation through *direct* face-to-face interactions between witnesses (as this is how real eyewitnesses would typically encounter misinformation; Paterson & Kemp, 2006; Skagerberg & Wright, 2008a). Two slightly different paradigms have been used. In the *co-witness* or *social contagion* paradigm (Meade & Roediger, 2002; Ost, Ghonouie, Cook, & Vrij, 2008; Roediger, Meade, & Bergman, 2001), participants discuss the observed event with a co-witness before filling out an individual memory test for the event. The co-witness, actually an experimental confederate, is trained to insert specific misleading details into the discussion, and as a result the typical

E-mail addresses: hartmut.blank@port.ac.uk (H. Blank), james.ost@port.ac.uk (J. Ost).

effect of such misinformation on individual memory performance emerges. In contrast, the *memory conformity* paradigm uses two real participants who influence each other. Further developing a technique introduced by Schneider and Watkins (1996), Wright, Self, and Justice (2000) presented pairs of participants with a series of slides about a criminal event that – unbeknownst to them – differed in one crucial slide, thereby ensuring that contradictions would arise in a subsequent discussion. As in the co-witness paradigm, this mutual influence later emerged in witnesses' subsequent individual accounts (although who exactly influenced who depended on their initial confidence in their memory; Wright et al., 2000). Both co-witness and memory conformity studies are reviewed in more detail in Bodner, Musch, and Azad (2009).

Our paper focuses specifically on the question of whether there is a difference in the 'suggestive power' of directly and indirectly encountered misinformation. Only a few studies have addressed this question, with differing results. The first relevant finding comes from Meade and Roediger (2002, Exp. 4). In this experiment, the same misinformation was presented either via a co-witness, or via a written statement ostensibly coming from a previous witness. This did not noticeably influence the size of the misinformation effect — in both the co-witness and written misinformation conditions, participants used the suggested misinformation to answer about 30% of the critical cued recall questions. In contrast, Gabbert, Memon, Allan, and Wright (2004), using the same methodology, found a stronger effect of 'socially' induced misinformation. In their co-witness condition, participants recalled misinformation 44% of the time, compared to 32% in the written presentation condition (a significant difference).

 $^{^{\}ast}$ Corresponding authors at: Department of Psychology, University of Portsmouth, Portsmouth PO1 2DY, United Kingdom.

In a third study, again using cued recall of misinformation as the dependent variable but a memory conformity paradigm instead of a cowitness paradigm, Bodner et al. (2009, Exp. 1) found a numerical advantage of directly vs. indirectly encountered misinformation. In their 'dyad' condition, participants first watched slightly different versions of a crime video and then discussed what they had seen with the other participant, while in their 'read' condition, each participant wrote an account of the video on their own, which the other participant was then allowed to read through. Subsequently, all participants individually answered a final memory questionnaire. In this final cued recall test, 74% of the 'dyad' participants reported misinformation, compared to 64% of the 'read' participants (although this difference was not statistically significant).

1.1. Direct and indirect misinformation influence — same or different?

In trying to account for this seemingly inconsistent pattern of results across the three studies, one might be tempted to look for differences in the 'social' aspects of the co-witness conditions realised in the three studies. This seems to almost suggest itself, as the contrast between directly and indirectly encountered misinformation is typically interpreted in this literature as reflecting the presence of social processes and influences in direct face-to-face interaction (most notably, conformity processes; Bodner et al., 2009; Gabbert, Memon, & Allan, 2003; Gabbert, Memon, & Wright, 2006; Gabbert et al., 2004; Hope, Ost, Gabbert, Healey, & Lenton, 2008; Ost et al., 2008; Schneider & Watkins, 1996; Skagerberg & Wright, 2008b; Wright & Carlucci, 2011; Wright et al., 2000).

While we emphatically welcome this attention to social factors in remembering, we would also like to make the point that indirect forms of introducing misinformation (e.g. in a written narrative) cannot necessarily be characterised as 'non-social'; information - as well as misinformation - does not exist in a social vacuum (see Blank, 2009, for a general elaboration of this view with respect to remembering). This is readily supported by a number of 'traditional' misinformation studies in which the influence of written misinformation varies as a function of the credibility of the misinformation's alleged source (e.g., Dodd & Bradshaw, 1980; Smith & Ellsworth, 1987; Underwood & Pezdek, 1998). Even more to the point, there is some memory suggestibility research conducted from an explicit social conformity perspective but without any face-to-face interaction of participants (Betz, Skowronski, & Ostrom, 1994; Walther et al., 2002). In Walther et al. (2002), for instance, participants saw misleading responses allegedly made by other participants coming up on a computer screen, and the effects on the real participants' recognition test answers followed the typical pattern found in classical (face-to-face) conformity research (Asch, 1951; Bond, 2005; Bond & Smith, 1996; Cialdini & Goldstein, 2004). Specifically, larger majorities led to more memory conformity, but the presence of a dissenter greatly reduced it.

It seems, therefore, that social variables have the potential to influence remembering quite generally, irrespective of whether this misleading influence is conveyed directly in face-to-face interaction or indirectly. In other words, direct misinformation influence is not in itself any more 'social' than indirect misinformation influence, and therefore there is also no reason to presuppose that it would be inherently stronger. Instead, both direct and indirect influence should depend on principally the same factors, that is, a multitude of factors that have been studied in misinformation research so far (cf. overviews by Belli & Loftus, 1996; Zaragoza et al., 2006). Any such factors might be responsible for the differences between direct and indirect influence found in Gabbert et al.'s (2004) and – to some extent – Bodner et al.'s (2009) study.

In concluding this discussion of direct vs. indirect influence, it is perhaps worth emphasising that this terminology does not imply any single underlying dimension of 'directness.' Rather, it reflects a number of naturally confounded differences between the ways misinformation is encountered, processed and encoded in co-witness/memory conformity paradigms on the one hand and in standard misinformation paradigms on the other. All of the three studies mentioned earlier that compared direct and indirect influence used such multidimensional contrasts. As in these studies, the focus of our own study is not on isolating a particular dimension but on comparing the paradigms as wholes. In this sense, our study can be seen as a conceptual replication of those earlier comparisons, but we also add to previous research by investigating a possible factor underlying the earlier findings.

1.2. The present study: misinformation retention and the impact of a post-warning

In the present study, we draw attention to a factor that might well explain some of the stronger direct influence findings summarised above. Specifically, we focus on the degree to which misleading details are attended to, encoded, subsequently remembered, and then influence participants' memory reports. Put simply, if the misleading information is better retained, it will have a stronger misleading impact. Following this logic, stronger impact in a direct influence condition might result, for instance, from a more vivid presentation of the misinformation and, subsequently, better retention. At the time of the final individual memory test, there would then be a higher chance that such directly encountered misinformation is remembered and used to answer test items.

This retention argument is a logical possibility in the Gabbert et al.'s (2004) and Bodner et al.'s (2009) findings, because misinformation retention was neither controlled nor assessed in these studies. Hence, it is entirely possible that their stronger direct influence effects were mediated through misinformation retention. To fully appreciate this argument, it is important to be aware that misinformation retention as we use the term here differs from (a) other aspects of memory for misleading details (such as memory for their sources; cf. e.g., Bodner et al., 2009; Lindsay & Johnson, 1989) and (b) the endorsement of suggested misleading details in accounts of/memory tests for the originally witnessed event, which is a consequence of remembering misinformation and believing that it is a correct representation of the original event (cf. the more general memory vs. belief distinction in remembering; Blank, 2009; Mazzoni, Scoboria, & Harvey, 2010), and is a form of the misinformation effect itself (Higham, 1998; Pansky, Tenenboim, & Bar, 2011). Memory retention simply reflects the ability to remember (i.e. access) presented misleading details, irrespective of memory for their sources and whether or not they are endorsed as veridical parts of the original event.

In our study, assessing misinformation retention enabled us to determine whether any difference between direct and indirect influence effects were associated with corresponding differences in misinformation retention (or if no differences in influence effects corresponded to no differences in misinformation retention). To this end, we used a memory state test (Blank, 1998, 2005; Oeberst & Blank, 2012) that simultaneously assesses retention of original and misleading details, separately from memory for the sources of those details, and also disrupts any misinformation endorsement effects by informing participants about the presence of misinformation and contradictions between original and misleading details (see Methods section for details). We also used a broader range of memory measures than in previous co-witness or memory conformity research, in order to cover different aspects of memory performance (recall, recognition, memory for original details as well as misinformation endorsement) and thereby put comparisons between direct and indirect influence on a broader basis.

There was another aspect of our study bearing on the question of differential vs. uniform influence of directly and indirectly encountered misinformation. Previous work has found that *post-warning* participants about the presence of misleading information (i.e., telling them about its presence only *after* it has been introduced) often serves to reduce participants' susceptibility to it in a final memory test (e.g. Blank, 1998; Chambers & Zaragoza, 2001; Christiaansen & Ochalek, 1983;

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