



Why Were Those Details So Hard for Me to Recall? Experienced Ease of Selective Retrieval Modulates Episodic Gist Memory



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The role of *retrieval fluency*—the experienced ease with which information comes to mind—in cognition has been studied from various perspectives. Memory research has treated retrieval fluency primarily as a metacognitive cue for evaluating the source and accuracy of retrieved content, whereas social-cognition research has focused on its role as an independent source of information that may qualify—and even oppose—the retrieved content. Spanning these literatures, we examined how the experienced difficulty of selective memory retrieval may bias one's gist memory of a key aspect of a narrated crime story (the suspect's likely guilt or innocence). Paradoxically, the experienced difficulty of selectively retrieving a larger number of event details supporting a particular gist interpretation (suspect is guilty) led participants toward the *opposite* interpretation (suspect is innocent), despite having retrieved substantially more supporting content. These findings raise an additional theoretical and practical concern regarding the malleability of witness memory.

General Audience Summary

In judicial settings, the questioning of witnesses about what they remember is a major source of information, used first in the investigative stages and then later in the courtroom. Witness memory, however, is highly susceptible to bias and contamination from external sources of (mis-)information. Building on the well-known ease-of-retrieval phenomenon, we identified and examined a potential memory bias by which the experienced ease (fluency) or difficulty with which the solicited information comes to mind operates as an additional source of information influencing one's overall interpretation of the remembered events independently of the retrieved content. After reading a crime story, participants were later asked to recall either few (easy task) or many (difficult task) details that incriminated the main suspect. Paradoxically, we found that participants asked to retrieve many incriminating details regarding the suspect judged him as less likely to be guilty than those asked to retrieve only a few, despite having retrieved three times as much incriminating information. Presumably, participants attributed the experienced difficulty of retrieving many incriminating details as reflecting the paucity of such details, though it actually simply reflected the difficulty of the task. Crime investigators should be wary: Attempting to elicit a large number of details in support of a particular conclusion may actually, by way of experienced retrieval difficulty, bias the witness' own overall interpretation of the events ("gist" memory) in the opposite direction.

Keywords: Gist memory, Eyewitness memory, Retrieval fluency, Ease of retrieval, Subjective experience as information

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It is now well established that one's subjective experience during the processing of information may carry its own informational value, above and beyond the processed content per se (e.g., Alter & Oppenheimer, 2009; Jacoby & Dallas, 1981; Schwarz, 1990). One type of subjective experience that has been prominent, both in the study of human memory and in the domain of social cognition, is *retrieval fluency*—the experienced ease or difficulty with which retrieved information comes to mind (e.g., Kelley & Rhodes, 2002; Wänke, 2013). In memory research, retrieval fluency has been shown to provide an important metacognitive cue used by rememberers in evaluating the source and accuracy of retrieved information (e.g., Benjamin, Bjork, & Schwartz, 1998; Johnson, Hashtroudi, & Lindsay, 1993; Kelley & Lindsay, 1993; Pansky & Goldsmith, 2014).

In parallel, research in social cognition has emphasized the informational value of retrieval fluency in influencing one's attitudes and judgments, most prominently, in the *ease-of-retrieval* (EOR) paradigm (Schwarz et al., 1991; for a review, see Wänke, 2013). In this paradigm, the informational value of difficulty experienced in retrieving judgment-pertinent content is pitted against the informational value of the retrieved content itself. In a pioneering study, Schwarz et al. (1991) had participants selectively recall either six or twelve examples of their own assertive behaviors, and then rate their own general level of assertiveness. Counterintuitively, participants rated themselves as *less* assertive after recalling twelve assertive behaviors than after recalling six behaviors. Presumably, the experienced difficulty of recalling twelve assertive behaviors was taken to indicate that one is not very assertive; otherwise, thinking of examples should not be that difficult.¹ Subsequent research has extended this pattern to a wide range of other attitudes and judgements (e.g., Rothman & Hardin, 1997; Wänke, Bless, & Biller, 1996).

The aim of the present study is to highlight the relevance of this latter role of retrieval fluency for the study of episodic (event) memory, by examining whether experienced retrieval difficulty can modulate one's memory of the *gist* (overall meaning; Kintsch, 1974) of a key aspect of a narrated crime episode. More specifically, we examined whether experienced difficulty in selectively retrieving event details supporting a particular overall interpretation of the events (that the suspect is guilty) can actually drive one's interpretation in the opposite direction (that the suspect is innocent). Although, in keeping with prior EOR research, this overall interpretation was elicited as an overt memory-based judgment, in the present context of episodic memory we propose to conceptualize this judgment as a type of *gist memory* (e.g., of the overall weight of the evidence, or overall likelihood that the suspect was guilty) that may have its own general or schematic memory representation (Brewer & Nakamura, 1984; Kintsch, 1974; Reyna & Brainerd, 1995), beyond that of the specific event details. The possibility that EOR may modulate gist memory has important theoretical and applied implications, both in its own right (e.g., Brainerd & Reyna, 1990; Reyna, Corbin, Weldon, & Brainerd, 2016), and

because of the potential effects that changes in gist/schematic memory might have on one's subsequent memory of the recalled events (see Discussion section).

Despite the clear parallels between the present research question and those typically examined within the EOR paradigm, it is not straightforward that EOR will influence one's interpretation of a remembered episode in the same way that it affects more general judgments and attitudes. A key issue concerns the extent to which the experienced difficulty of selectively retrieving a particular category of event details (e.g., incriminating behaviors) will be perceived as being diagnostic of the paucity of such details, rather than simply reflecting the level of retrieval difficulty that one should expect to experience under the specific memory task conditions. Raghbir and Menon (2005), for example, obtained the typical pattern of EOR effects on judgments of general dining satisfaction when the selective retrieval of positive or negative dining instances pertained to the recent past, but not when the retrieval was from a more distant time period. In the latter case, the experienced difficulty of retrieving the solicited number of dining instances could perhaps be attributed more naturally to the expected difficulty of retrieving a large number of distant memories, rather than to the paucity of such dining instances (cf. Winkielman, Schwarz, & Belli, 1998).

Based on these, and on other findings in which participants' expectancies regarding retrieval difficulty were experimentally manipulated (e.g., Hansen & Wänke, 2008; Schwarz et al., 1991), it appears that EOR effects are more likely to occur when there is at least some deviation between the experienced retrieval difficulty and subjective expectancies (for a review of evidence and alternative theoretical interpretations, see Wänke & Hansen, 2015). Therefore, following Hansen and Wänke (2008), in order to maximize the potential effectiveness of the EOR manipulation in the present study, we added an initial baseline memory task whose difficulty was manipulated in a direction opposite to the manipulated difficulty of the subsequent crime-detail retrieval task.²

Participants first read a fictitious crime report containing an equal number of details that tended either to incriminate or to exonerate the primary suspect. Afterwards, they were asked to selectively recall a specified small (easy retrieval) or large (difficult retrieval) number of incriminating details according to the assigned EOR condition. Before doing so, however, they were first administered either an easy or a difficult word-pair memory task, designed to create two different levels of baseline task difficulty, which we hoped would influence the participants' expectancies regarding the difficulty of the subsequent crime-detail retrieval task in a direction opposite to the actual manipulated difficulty of the that task (i.e., the EOR manipulation). Thus, half of the participants first performed a difficult word-pair memory task (*difficult baseline*) and then moved on to perform the *easy-retrieval* version of the crime-detail retrieval task, whereas the other half first performed an easy word-pair

¹ This is one possible characterization of the attribution process underlying the EOR effect, which is still under debate (see Wänke, 2013).

² Note that the present study was not designed to (re-)examine the role of expectancies, or whether the observed EOR effects might have been obtained without the initial baseline-difficulty manipulation.

task (*easy baseline*) and then moved on to perform the *difficult-retrieval* version of the crime-detail retrieval task. Immediately upon completion of the selective crime-detail retrieval task, based on their memory of the overall gist of the evidence, all participants were asked to rate the likelihood that the suspect is in fact the murderer. Compared to the easy crime-detail retrieval condition, we predicted that the experienced difficulty of recalling the required number of incriminating details in the difficult crime-detail retrieval condition would lead participants to view the suspect as *less likely* to be guilty, even though a larger number of incriminating details had actually been retrieved.

Method

Participants

Sixty undergraduates from the University of Haifa participated for either course credit or monetary compensation (30 ILS, approximately 8 USD). Sample size was determined before data collection, based on an *a priori* power analysis (G*Power 3; Faul, Erdfelder, Lang, & Buchner, 2007), aimed to detect a moderate EOR effect (effect sizes reported in the EOR literature are commonly moderate or larger) with 80% power at $\alpha = .05$. Participants were assigned randomly and equally to each of the two EOR (easy-retrieval, difficult-retrieval) groups. Thirteen participants who failed to recall the required number of incriminating details during the EOR manipulation phase were excluded from the sample and replaced. All reported results reflect the sample of participants who fulfilled the task requirements (30 in each condition).

The exclusion criterion followed the common practice in EOR studies (e.g., Wänke et al., 1996; Winkielman et al., 1998) and the guidelines put forward by Wänke (2013). Excluding cases of incomplete retrieval precludes an alternative account of EOR effects, by which non-fulfilling participants (in the present study) might regard the required number of incriminating details as setting a norm for inferring guilt, and then treat their inability to satisfy this norm as an indication that the suspect is innocent. Including the 13 non-fulfilling participants in the analyses did not change the pattern of results.

Materials

Episodic crime report. A fictitious crime report was developed, adapted from Tversky and Marsh (2000, Exp. 3), and translated to Hebrew. This narrative was chosen in order to simulate an eyewitness memory situation in which witnesses are typically requested to recollect meaningful information about crime events (for further discussion of the relevance of narrative memory to eyewitness testimony, see Reyna et al., 2016).

The report (1500 printed words; see Online Supplement) depicted the investigation of the murder of Elijah Shapira. In addition to neutral background information, embedded in the report were target clues and behaviors that either incriminated or exonerated the primary suspect, Jonathan Shahar. Overall, the narrative contained ten incriminating target details (e.g., “Jonathan was the prime beneficiary of Shapira’s will”) and ten exonerating details (e.g., “the polygraph test indicated that

Jonathan’s version of the events was reliable”), thereby rendering the report ambiguous as to Jonathan’s guilt or innocence.

Word-pair recall task (baseline-difficulty manipulation).

The task was administered by computer. Participants studied a serially presented list of word pairs for a subsequent recall test. Differences in the strength of the semantic relation between the two words and in presentation time were designed to create two substantially different levels of task difficulty, thereby setting a baseline for the expected difficulty of the memory tasks that would follow: To induce an easy baseline, participants studied 35 strongly associated word pairs (e.g., cat–dog), each presented for 5315 ms, whereas to induce a difficult baseline, participants studied 38 unrelated word pairs (e.g., bowl–month), each for 4500 ms.³ The study phase was followed immediately by a cued-recall test, with one word of each pair serving as cue. Upon completion, bogus feedback was tailored to fit the difficulty of the task: All participants completing the easy baseline task were told that they had performed “very well” (in the 90th percentile), and all participants completing the difficult expectancy-baseline task were told that their performance was “about average” (in the 50th percentile). Because the percentage of recalled pairs in the difficult baseline task was very low (42.4%, compared to 94.1% in the easy condition), the bogus feedback indicating average performance was designed to encourage these participants to attribute their poor performance to the difficulty of the task, rather than to their own memory ability.

Crime-detail retrieval task (EOR manipulation). Participants were asked to selectively recall a specified number of incriminating details associated with the primary suspect depicted in the crime report. Preliminary testing indicated that most participants could easily recall three details, but found it very difficult to recall nine (out of the ten incriminating details embedded in the report). Accordingly, participants in the easy and difficult retrieval conditions were instructed to provide three or nine incriminating details, respectively. Participants reported the details on answer sheets containing two blank lines for each requested detail.

Gist-memory rating questionnaire. On a separate page, participants’ memory of the overall gist of the evidence regarding the suspect’s guilt or innocence was elicited using a direct rating scale, similar to those standardly used in EOR experiments (Wänke, 2013). The exact wording was as follows: “Based on your gut feeling, in your opinion how likely is Jonathan to be the murderer, on a scale from 1 (definitely not the murderer) to 10 (definitely the murderer)?” The wording was designed to encourage participants to make their rating without engaging in any additional retrieval of specific crime details.

Manipulation-check questionnaire. Two additional rating scales were used to evaluate the subjective difficulty experienced during the crime detail retrieval task and the preceding word-pair

³ The larger number of pairs in the latter condition, as well as additional blank screens that were added in that condition, served to fully equate the task duration in the two conditions.

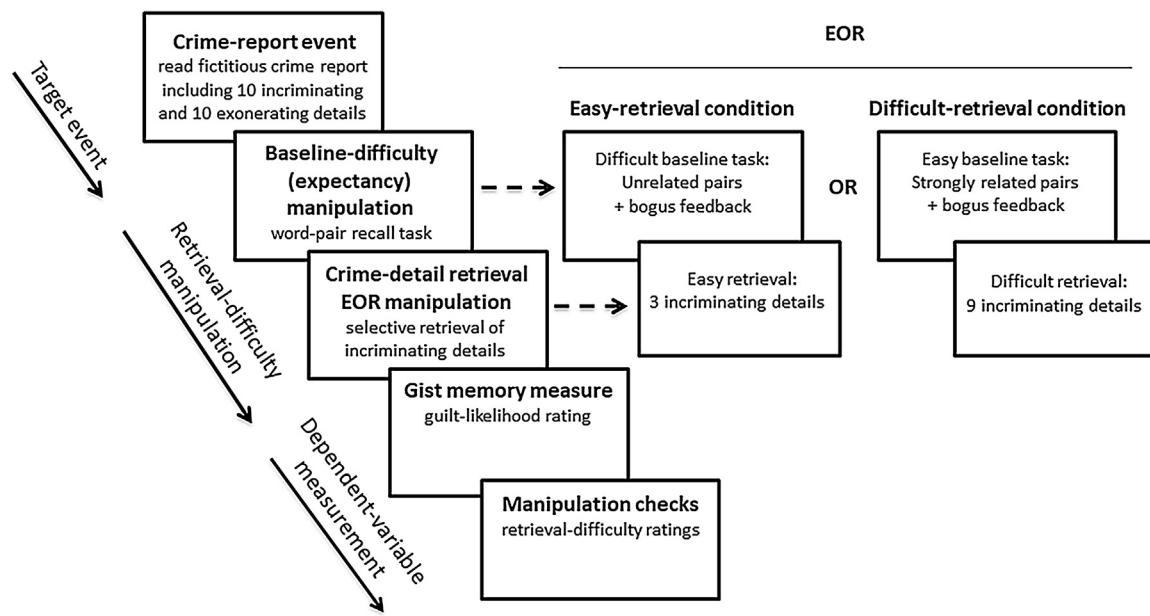


Figure 1. A schematic representation of the experimental procedure and design.

memory task, on scales ranging from 1 (very easy) to 10 (very difficult).

Procedure

There were five phases to the experiment (see Figure 1): the crime-report event phase, the baseline-difficulty (expectancy) manipulation phase (word-pair recall task), the selective crime-detail retrieval phase (EOR manipulation), the gist-memory measurement phase (guilt likelihood rating), and a final manipulation-check phase. At the beginning of the experiment, participants were told that the research is concerned with developing a program to improve eyewitness memory. They were then presented with the fictitious crime report and encouraged to read it carefully, at their own pace, in preparation for an upcoming memory test. After reading the report, before continuing to the critical crime-detail retrieval phase, they first performed the word-pair memory baseline task, which was purported to test the type of "declarative memory functioning" that is also used in eyewitness recall. Half of the participants were first given the easy word-pair memory task (*easy-expectancy baseline*) followed immediately by the difficult crime-detail retrieval task (*difficult-retrieval EOR condition*), whereas the other half were first given the difficult word-pair memory task (*difficult-expectancy baseline*) followed immediately by the easy crime-detail retrieval task (*easy-retrieval EOR condition*).

At the beginning of the crime-detail retrieval task, participants in all conditions were encouraged to imagine themselves as potential witnesses for the prosecution in Elijah Shapira's murder case. Then, according to their assigned EOR condition, they were asked to selectively recall either three (easy-retrieval) or nine (difficult-retrieval) details that incriminate the primary suspect in the murder of Shapira. Immediately following completion of this task, participants were given the gist-memory rating questionnaire, and finally, the manipulation-check

questionnaire. Upon finishing, participants were thanked, debriefed, and paid. The entire procedure took about 30 min.

Results

Manipulation Checks

The results of the manipulation checks are presented in Table 1. First, with regard to the baseline-difficulty manipulation (initial word-pair memory task), the difficult (unrelated) word-pair memory task was experienced as more difficult than the easy (strongly-related) word-pair task (8.1 vs. 2.3, respectively), $t(58) = 19.27, p < .001, d = 4.97$. Second, with regard to the EOR manipulation (crime-detail retrieval task), retrieving three incriminating crime details was experienced as easier than retrieving nine (2.3 vs. 5.1, respectively), $t(58) = 6.95, p < .001, d = 1.83$. Third, to gauge the joint success of the baseline-difficulty and EOR manipulations in creating a deviation between the experienced and baseline EOR during the crime-detail retrieval task, we compared the rated difficulty of the crime-detail retrieval task with the rated difficulty of the preceding word-pair baseline task. As expected, participants in the difficult-retrieval EOR condition (retrieval of nine crime details following the easy baseline task) experienced the crime-detail retrieval task as more difficult than baseline, $M_{diff} = 2.8; t(29) = 7.85, p < .001, d = 1.43$, whereas participants in the easy-retrieval EOR condition (retrieval of three crime details following the difficult word-pair task) experienced the crime-detail retrieval task as easier than baseline, $M_{diff} = -5.8; t(29) = 15.97, p < .001, d = 2.89$. In sum, by all indications, it appears that the experimental manipulations were successful in creating two different levels of experienced crime-detail retrieval difficulty that deviated from the participants' baseline experienced retrieval difficulty.

Table 1*Subjective Task Difficulty Ratings and Gist Memory by EOR Condition*

EOR condition	Difficulty rating, crime-detail retrieval task	Difficulty rating, word-pair baseline task	Gist memory guilt rating
Easy	2.3 (1.3)	8.1 (1.4)	5.0 (2.2)
Difficult	5.1 (1.8)	2.3 (0.9)	3.9 (1.8)

Note. The presented means were calculated separately for each EOR condition (easy—retrieval of three incriminating crime details; difficult—retrieval of nine incriminating crime details). Standard deviations are presented in parentheses.

Gist Memory

To test our main hypothesis regarding the effect of experienced difficulty during the selective retrieval of incriminating details on participants' gist memory of the overall weight of the evidence relevant to the suspect's guilt or innocence, we compared the guilt-liability ratings obtained in the two EOR conditions (see Table 1). As predicted, participants required to recall nine incriminating details rated the suspect as less likely to be guilty than those required to recall only three (3.9 vs. 5.0, respectively), $t(58) = 2.20, p = .032, d = 0.57$, despite having recalled three times as many incriminating details. Thus, it appears that the potential contribution of more incriminating content was qualified, and in fact reversed, by the experienced difficulty with which the additional incriminating content was brought to mind.

However, a possible alternative account of the findings (often raised in the context of EOR research) must be considered. By this account, participants in both the easy-retrieval and difficult-retrieval conditions may have started out by retrieving the (three) incriminating details with the highest evidentiary value, but the requirement to provide a larger number of such details in the difficult-retrieval condition essentially required these participants to retrieve six additional details with less evidentiary (incriminating) value. If so, rather than strengthening the overall evidence of the suspect's guilt, the retrieval of these additional details may actually have diluted, and thereby weakened, the evidence in a completely "content-based" manner. To discount this possibility, following the procedure used in previous studies (e.g., Schwarz et al., 1991, Experiment 2; Tsai & McGill, 2011), two double-blind, independent judges rated the evidentiary (incriminating or exonerating) value of the last two details produced by each participant (details 2 and 3 in the easy-retrieval condition; details 8 and 9 in the difficult-retrieval condition) on a scale ranging from strongly indicating innocence (1) to strongly indicating guilt (7). Interrater reliability was high ($\alpha = .84$), so the judges' ratings were averaged to form a single measure of the strength of the evidence for guilt. This measure did not differ between EOR conditions (5.1 vs. 4.9 for the easy- and difficult-retrieval conditions, respectively), $t(58) = 0.59, p = .566, d = 0.15$, suggesting that the observed differences in guilt-liability ratings between the two conditions do in fact stem from differences in experienced EOR rather than from differences in the perceived overall evidentiary strength of the retrieved incriminating content.⁴

⁴ A related possibility is that retrieving nine (rather than three) incriminating details may have led to the unsolicited covert retrieval of exonerating details, perhaps outweighing the evidentiary value of the additional six retrieved

Finally, seeking additional evidence regarding the relationship between the experienced difficulty during the selective retrieval of incriminating details and the participants' gist memory regarding the suspect's guilt or innocence, we examined the correlation between the difficulty ratings reported for the crime-detail retrieval task and the guilt-liability ratings, across the two EOR conditions. Although negative, as would be expected, this correlation was not significant, $r(58) = -.11, p = .407$. This null result is not surprising, given the many previous studies that have reported significant EOR effects, in which parallel correlational analyses were either non-significant (e.g., Grayson & Schwarz, 1999, Experiment 1; Schwarz et al., 1991, Experiment 3) or not reported (e.g., Hansen & Wänke, 2008; Wänke et al., 1996; Wänke, Bohner, & Jurkowitzsch, 1997; Winkielman & Schwarz, 2001).

Discussion

In this study, we examined the potential role of retrieval fluency in modulating one's interpretation of the gist or "overall meaning" of a remembered episode. Specifically, we asked whether attributing the experienced difficulty of selectively retrieving a large number of details supporting a particular interpretation of the episode to the paucity of such details might actually override the retrieved content, leading the rememberer toward the opposite overall interpretation. The answer was affirmative. Paradoxically, asking people to recall more incriminating information resulted in a lower overall impression of the suspect's guilt.

This finding extends previous research on the effects of retrieval fluency using the EOR paradigm, traditionally conducted in the domain of social cognition (Schwarz et al., 1991), to the domain of event memory. This extension is theoretically important, because it highlights the potential role of retrieval fluency in modulating the *overall meaning* of what one remembers in addition to its known role in subjectively evaluating the source and accuracy of remembered details (e.g., Johnson et al., 1993; Whittlesea & Leboe, 2000). This role may be particularly important in rich and meaningful memory contexts, such as eyewitness memory, which are especially prone to the operation of inferential, reconstructive, and gist-based processing (e.g., Newman & Lindsay, 2009). As noted by Reyna et al. (2016), "A legal

incriminating details. The issue of unsolicited covert retrieval has been addressed and discounted previously in the EOR literature (Wänke, 2013; Wänke et al., 1996; Weick & Guinote, 2008). However, given the methodological differences between the standard EOR paradigm and ours, it would be worthwhile for future research to investigate this possibility in the context of the present paradigm.

case often does not turn on arbitrary details. Later testimony in court that requires an inference, for example about whether the accused was acting strangely or was angry on the day of the crime, draws on memory for the gist of events” (p. 2).

There are several reasons why EOR-based modulation of gist memory may be prevalent in eyewitness memory contexts. People expect that memory for the details of dramatic witnessed events should be better than memory for ordinary everyday events (Magnussen et al., 2006), yet the availability and accessibility of witnessed details can be diminished by a variety of factors (e.g., Granhag, Ask, & Giolla, 2014), thereby leading to an experience of unexpected retrieval difficulty. Moreover, even when some details can be retrieved fluently, conversation partners or other sources of extrinsic or intrinsic motivation may encourage witnesses to continue their retrieval efforts beyond their natural comfort zone (Wänke et al., 1996). Modern interviewing procedures (e.g., Fisher, Milne, & Bull, 2011) recommend first allowing witnesses to report what they remember in an open-ended manner, and only afterwards prompting them for further details in more direct, selective questioning. Such procedures have proven effective in increasing the quantity of accurate details elicited from witnesses (Memon, Meissner, & Fraser, 2010). Nonetheless, to the extent that witnesses experience the prompted selective retrieval as overly difficult, the present results suggest that this could bias the witnesses’ memory at a higher, gist level.

Memory for the gist of past events is considered to be relatively stable over time (e.g., Brainerd & Reyna, 1998; Reyna & Brainerd, 1995; see also Kintsch, Welsch, Schmalhofer, & Zimny, 1990). Although research examining the temporal stability of EOR effects on judgments and attitudes is scarce, findings by Weick and Guinote (2008) demonstrate the persistence of EOR effects after one week.⁵ Therefore, it seems reasonable to believe that the influence of retrieval fluency on rememberers’ thoughts, attitudes, and judgments regarding events recalled on one occasion will continue to influence their thoughts, attitudes, and judgments regarding those events on later occasions, and thereby play an important role in biasing their subsequent memory of these events. For example, research on the topic of memory “retelling” has demonstrated that inducing people to adopt a particular perspective (e.g., that the suspect was guilty; Tversky & Marsh, 2000) not only induces a selective bias regarding which aspects of the events are retrieved and recounted to others, but also tends to distort the person’s own subsequent memory of the actual event details (e.g., Higgins & Rholes, 1978; Marsh, 2007; Tversky & Marsh, 2000). A primary mechanism implicated in theoretical accounts of this phenomenon (Tversky & Marsh, 2000) is the creation of a perspective-consistent “schema” representation (Brewer & Nakamura, 1984), which increases the subsequent accessibility of schema-consistent details, independently of, but in tandem with, the selective strengthening of the initially retrieved perspective-consistent details. The present findings suggest a

possible twist to the predicted influence of this mechanism: If the initial selective perspective-guided retrieval is experienced as overly difficult, a resulting perspective-*inconsistent* gist/schema representation might then compete against the influence of the initial selective strengthening of perspective-consistent details, potentially biasing one’s subsequent event memory in the opposite direction. Initial results appear to support this possibility (Sheaffer, Goldsmith, & Pansky, 2018).

Before concluding this discussion, we wish to address the robustness and generalizability of the present results. To our knowledge, this is the first time that the EOR paradigm has been applied to examine the potential biasing influence of retrieval fluency on episodic gist memory, and we have recently replicated these results with similar materials, procedures, and measures in a study on memory retelling (Sheaffer et al., 2018). In both studies, following Hansen and Wänke (2008), we used an initial baseline-difficulty manipulation before the critical EOR manipulation to increase the likelihood that the experienced difficulty of retrieving the larger number of incriminating details would deviate from the expected task difficulty, and thereby be attributed to the paucity of such details, rather than simply to poor memory or the (expected) difficulty of the task. Because these studies were not designed to do so, we cannot say whether the initial baseline-difficulty manipulation was needed to obtain the observed EOR effects, or in fact, whether it had any effect at all on the participants’ expectancies. Nonetheless, based on the theoretical and empirical grounds discussed earlier (e.g., Raghbir & Menon, 2005; Wänke & Hansen, 2015), it seems reasonable to assume that in general, and most importantly, in real-life situations, the biasing influence of retrieval fluency on gist memory should be observed primarily when there is some deviation between the expected and experienced difficulty of selective retrieval, so that the difficulty is treated (heuristically) by the rememberer as informative regarding the gist of the original events, rather than attributed to other causes. As discussed earlier, there are good reasons to expect such a deviation in witness memory situations, given people’s tendency to overestimate their ability to remember the details of dramatic events, and the various factors that may motivate or require the selective recall of relevant details that do not easily come to mind.

In sum, the present findings suggest that the fluency of selective retrieval can play an important role in modulating one’s gist memory of a past episode. Even when witnesses are not exposed to misleading information or leading questions (Loftus, Miller, & Burns, 1978; Loftus & Palmer, 1974), the phenomenological by-product of retrieving information about the witnessed events can bias the way in which they interpret and remember those events.

Conflict of Interest Statement

The authors declare no conflict of interest.

Author Contributions

All the authors contributed to the study concept and design. R. Sheaffer performed the testing and data collection and performed

⁵ We have recently obtained similar findings using the present paradigm as well (Sheaffer et al., 2018).

the data analysis and interpretation under the supervision of M. Goldsmith and A. Pansky. R. Sheaffer drafted the manuscript, and all the authors provided critical revisions. All the authors approved the final version of the manuscript for submission.

Appendix A. Supplementary Data

Supplementary data associated with this article can be found, in the online version, at <https://doi.org/10.1016/j.jarmac.2018.04.006>.

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