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The Benefits of a Self-Generated Cue Mnemonic for Timeline Interviewing

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Obtaining detailed accounts from individuals who have witnessed complex events under challenging encoding conditions presents a difficulty for investigators. In the present research, participants ($N = 132$) reported their recall of an event witnessed under full or divided attention using a timeline reporting format. Extending the timeline technique to assess the relative performance of two additional mnemonics—self-generated cues (SGC) and other-generated cues (OGC)—participants provided an account across three timeline reporting conditions comparing the efficacy of SGC, OGC, and no cues (control). Mock-witnesses using SGC provided more correct details than mock-witnesses in the OGC or no-cues conditions, under full but not under divided attention conditions. There was no difference between cue conditions with respect to the number of errors reported across attention conditions. Findings show SGC to be a promising addition to interviewing techniques as a retrieval support mnemonic with implications for applied contexts.

General Audience Summary

Reliable information is critical for investigations in forensic and security settings; however, obtaining reliable information for complex events can be challenging. In this study, we extend the *timeline technique*, which uses an innovative and interactive procedure where events are reported on a physical timeline. To facilitate remembering we tested two additional mnemonics, self-generated cues (SGC), which witnesses produce themselves, against other-generated cues (OGC) which are suggested by the interviewer. One hundred and thirty-two participants witnessed a multi-perpetrator theft under full or divided attention and provided an account using the timeline comparing the efficacy of SGC, OGC, and no cues (control). Mock-witnesses who used self-generated cues provided more correct details than mock-witnesses in the other-generated or no cues conditions, with no cost to accuracy, under full but not under divided attention. Promising results on SGC suggest that they might be a useful addition to current interviewing techniques.

Keywords: Information gathering, Timeline, Cognitive mnemonics, Self-Generated Cues, Memory retrieval, Divided attention

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Successful criminal and intelligence investigations rely on detailed and accurate information from suspects, witnesses, victims, and informants (Borum, Gelles, & Kleinman, 2009). However, memory for experienced events is fallible and hence sometimes inaccurate and often incomplete (Frenda, Nichols, & Loftus, 2011; Loftus, 2003). Obtaining high-quality information can become even more difficult in cases of complex multi-perpetrator events witnessed under challenging conditions. Given that 25% of violent crimes committed by strangers involve four or more perpetrators (Office for National Statistics, 2015), and that group involvement is common in terrorist activities (Ozgul, 2016), reporting of multi-perpetrator events is relevant in both forensic and security contexts. To date, only a small body of empirical research has examined ways to improve intelligence gathering practices, with calls for more focused contributions in this area (Granhag, Vrij, & Meissner, 2014). The current research extends the *timeline technique* (Hope, Mullis, & Gabbert, 2013), which uses an innovative reporting format to enhance retrieval of complex events, by testing the introduction of a new mnemonic, self-generated cues (SGC), to facilitate recall for multi-perpetrator events witnessed under optimal (full attention) and sub-optimal (divided attention) conditions.

Use of Cognitive Mnemonics in Interviewing

The use of mnemonics is already embedded in gold-standard investigative interviewing practices. One example is the mental reinstatement of context (MRC) of the Cognitive Interview (CI; Fisher & Geiselman, 1992). Context reinstatement capitalizes on the notion that recall increases when there is an overlap between the conditions present at encoding and at retrieval (*encoding-specificity principle*; Tulving & Thomson, 1973; for a review, see Pansky, Koriat, & Goldsmith, 2005). The administration of the MRC mnemonic, which typically elicits more correct information than free recall (e.g., Dando, Wilcock, & Milne, 2009), involves directing interviewees to think back to their surroundings, their emotional state, and their thoughts around the time of the event (Memon, Wark, Bull, & Koehnken, 1997) using pre-defined generic instructions.

Although the encoding–retrieval match appears to aid memory, it is the quality of cues that moderates the extent to which retrieval improves (Nairne, 2002). Cues effectively facilitate retrieval when they are distinctive in addition to satisfying the encoding–retrieval match (Tullis & Benjamin, 2015; Watkins & Watkins, 1975). A distinctive cue uniquely matches a memory to the exclusion of other related memories (*principle of cue overload*; Nairne, 2002). Therefore, to be effective, cues need to be encoded within the context of the witnessed event (encoding specificity principle), and to offer diagnostic information identifying a single target to the exclusion of others, rather than matching multiple related targets (i.e., matching but not distinctive; Goh & Lu, 2012; Nairne, 2002). To date, research on the efficacy of cues in interviewing has mainly focused on cues generated by an interviewer, such as in the administration of context reinstatement techniques. However, recent work (Wheeler, Gabbert, Hope, & Jones, 2017) examined a new mnemonic, self-generated cues (SGC) and found, across two studies, that

self-generated cue techniques increased reporting, with no cost to accuracy, in comparison to cues generated by another witness (other-generated cues), or free recall.

Self-generated cues are salient details that are actively generated by the individuals themselves and facilitate retrieval of a target memory. When episodic information is recalled, stored traces are activated and these prompt related details, thereby “spreading activation” throughout an associative network (activation theory; Anderson, 1983). Every attempt to remember a detail strengthens the memory trace. The stronger the memory, the more likely it is that it will be recalled later and that it will activate associated memories (Anderson, 1983). Similarly, Anderson and Conway (1993) showed that, when asked to list event details in free recall, participants first listed “distinctive details” (i.e., “details that really stand out and make that memory what it is,” p. 1188). Then they listed other details that were highly associated with those distinctive details. Thus, self-generation of distinctive cues can trigger related memories by tapping a common theme (Anderson & Conway, 1993; Belli, 1998). More recently, Berntsen, Staugaard, and Sørensen (2013) showed that it is possible to activate specific involuntary autobiographical memories in the lab by manipulating the unique match between cue and item.

In light of Anderson and Conway’s (1993) findings, use of SGC (i.e., the most memorable details) should trigger the retrieval of related event details while excluding unrelated details, thus satisfying both the encoding–specificity principle (Tulving & Thomson, 1973), and the principle of cue overload (Nairne, 2002). Therefore, the present study tests the effectiveness of SGC in comparison to other-generated cues and no cues (control) across timeline reporting conditions. To maximize our test of the efficacy of SGC, in the OGC condition we administered standard MRC instructions as a generic mnemonic (i.e., not generated by the witness). Although MRC instructions do not provide directive cues to specific aspects of an event, they suggest aspects the rememberer might focus on during retrieval. Following Wheeler et al. (2017), we predicted that use of SGC would activate unique associated memories, thus facilitating higher rates of correct recall. To examine the effectiveness of cues, and given previous research showing that accounts can be incomplete despite being accurate (Hope, Gabbert, & Fraser, 2013; Smeets, Candel, & Merckelbach, 2004), we also explored how the use of mnemonics affects account completeness for critical details.

Obtaining Information Using the Timeline Technique

The timeline technique (Hope, Mullis, et al., 2013) uses a reporting format with a physical timeline to facilitate retrieval of multi-perpetrator events. In Hope, Mullis, et al. (2013), the timeline technique elicited more accurate information than free recall for a multi-perpetrator event and enhanced the reporting of connections between perpetrators and actions at immediate testing and after a two weeks’ delay. Importantly, instead of asking for a linear narrative of the events, the timeline format encourages witness-compatible reporting whereby interviewees can report events as they remember them, at any point of

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