

Running head: EYE-CLOSURE INTERVIEW

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**A Field Evaluation of the Eye-Closure Interview with Witnesses of Serious Crimes**

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### Abstract

Laboratory research shows that eye-closure during memory retrieval improves both the amount and the factual accuracy of memory reports about witnessed events. Based on these findings, we developed the Eye-Closure Interview, and examined its feasibility (in terms of compliance with the instructions) and effectiveness (in terms of the quantity and quality of reported information) in eyewitness interviews conducted by the South African Police Service. Police interviewers from the Facial Identification Unit were randomly assigned to receive Eye-Closure Interview training or no training. We analyzed 95 interviews with witnesses of serious crimes (including robbery, rape, and murder), some of whom were instructed to close their eyes during salient parts of the interview. Witnesses in the control condition rarely spontaneously closed their eyes, but witnesses in the Eye-Closure Interview condition kept their eyes closed during 97% of their descriptions, suggesting that the Eye-Closure Interview would be easy to implement in a field setting. Although witnesses who closed their eyes did not remember more information overall, the information they provided was considered to be of significantly greater forensic relevance (as reflected in two independent blind assessments, one by a senior police expert and one by a senior researcher). Thus, based on the findings from this field study and from previous laboratory research, we conclude that implementation of the Eye-Closure Interview in witness interviews would help police interviewers to elicit more valuable information from witnesses, which could be relevant to the police investigation and/or in court.

Keywords: Eye-Closure Interview, eyewitness memory, field research, forensic relevance

## A Field Evaluation of the Eye-Closure Interview with Witnesses of Serious Crimes

Eyewitnesses play a central role in police investigations and court cases. Based on witness statements, the police may conduct a mugshot search, construct a line-up, interview other witnesses, or formulate theories about how a crime was committed. In a court of law, eyewitnesses often provide valuable evidence contributing to the conviction or acquittal of a suspect. It is therefore important to maximize the quantity and quality of witness testimony. The current paper presents a field study to evaluate whether the Eye-Closure Interview can improve the quantity and/or quality of reports provided by witnesses of serious crimes.

Many techniques have been developed to help witnesses remember more, of which the Cognitive Interview (Fisher & Geiselman, 1992; Geiselman et al., 1984) is probably the most well-known. The Cognitive Interview incorporates various principles from social psychology, such as rapport-building and transfer of control, and cognitive psychology, such as mental context reinstatement (i.e., mentally placing oneself back into the context of the crime) and recalling the event in reverse order. A recent meta-analysis including 59 effect sizes (Memon, Meissner, & Fraser, 2010) found that the Cognitive Interview increases the amount of accurate information reported by witnesses ( $d = 1.20$ ) with only a relatively small concurrent increase in inaccurate information reported ( $d = 0.24$ ). One limitation of the Cognitive Interview, however, is that it requires a considerable amount of training, and that the interview itself takes significantly longer than a standard interview (e.g., Dando, Wilcock, & Milne, 2008). Therefore, it may not be practical in all cases. Indeed, in England and Wales, where official policy recommends use of the Cognitive Interview in all interviews with witnesses and victims, Clarke and Milne (2001) found no evidence of the procedure having been used in 83% of cases. Thus, although the Cognitive Interview is widely considered the

‘gold standard’ for investigative interviewing, it may be helpful to develop brief alternatives in cases where it is not possible or feasible to conduct a full Cognitive Interview.

One element of the Cognitive Interview is a recommendation that witnesses close their eyes during the interview. Recent laboratory research has shown that eye-closure on its own, without the other elements of the Cognitive Interview, can also improve witness recall. For example, eye-closure improved recall of Princess Diana’s funeral (Wagstaff et al., 2004), live and video-taped everyday events (Perfect et al., 2008), violent video-taped events (Vredeveldt, Baddeley, & Hitch, 2012, 2013), and an unexpected staged altercation (Vredeveldt & Penrod, 2013). Specifically, eye-closure increases the report of accurate information, with effect sizes falling generally within the range of medium to large (*ds* between 0.50 and 1.00). At the same time, eye-closure either does not significantly affect the report of inaccurate information (Perfect et al., 2008, Experiments 2, 3, & 5; Vredeveldt & Penrod, 2013; Wagstaff et al., 2004), or even reduces it (Perfect et al., 2008, Experiments 1 & 4; Vredeveldt et al., 2012, 2013). Thus, the eye-closure instruction could be a valuable addition to the investigative interviewer’s toolbox.

Two main explanations for the benefits of eye-closure on recall have been proposed, one general and one modality-specific. First, it is possible that eye-closure has a general effect on cognitive performance—consistent with Glenberg’s (1997) embodied cognition account, which construes environmental monitoring and memory retrieval as two concurrent tasks competing for cognitive resources. This idea is supported by findings that (a) eye-closure improves performance on a wide range of cognitive tasks (Glenberg, Schroeder, & Robertson, 1998), (b) in some studies, eye-closure improves recall of both visual and auditory aspects of events (e.g., Perfect et al., 2008), and (c) eye-closure mitigates the cross-modal impairment typically caused by auditory distraction (Perfect, Andrade, & Eagan, 2011). Second, it is possible that the eye-closure effect is modality-specific—in line with Baddeley

and Hitch's (1974) working memory model, which shows that concurrent tasks typically only interfere with each other if they are presented in the same modality. This idea is supported by findings that (a) in some studies, eye-closure improves recall of visual but not auditory aspects of witnessed events (e.g., Vredeveldt et al., 2012, 2013), and (b) recall of visual aspects is most disrupted by visual distractions in the environment, whereas recall of auditory aspects is most disrupted by auditory distractions (Vredeveldt, Hitch, & Baddeley, 2011). In sum, there is evidence for both general and modality-specific effects, and it seems likely that these effects are complementary rather than mutually exclusive (see also Vredeveldt et al., 2011; Vredeveldt & Perfect, 2014).

Although its benefits on the amount and accuracy of event recall have proven robust in laboratory settings, the eye-closure instruction has not yet been tested in the field. In fact, few field studies have been conducted on any topic in the eyewitness memory area, but some in this small collection have raised concern about the external validity of findings from laboratory studies (e.g., Cutshall & Yuille, 1989; Woolnough & MacLeod, 2001; Yuille & Cutshall, 1986). For example, field studies have found witnesses to be surprisingly accurate in their descriptions, which is at odds with the image of the eyewitness emerging from the laboratory. Yuille (1993) has cogently argued that we need data from actual eyewitnesses who have witnessed real crimes in order to draw valid conclusions about eyewitness memory. Participants in laboratory studies and actual eyewitnesses differ on many dimensions, including their demographic backgrounds, the level of emotional arousal experienced during the witnessed event, their involvement in the event, and their ability to perceive the event. Yuille and Wells (1991) note that "the variances and covariances among variables that infiltrate actual eyewitness cases are controlled or 'randomized out' in experimental research in ways that can make generalization from experiments to actual cases a risky endeavor under certain circumstances" (p. 127).

One of the few interview techniques that has been tested in the field is the Cognitive Interview. Three studies found that the benefits of the Cognitive Interview observed in the laboratory extended to field situations (Clifford & George, 1996; Colomb, Ginet, Wright, Demarchi, & Sadler, 2013; Fisher, Geiselman, & Amador, 1989). Two other studies, however, found no benefits of the Cognitive Interview in a field setting (Memon, Holley, Milne, Köhnken, & Bull, 1994; Newlands, George, Towell, Kemp, & Clifford, 1999). These null findings were probably due to the insufficient length and quality of interview training (Memon et al., 1994), and/or to the use of different outcome measures (Newlands et al., 1999). Nevertheless, they highlight the importance of verifying whether a technique that is effective in the laboratory also works in the field. This is equally important for the eye-closure instruction, given that, to date, it has only been studied in the laboratory. The present study examined whether the eye-closure instruction is effective with real eyewitnesses. To this end, we developed the Eye-Closure Interview (ECI)—a simple procedure that can readily be adopted by police interviewers, consisting of one essential instruction: asking witnesses to keep their eyes closed throughout salient parts of the interview. We investigated whether the Eye-Closure Interview was feasible (in terms of compliance with the instructions) and effective (in terms of the amount and quality of reported information) in interviews conducted by police members from the Facial Identification Unit in the South African Police Service (SAPS). These interviews were conducted with witnesses (victims or bystanders) of serious crimes, including armed robbery, rape, and (attempted) murder.

The primary task of members in the Facial Identification Unit is to construct a facial composite of the perpetrator based on witness descriptions. Generally, witnesses find it difficult to describe faces “in a precise and globally agreed upon language” (O’Toole, Abdi, Deffenbacher, & Valentin, 1995, p. 160). Nevertheless, detailed descriptions are necessary to enable composite construction. In a typical Facial Identification Unit interview, witnesses are

encouraged to put a great deal of cognitive effort into remembering the perpetrator's appearance, whereas less emphasis is placed on remembering other details of the witnessed event (e.g., the modus operandi). Glenberg's (1997) embodied cognition account suggests that disengaging from the environment is only necessary when recollection is difficult. Indeed, Glenberg et al. (1998) found that people avert their gaze more when answering more difficult general-knowledge questions, and when retrieving events that happened longer ago. Based on the notion that eye-closure is likely to be most beneficial for effortful recollection, we predicted that in the current study, the Eye-Closure Interview would be most beneficial for recall of the perpetrator's appearance. It should be noted that this prediction was specific to the present sample of interviews from the Facial Identification Unit, in which witnesses were encouraged to focus on the perpetrator rather than on other aspects of the event.

In field research, it is often difficult to assess the factual accuracy of information reported by witnesses. However, it is possible to evaluate the quality of the information in terms of its value for the police investigation or in a court of law, which we term 'forensic relevance' (Roberts & Higham, 2002). Forensic relevance can be measured in different ways. For example, one can binary-code each detail provided by witnesses as either forensically relevant or non-relevant, and aggregate this (cf. Roberts & Higham, 2002). Alternatively, one can evaluate the degree of forensic relevance of each witness report as a whole, as a police investigator might do during an ongoing investigation (cf. Newlands et al., 1999). We collected both detail-specific and global measures of forensic relevance.

In sum, we investigated whether the Eye-Closure Interview would improve the quantity and quality of information provided by eyewitnesses of serious crimes. Based on previous research, we predicted that witnesses in the Eye-Closure Interview condition would report more information than witnesses in the control condition. Further, we hypothesized that this effect of the Eye-Closure Interview would be most pronounced for details about the



perpetrator's appearance, due to the nature of the Facial Identification Unit interviews. In this field study, we could not verify the factual accuracy of information reported by witnesses. However, we predicted that the Eye-Closure Interview would enhance the quality of the information in terms of its forensic relevance.

## **Method**

### **Ethical Approval**

Approval was obtained from the Department of Psychology Research Ethics Committee (University of Cape Town) and the Federal Bureau of Investigation Institutional Review Board (United States).

### **Power Calculation**

We calculated our minimum required sample size based on the effect size reported in previous research that most closely resembled field conditions, namely, the effect of eye-closure on the total number of details reported in free recall about a live altercation on the street (Vredeveldt & Penrod, 2013). Given that the police members involved in the current project indicated that most of their interviews are conducted inside (e.g., at the police station or the witness' home), we selected Vredeveldt and Penrod's effect size for witnesses who were interviewed inside, namely,  $d = 0.78$ . Thus, to achieve power of .80, we needed at least 26 witnesses per condition. This is a conservative power estimate, given that it is based on independent observations, whereas our study concerned non-independent observations (i.e., each interviewer in our study provided multiple interviews). However, because criminal events witnessed in real life are more variable than the scripted events used in previous research, and thus involve a greater amount of error (measurement, sampling, random), we

decided to collect as many interviews as possible over a data collection period of seven months, with a minimum of 26 interviews per condition.

### **Interviewers**

We recruited 12 police interviewers from five SAPS Facial Identification Units in the Western Cape Province (an area of approximately 129,462 km<sup>2</sup>). Interviewers were assigned to six pairs matched on gender, age, and years of experience. One member from each pair was randomly assigned to the Eye-Closure Interview condition, and the other to a control condition. Due to personal circumstances, one interviewer in the Eye-Closure Interview condition (who had not contributed any interviews) was replaced mid-way through the project by a new Facial Identification Unit member who had not yet been involved in the project—he was trained in an individual session. Each condition contained six interviewers (three male) with a mean age of 36 years ( $SD = 5$ ). On average, interviewers in the Eye-Closure Interview condition had five years' experience ( $SD = 3$ ) and interviewers in the control condition had six years' experience ( $SD = 5$ ). Towards the end of data collection, one interviewer in the control condition was re-trained to use the Eye-Closure Interview technique, to boost the number of interviews in the Eye-Closure Interview condition. He contributed four interviews to the Eye-Closure Interview condition, and the local police captain (who also attended the training session) also contributed one interview to the Eye-Closure Interview condition.

### **Interview Selection**

In total, 63 interviews were collected in the control condition and 46 in the Eye-Closure Interview condition. Prior to data collection, three exclusion criteria were established: (a) in line with ethics regulations, we excluded interviews with witnesses younger than 18 years ( $N = 5$ ), (b) to avoid complications, we excluded interviews in which multiple witnesses were

present ( $N = 3$ ), and (c) to enable comparisons between event recall and perpetrator recall, we excluded interviews in which witnesses did not describe the event ( $N = 6$ ). This selection process yielded 55 usable interviews in the control condition and 40 in the Eye-Closure Interview condition. Due to the nature of our field study, this unbalanced design was unavoidable. Table 1 shows the case characteristics for each condition.

[INSERT TABLE 1 ABOUT HERE]

### **Witnesses**

Our sample consisted of 42 male and 53 female witnesses aged between 18 and 75 ( $M = 34.72$ ,  $SD = 14.39$ ). We had an ethnically diverse sample. Under the Apartheid government (1948 – 1994), South Africans were classified, and segregated, into several population groups by law. This classification is no longer enforced by law, but implicitly affects life in South Africa, in many ways (for an overview, see Worden, 2011). For example, this classification was used in the 2011 South African Census (Statistics South Africa, 2012). Our sample included 38 Black witnesses (people of African descent), 24 White witnesses (people of European descent), 32 Coloured witnesses (people of mixed ethnicity, or Indonesian, or San descent), and 1 Indian witness (people descended from the Indian subcontinent of Asia).

### **Training Sessions**

All police members attended a training session for this research project. The researchers explained that they were investigating “a new procedure for interviewing witnesses”, and that half of the members would be trained to use this new procedure, whereas the other half would be trained after data collection was complete. Next, all members were trained in a protocol for obtaining informed consent, setting up video- and voice-recording equipment, and debriefing witnesses (see “Procedure” section), after which members in the control condition

were dismissed. The remaining police members were informed about the Eye-Closure Interview, and instructed when and how to use the eye-closure instruction during interviews. They participated in role-play interviews to practice the technique with their colleagues. Interviewers were instructed not to disclose the nature of the interview procedure to their colleagues. Upon completion of data collection, all police members attended a second session, during which members in the control condition were informed about the Eye-Closure Interview, and trained in its use. In addition, the researchers presented preliminary findings and a set of general interviewing guidelines (collated from various peer-reviewed sources) to all police members.

### **Materials**

Interviewers received (a) written protocols with full instructions, in English, Afrikaans, and isiXhosa (the three most commonly spoken languages in the area), (b) informed consent forms for witnesses, (c) location-specific lists of helpful phone numbers for witnesses (e.g., help centers for abuse, drugs, and rape), (d) a document with frequently asked questions and the researchers' contact details, and (e) video- and voice-recording equipment, accompanied by instruction manuals. Interviewers in the control and Eye-Closure Interview conditions received different versions of the protocol, informed consent forms, and frequently-asked-question lists.

### **Procedure**

Since we integrated our research into the ordinary business of the Facial Identification Unit, it is necessary to explain how this unit operates. When witnesses report a crime to the SAPS, they are interviewed by a police member who takes their statement. This interview is typically not very thorough (however, if the crime concerns a sexual offence, the witness may

be referred to a different sexual-offences detective for a second interview). If the crime involves an unknown perpetrator, witnesses are referred to the Facial Identification Unit, whose members conduct a more comprehensive interview with the primary purpose of constructing a facial composite. The case is referred to the Facial Identification Unit member on standby in the area, unless there is a special request for a specific language or for a female interviewer (e.g., in rape cases). The Facial Identification Unit member then makes an appointment to meet the witness at the police station, the witness's home, or the scene of the crime (ideally within 48 to 72 hours). During the data collection period, Facial Identification Unit members were instructed to invite all witnesses to participate in the current project, except in cases in which the witness was younger than 18, or multiple witnesses were present.

Before starting the interview, Facial Identification Unit members asked the witness for permission to film and voice-record the interview for a project on police interviewing techniques conducted by specialists at the University of Cape Town. Interviewers in the Eye-Closure Interview condition also explained that participation in the project would involve eye-closure during the interview. Witnesses who gave their permission read and signed the informed consent form, after which the interviewer set up the video- and voice-recording equipment. Interviewers then proceeded with their normal interview procedure (using a standardized scene report form), which consists of (1) obtaining a description of the event (through a free-recall question, potentially followed by a few follow-up questions), (2) obtaining a description of the perpetrator (through a free-recall question, followed by an extensive list of questions about the perpetrator's appearance and characteristics), and (3) constructing a facial composite. Interviews lasted 35 minutes on average, with 9% of interview time spent on describing the event, 13% on describing the perpetrator, and 63% on composite construction. Interviewers in the Eye-Closure Interview condition instructed witnesses to keep their eyes closed during recall of the event and the perpetrator, and

reminded them of this instruction when appropriate. To prevent expectancy effects, we did not inform witnesses that eye-closure may improve memory. However, providing no reason at all for the eye-closure instruction was considered unethical, because it could make witnesses uncomfortable. Therefore, we provided a reason that de-emphasized potential effects on cognitive performance: interviewers were instructed to tell the witness that “closing your eyes may help you to relax”.

After obtaining descriptions of the event and perpetrator, but prior to composite construction, interviewers asked witnesses to rate on a scale ranging from 1 (not at all) to 10 (extremely): how (a) comfortable and (b) relaxed they had felt during the interview, and how well they had been able to (c) concentrate, (d) see the crime in their head, and (e) remember details about the crime. They then constructed the facial composite using books with predetermined features and specialized software (E-FIT or Identikit 2000, depending on the Facial Identification Unit member). Finally, witnesses were thanked, informed about the purpose of the study, and provided with a list of helpful phone numbers.

### **Data Coding**

**Compliance.** Three coders inspected the video-recorded interviews and coded when witnesses opened or closed their eyes during recall of the event and the perpetrator (excluding brief eye-blinks). One main coder coded all interviews, and two independent researchers each double-coded half of the interviews. Inter-rater reliability was established for the percentage of time that witnesses had their eyes closed. Specifically, the percentages recorded by the main coder were compared to the percentages provided by the double-coder who double-coded that interview. There was a strong correlation between percentages recorded by the main coder and the double-coders,  $r_s = .93$ , 95% CI [.90, .96],  $p < .001$ . The main coder's results were retained for analysis.

**Amount of information.** All Afrikaans and isiXhosa interviews were translated into English by professional translators. All interviews were transcribed verbatim, and all references to interview condition were removed from the transcripts. The first author developed a coding scheme in collaboration with two senior investigative officers in the SAPS, to categorize the content of witness reports in a way that would be meaningful to police investigations. All details reported by witnesses were coded for type of information, forensic relevance, and modality (see Table 2 for examples). First, statements were classified as relating to the perpetrator's appearance or characteristics (Perpetrator), modus operandi (M.O.), other potential witnesses (Witness), or any other details (Other). Second, statements were coded as highly, somewhat, or not forensically relevant. Forensic relevance was defined as information that may be "considered relevant in an investigation, a court of law, or both" (Roberts & Higham, 2002, p. 35). Finally, all details were coded as visual (e.g., what the perpetrator looked like), auditory (e.g., what the perpetrator said), or other modality (e.g., smells or feelings).

The first author and three coders independently coded the first ten interviews. Coding disagreements were discussed and resolved by group discussion. Subsequently, one-third of the remaining interviews were coded by Coders A and B, one-third by Coders A and C, and one-third by Coders B and C. All coders were blind to interview condition. In each coder pair, one of the coders divided the transcripts into countable segments (i.e., details), and the second coder double-coded these segments without seeing the first coder's results. Disagreements were resolved by discussion. Inter-rater reliability between the first and second coder of each pair was deemed acceptable for the category of details,  $\kappa = .85$ , 95% CI [.84, .86],  $p < .001$ , modality,  $\kappa = .78$ , 95% CI [.76, .80],  $p < .001$ , and forensic relevance,  $\kappa = .64$ , 95% CI [.62, .66],  $p < .001$ .

[INSERT TABLE 2 ABOUT HERE]

**Quality of information.** We recruited a retired senior police officer from the SAPS to provide a global rating of perceived forensic relevance for each transcript as a whole. To obtain an additional independent assessment of perceived forensic relevance, transcripts were also rated by the principal investigator (i.e., the researcher who developed the quantitative coding scheme in collaboration with the police). Both raters were blind to condition, and to each other's ratings. Transcripts were rated for perceived forensic relevance on a 7-point Likert scale (again defined as information that would be relevant for a police investigation or in court). There was a strong correlation between the assessments provided by the two raters,  $r = .75$ , 95% CI [.65, .83],  $p < .001$ .

## Results

### Compliance

On average, witnesses in the control condition closed their eyes during 0.2% of their descriptions of the event and the perpetrator (range: 0% to 6%). In contrast, witnesses in the Eye-Closure Interview condition kept their eyes closed during 97% of their descriptions (range: 78% to 100%). Thus, witnesses almost never closed their eyes spontaneously, and compliance with the eye-closure instruction was very high.

### Amount of Information

Table 3 shows the number of details reported by witnesses in the control and Eye-Closure Interview condition, categorized by type, modality, and forensic relevance of the information. In a police investigation, the most pertinent measure is the amount of *unique* information reported by witnesses, therefore, each piece of information was counted only once (the



number of repeated details did not differ between conditions; control:  $M = 13.71$ ,  $SD = 7.86$ ; Eye-Closure Interview:  $M = 12.13$ ,  $SD = 8.53$ ;  $t(93) = 1.12$ ,  $p = .266$ ,  $d = 0.23$ , 95% CI [-0.18, 0.64]). Problems with positive skew and leptokurtosis were remedied by square-root transformation prior to analysis. Reported inferential tests and effect sizes are based on the transformed variables, but descriptive presentations are of the untransformed variables.

[INSERT TABLE 3 ABOUT HERE]

**Type of detail.** To account for the nested data structure (i.e., each interviewer provided a different number of interviews), we conducted multilevel modeling on the number of details reported. First, we constructed a baseline model (cf. Field, 2013) with Interview Condition (Control, Eye-Closure Interview) as a fixed factor and Type of Detail (Suspect, M.O., Witness, Other) as a covariate. Next, we constructed a hierarchical model by adding Interviewer as a Level 2 variable with a random intercept. Adding Interviewer significantly improved the fit of the model,  $\chi^2(1) = 4.24$ ,  $p = .039$ ,  $PRV = .04$ , hence we report the statistics from the multilevel model.

There was a significant main effect for type of detail,  $F(1, 365.88) = 53.00$ ,  $p < .001$ ,  $f = 0.38$ . Table 3 shows that most details were reported in the Perpetrator category, followed by M.O. and Other, with a relatively small number of details reported in the Witness category. The model revealed no significant main effect of interview condition,  $F(1, 179.20) = 1.76$ ,  $p = .186$ ,  $f = 0.10$ , but there was a significant interaction between condition and type of detail,  $F(1, 365.88) = 3.91$ ,  $p = .049$ ,  $f = 0.10$ . To explore this interaction in more detail, separate multilevel models for each type of detail were conducted. There was a non-significant tendency for witnesses in the Eye-Closure Interview condition to report more information about the perpetrator ( $Mdn = 35$ , interquartile range = 26-46) than witnesses in

the control condition ( $Mdn = 29$ , interquartile range = 22-38),  $t(22.66) = 1.16$ ,  $p = .259$ ,  $d = 0.43$ , 95% CI [0.02, 0.85]. Note that the 95% confidence interval for effect size  $d$  does not include zero, which clashes with the finding of non-significant differences from the multilevel model. However, because the multilevel model takes the hierarchical structure of the data into account, it provides a more appropriate indication of the statistical significance of the difference. Interview condition also did not have a significant effect on information in any of the other categories (see Table 3): M.O.,  $t(16.52) = -0.47$ ,  $p = .646$ ,  $d = -0.09$ , 95% CI [-0.50, 0.31], Witness,  $t(7.06) = 0.01$ ,  $p = .995$ ,  $d = 0.02$ , 95% CI [-0.38, 0.43] and Other,  $t(16.01) = -1.49$ ,  $p = .155$ ,  $d = -0.28$ , 95% CI [-0.69, 0.13].

**Modality.** A multilevel model with interview condition as a predictor, modality as a covariate, and Interviewer as a Level 2 variable revealed a significant main effect of modality,  $F(1, 270.75) = 486.89$ ,  $p < .001$ ,  $f = 1.34$ . The majority of information reported by witnesses was visual in nature, with only few auditory and other-modality details reported (see Table 3). The model revealed no significant interaction between condition and modality,  $F(1, 270.75) = 0.03$ ,  $p = .853$ ,  $f = 0.01$ .

**Forensic relevance.** A multilevel model with interview condition as a predictor, the detail-specific measure of forensic relevance as a covariate, and Interviewer as a Level 2 variable revealed a significant main effect of forensic relevance,  $F(1, 271.43) = 551.00$ ,  $p < .001$ ,  $f = 1.11$ . Table 3 shows that most details reported by witnesses were coded as highly or somewhat relevant; only relatively few details were considered not forensically relevant. Further, it seems that witnesses in the Eye-Closure Interview condition tended to report less non-relevant information than witnesses in the control condition. However, because the multilevel model revealed no significant interaction between condition and forensic relevance,  $F(1, 271.43) = 1.36$ ,  $p = .245$ ,  $f = 0.07$ , we did not conduct separate multilevel model analyses for each level of relevance.

### Quality of Information

To assess the quality of the reported information, two independent blind raters provided a global rating of perceived forensic relevance for each interview transcript. A 2 (Rater: police expert, principal investigator) by 2 (Condition: Control, Eye-Closure Interview) mixed ANOVA on these ratings revealed significant main effects of rater,  $F(1, 93) = 9.33, p = .003, f = 0.11$ , and condition,  $F(1, 93) = 5.39, p = .024, f = 0.22$ , but no significant interaction,  $F(1, 93) = 0.02, p = .901, f = 0.00$ . To permit a comparison between the two raters from different backgrounds, we report simple contrasts despite the non-significant interaction. The police expert rated transcripts in the Eye-Closure Interview condition as significantly more forensically relevant ( $M = 3.60, SD = 1.65$ ) than transcripts in the control condition ( $M = 2.91, SD = 1.57$ ),  $t(93) = 2.08, p = .040, d = 0.43, 95\% CI [0.02, 0.84]$ . Similarly, the principal investigator provided higher ratings of forensic relevance for transcripts in the Eye-Closure Interview condition ( $M = 3.98, SD = 1.61$ ) than the control condition ( $M = 3.25, SD = 1.48$ ),  $t(93) = 2.26, p = .026, d = 0.47, 95\% CI [0.06, 0.88]$ .

Correlational analyses showed that the global rating of perceived forensic relevance (averaged over both raters) correlated significantly and positively with the detail-specific measure of the number of highly relevant,  $r(95) = .37, 95\% CI [.18, .53], p < .001$ , and somewhat relevant details,  $r(95) = .26, 95\% CI [.07, .44], p = .010$ , but not with the number of non-relevant details,  $r(95) = .14, 95\% CI [-.07, .33], p = .193$ . The relationship between the detail-specific and global measures of forensic relevance will be addressed in the Discussion.

### Self-Report Ratings

To remedy negative skew, witnesses' self-report ratings about their feelings and cognitive processes during the interview were inverted and square-root transformed prior to analysis. A

multivariate ANOVA revealed no significant effect of interview condition,  $F(5, 78) = 1.55$ ,  $p = .185$ ,  $f = 0.31$ . Univariate ANOVAs for each rating revealed no significant effects either (all  $ps > .151$ ). Thus, there were no significant differences between the control and Eye-Closure Interview conditions in terms of how comfortable and relaxed witnesses reported feeling during the interview, nor in terms of how well they were able to concentrate, see the crime in their head, and remember information. Note that witnesses in the Eye-Closure Interview condition were informed that closing their eyes may “help them to relax”, hence potential differences with respect to this rating may have been affected by expectancy effects. However, there was no significant difference in “relaxed” ratings between the control condition ( $M = 7.72$ ,  $SD = 2.47$ ,  $N = 54$ ) and the Eye-Closure Interview condition ( $M = 6.68$ ,  $SD = 3.16$ ,  $N = 35$ ),  $t(87) = 0.89$ ,  $p = .376$ ,  $d = 0.19$ , 95% CI [-0.23, 0.62].

### Discussion

The aim of this field study was to assess the feasibility and effectiveness of the Eye-Closure Interview with eyewitnesses of serious crimes, including armed robbery, rape, and murder. We found that witnesses complied with the eye-closure instruction 97% of the time, whereas witnesses in the control condition rarely closed their eyes spontaneously. Contrary to predictions, the Eye-Closure Interview did not increase the overall amount of information reported. Potential explanations for this null finding will be considered below. However, there was a significant interaction between interview condition and the type of information reported: witnesses in the Eye-Closure Interview condition tended to report more information about the perpetrator and less information in the “Other” category than witnesses in the control condition (although neither of these simple contrasts was significant in the multilevel model). Perhaps the most important finding from the current research was that the Eye-Closure Interview significantly enhanced the perceived quality of the information reported by

witnesses. Thus, although the Eye-Closure Interview did not increase the absolute number of forensically relevant details, it significantly increased the perceived overall forensic relevance of witness reports, as reflected in the independent assessments of a senior police expert and a senior researcher.

The main rationale for introducing the Eye-Closure Interview to investigative interviewers is that this simple procedure may be easier to implement in practice compared to more complex interview protocols (cf. Clarke & Milne, 2001). Our findings show that real witnesses of serious crimes do not seem to have difficulty with the eye-closure instruction: witnesses in the Eye-Closure Interview condition kept their eyes closed during 97% of their descriptions. Further, the self-report ratings provided no evidence that witnesses in the Eye-Closure Interview condition felt less comfortable than witnesses in the control condition. These findings should alleviate at least some of the concerns expressed by some practitioners that interviewers would not be able to convince real eyewitnesses to close their eyes during an investigative interview. Nevertheless, further investigations are needed to determine whether these findings are specific to our particular sample of witnesses, who had consented to participating in a research project.

Our main prediction, that eye-closure would increase the amount of information reported by witnesses, was not supported. We can only speculate why this basic finding from laboratory studies was not replicated. First, one could argue that it may be due to a weak experimental manipulation or insufficient power. However, given that previous studies have found large effects using similar instructions, and given that we collected a greater sample of interviews per condition than required based on our power calculation, these explanations seem unlikely. Perhaps a more plausible explanation is that the behavior of the police interviewers in the current study moderated the eye-closure effect. In the laboratory, interviewer behavior can to some extent be kept consistent across conditions: interviewers are

typically instructed to adhere to strict interviewing protocols that specify instructions to participants, interview questions, and the order in which questions are posed. Although police interviewers in the current study also followed a protocol with a list of predetermined questions, they had a high degree of flexibility in their timing and sequence of questions, in their choice of follow-up questions, and in their personal interview style (e.g., the extent to which they established rapport at the start of the interview). Given that the eye-closure instruction likely influences the social dynamic during an interview, we cannot exclude the possibility that police members who interviewed witnesses who had their eyes closed adopted a different interview style or asked somewhat different follow-up questions than interviewers in the control condition. In addition, although we matched interviewers in both conditions on gender, age, and years of experience, it remains possible that interviewers in the control and Eye-Closure Interview conditions, respectively, differed on some other characteristic. Thus, compared to laboratory studies, we had much less control over the potential influence exerted by the interviewer.

An alternative explanation could be that closing the eyes intensified eyewitnesses' negative emotional experiences during the interview, which may have nullified the cognitive benefits of eye-closure typically observed for research participants in the laboratory. Previous research shows that eye-closure increases the intensity of emotions experienced while listening to negative emotional music (Lerner, Papo, Zhdanov, Belozersky, & Hendler, 2009), and results in more intense negative emotions when judging unethical scenarios (Caruso & Gino, 2011). Although our self-report measures do not suggest that witnesses in the Eye-Closure Interview condition were less comfortable or less relaxed than witnesses in the control condition, it remains possible that witnesses who closed their eyes experienced more negative emotions during the interview. This scenario could also potentially explain why reports in the Eye-Closure Interview were perceived as more forensically relevant than

reports in the control condition, and tended to contain more details about the perpetrator but fewer details about other aspects of the event. A more intense emotional experience in the Eye-Closure Interview condition could have led to an increased focus on central details (in this case, details about the perpetrator) at the expense of peripheral details (in this case, details unrelated to the perpetrator, M.O., or other witnesses)—similar to the attentional narrowing effect observed when experiencing emotional events (see Christianson, 1992; Easterbrook, 1959). To investigate the potential role of the intensity of emotions during the police interview, future field studies could measure physiological arousal during the interview, provided that ethical concerns do not prevent such measures.

Due to the nature of the field study, we could not assess the factual accuracy of the information reported by witnesses. Therefore, findings from the current field research must be considered in combination with findings from more controlled studies. In the case of the Eye-Closure Interview, previous research in controlled settings has shown that eye-closure increases the amount of information reported without impairing the accuracy of that information, sometimes even improving accuracy (Perfect et al., 2008; Vredeveldt et al., 2012, 2013). The present findings make an important contribution to the literature by showing that, in a field setting, the Eye-Closure Interview can increase the practical value of information reported by witnesses, as reflected in global ratings of forensic relevance.

Nevertheless, our measures of forensic relevance were limited in several ways. First, whether a particular piece of information is forensically relevant often depends on the context of the case. For example, in some cases, the mention of a particular time of day can be of crucial importance (e.g., when it is tied to a suspect's alibi), whereas in other cases, the importance of this information may be negligible. Because we were unable to obtain contextual information about the cases, it was difficult to determine how forensically relevant a particular detail was for that particular case. Second, forensic relevance was confounded

with the type of information; details about the perpetrator were nearly always scored as forensically relevant, whereas information in the “Other” category was often considered not forensically relevant. This pattern was also reflected in the difference between conditions: witnesses in the control condition tended to report more non-relevant information, and also more information in the “Other” category. Third, although reports in the Eye-Closure Interview condition received significantly higher global ratings of perceived forensic relevance, this pattern was not reflected in the number of highly or somewhat relevant details. The discrepancy between the global and detail-specific measures is most likely due to the fact that even a single highly relevant detail, for example that the perpetrator had a tattoo, could greatly influence the perceived overall forensic relevance of the report (because this information would considerably increase the likelihood of apprehending the perpetrator), whereas it would only have a minor impact on the absolute number of highly relevant details. Despite the limitations of our forensic relevance measures, we believe that it is important that researchers attempt to assess the forensic relevance of information reported by witnesses, to make research findings more relevant to applied contexts.

Since the primary purpose of Facial Identification Unit interviews is to construct a facial composite, future research with other types of interview (e.g., designed to obtain information about the criminal event itself) is required to assess whether the current pattern of findings extends to different contexts. In addition, witnesses in the present sample had already been interviewed about the crime (albeit briefly) when they initially reported the crime to the police, and potentially twice, if the case concerned a sexual offence. An important remaining question for future research is whether the current pattern of findings holds in initial interviews with witnesses. In sum, the conclusions we can draw from the present findings are limited to this specific sample of witness interviews. Nevertheless, the current research is an important first step in validating the effectiveness of the Eye-Closure



Interview in a field context with witnesses of serious crimes (cf. Yuille, 1993; Yuille & Wells, 1991).

The practical implications of the combined findings from the laboratory and the field are clear. In the laboratory, eye-closure invariably improves either the quantity or the factual accuracy of memory reports, or both. In the present field study, the Eye-Closure Interview did not significantly increase the amount of information reported by witnesses, but it significantly increased the perceived forensic relevance of the information provided. Thus, it seems that the Eye-Closure Interview can help witnesses focus on what is important. In field settings, even the addition of a single highly relevant detail (e.g., the perpetrator's tattoo) could have crucial consequences for the police investigation. Thus, based on the present findings with witnesses of serious crimes, we conclude that implementation of the Eye-Closure Interview in police interviews may result in the acquisition of valuable information that would not be attained by default practice.

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Table 1. Case characteristics in the control condition ( $N = 55$ ) and Eye-Closure Interview (ECI) condition ( $N = 40$ ).

	Condition		
	Control	ECI	Total
<b>Language of interview</b>			
English	41	28	69
Afrikaans	8	11	19
isiXhosa	6	1	7
<b>Type of crime</b>			
Unarmed/nonviolent robbery	20	7	27
Armed/violent robbery	28	18	46
(Attempted) rape / murder	6	13	19
Other	1	2	3
<b>Number of perpetrators</b>			
1	20	22	42
2	22	8	30
3+	13	10	23
<b>Cross-race description</b>			
Yes	28	18	46
No	27	22	49

*Table 2.* Coding scheme. Examples of details in the Perpetrator, Modus Operandi (M.O.), Witness, and Other categories considered to be highly, somewhat, and not forensically relevant.

<b>Category</b>	<b>Forensic relevance</b>		
	Highly relevant	Somewhat relevant	Not relevant
Perpetrator	He had a tattoo	He looked young	His hair was on his head
M.O.	He had a gun	It happened at 8 am	He opened his mouth
Witness	Someone else witnessed the crime	Someone took me to the police station after the crime	The other witness was nice
Other	I fought back	I begged for help	I was tired

*Table 3.* Number of details reported by witnesses in the control condition ( $N = 55$ ) and Eye-Closure Interview (ECI) condition ( $N = 40$ ), categorized by type, modality, and forensic relevance of the information.

	<b>Condition</b>					
	Control		ECI		Total	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Type</i>						
Perpetrator	30.84	10.48	36.28	14.88	33.13	12.74
M.O.	24.60	15.30	23.20	14.45	24.01	14.89
Witness	4.44	5.99	4.58	6.21	4.49	6.05
Other	25.02	16.65	20.60	14.72	23.16	15.94
<i>Modality</i>						
Visual	65.18	21.26	65.98	21.60	65.52	21.29
Auditory	12.76	13.36	11.93	11.34	12.41	12.49
Other-modality	6.95	7.44	6.75	6.89	6.86	7.18
<i>Forensic Relevance</i>						
Highly relevant	43.71	19.31	45.35	18.91	44.40	19.06
Somewhat relevant	33.75	15.38	35.18	14.74	34.35	15.05
Not relevant	7.11	9.41	3.75	4.90	5.69	7.97