Addressing Unanswered Questions About the Shift of Strategy Approach: A Multi-Study Investigation of Approach Variations, Repeated Interviews, and Innocent Versus Guilty Responses

Lina Nyström¹, Pär Anders Granhag¹, Emma Neofotistos², Minna Määttä¹, Jikke Gribnau, Sofia Théren Waern¹, Hanna Feige¹, Ali Abbasov¹, Naiara Castello¹, Aziz-Kaan Dönmez¹, Malin Ekelund³, Paulina Engmann¹, Fanny Habacht⁴, Katlyn Madronero¹, Arman Raver⁵, Karishma Sooka¹, Pär D. Stern¹ and Timothy J. Luke¹

¹Department of Psychology, University of Gothenburg

²Faculty of Psychology and Neuroscience, Maastricht University

³Faculty of Human and Social Sciences, Åbo Academy University

⁴Division of Psychological Methodology, Department of Psychology and Psychodynamics,

Karl Landsteiner University of Health Sciences

⁵Department of Psychology, Stockholm University

This is a pre-print and the text may change in subsequent versions.

Correspondence concerning this article should be addressed to Lina Nyström, Department of Psychology, University of Gothenburg, Box 500, 405 30 Gothenburg, Sweden. Email: lina.nystrom@psy.gu.se

Author Note

Lina Nyström https://orcid.org/0000-0002-9221-8503

Pär Anders Granhag https://orcid.org/0000-0002-1856-925X

Emma Neofotistos https://orcid.org/0009-0000-5742-3010

Sofia Théren Waern https://orcid.org/0009-0009-2486-1474

Hanna Feige https://orcid.org/0009-0003-4767-4846

Ali Abbasov https://orcid.org/0009-0003-6163-9668

Naiara Castello https://orcid.org/0000-0003-2820-5617

Aziz-Kaan Dönmez https://orcid.org/0009-0009-8891-4109

Malin Ekelund https://orcid.org/0000-0001-6919-0373

Paulina Engmann https://orcid.org/0009-0007-2318-4745

Fanny Habacht https://orcid.org/0000-0002-5179-0247

Katlyn Madronero https://orcid.org/0009-0003-6565-2456

Arman Raver https://orcid.org/0000-0001-6291-632X

Pär Stern https://orcid.org/0009-0007-3099-1537

Timothy J. Luke https://orcid.org/0000-0002-5513-6605

This work was preregistered (Study 1: https://osf.io/td7ue; Study 2: https://osf.io/p248t;

Study 3: https://osf.io/69me8). Data and analysis code is openly available (Study 1:

https://github.com/linanystrom/SOS CD; Study 2: https://github.com/linanystrom/SOS-

Repeated; Study 3: https://github.com/linanystrom/sos-innocent) as well as study materials (Study 1: https://osf.io/gms8w/; Study 2: https://osf.io/gms8w/; Study 3: https://osf.io/jf2h4/). We have no known conflict of interest to disclose. This work was funded by a grant from the High-Value Detainee Interrogation Group (J-FBI-10-009) awarded to Timothy J. Luke. Any opinions, findings, and conclusions or recommendations expressed in this article are those of the authors and do not necessarily reflect the views of the U.S. government.

CRediT Author Statement

Lina Nyström: Conceptualization, Data curation, Formal analysis, Investigation,
Methodology, Project administration, Visualization, Writing—original draft, Writing - review
& editing. Pär Anders Granhag: funding acquisition, conceptualization, methodology,
supervision, and Writing - review & editing Emma Neofotistos: Methodology, Investigation,
Project administration. Minna Määttä: Investigation, Project administration. Jikke
Gribnau: Project administration, Investigation. Sofia Théren Waern: Methodology,
Investigation. Hanna Feige: Investigation, Project administration. Ali Abbasov:
Investigation. Naiara Castello: Investigation. Aziz-Kaan Dönmez: Investigation. Malin
Ekelund: Investigation. Paulina Engmann: Methodology. Fanny Habacht: Investigation.
Katlyn Madronero: Investigation. Arman Raver: Investigation. Karishma Sooka:
Investigation. Pär Stern: Investigation. Timothy Luke: Funding acquisition,
Conceptualization, Formal analysis, Investigation, Methodology, Project administration,
Supervision, Visualization, Writing - review & editing.

Abstract

Introduction. The Shift-of-Strategy (SoS) approach aims to obtain concealed information from semi-cooperative suspects by prompting them to shift toward more forthcoming counter-interrogation strategies. While previous studies on the approach have shown promising results, important questions remain about its practical application. This paper reports three studies addressing these gaps. Aim. Study 1 tested two SoS variations designed to maintain suspects' engagement and motivation to appear credible during interviews. Study 2 examined the approach in a repeated-interview context simulating an evolving investigation. Study 3 compared the approach's effects on disclosures from innocent and guilty suspects. Methods. Within each study, participants completed a mock crime procedure and were thereafter interviewed as mock suspects. Following the interview, participants provided assessments of their experiences of being interviewed. Results. Study I suggest that the SoS approach's efficacy is robust to procedural variation though the tactics aimed at maintaining suspect motivation did not provide additional benefits over the standard SoS approach. Study 2 revealed an important boundary condition; the approach's effectiveness was limited when initial evidence was scarce. Study 3 demonstrated that innocent suspects were forthcoming regardless of their assigned interviewing condition, whereas guilty suspects disclosed more previously unknown information under SoS. Conclusion. The findings demonstrate that the SoS approach is robust to variation, however its efficacy is not maintained when evidence is sparse. Importantly, the approach does not appear to disadvantage innocent suspects. Together, the studies refine the understanding of how the SoS approach should be deployed for use in investigative practice.

Keywords: Shift-of-Strategy, investigative interviewing, repeated interviews, innocent suspects, Strategic Use of Evidence

Addressing Unanswered Questions About the Shift of Strategy Approach: A Multi-Study Investigation of Approach Variations, Repeated Interviews, and Innocent Versus Guilty Responses

Suspects often serve as crucial sources of investigative information. However, many suspects are reluctant to share information, withholding details through vagueness or denials to avoid incriminating themselves (Granhag & Hartwig, 2015). The Shift-of-Strategy (SoS) approach (Granhag & Luke 2018) was designed to address this challenge by prompting semi-cooperative suspects to adopt more forthcoming counter-interrogation strategies through strategic questioning and disclosure of evidence.

Two previous studies have demonstrated the SoS approach's ability to elicit concealed information from participants. In the first test, participants interviewed with the SoS approach disclosed more previously unknown information than Direct questioning (Luke and Granhag, 2023). In the second test, the SoS approach outperformed Direct questioning again, when tested with a longer mock crime procedure (Nyström et al., 2024). Further, this test provided support for the underlying mechanisms that the SoS approach is based on, wherein participants interviewed with the SoS approach associated sharing information with producing a credible impression. Through these two studies, we have found support for the SoS approach achieving its primary aim of obtaining increased information from guilty suspects. Now, we lift our gaze to address the approach's broader applicability in different investigative contexts and the development of new variations of the approach.

In this paper, we have identified three key questions initiating this next phase of inquiry. First, is it possible to modify the SoS approach to better support suspects' motivation to stay engaged with the interview (Study 1)? Second, how does the SoS approach fare when implemented in a repeated interview context (Study 2)? Third, how does the SoS approach affect the statements of innocent and guilty suspects (Study 3)?

Counter-Interrogation Strategies

Counter-interrogation strategies refer to the ways suspects attempt to appear innocent during an interrogation (Granhag, et al., 2015). Suspects who are motivated to conceal information tend to provide simple, brief accounts of their actions (Hartwig et al., 2007) and attempt to withhold potentially incriminating information (Luke et al., 2014). However, suspects' choice of counter-interrogation strategy can be influenced by their perception of the interrogators' preexisting knowledge of their activities (Brimbal & Luke, 2022; Luke et al., 2014; Luke et al., 2016). When suspects believe the interrogator is knowledgeable about their actions, they tend adjust their strategy to account for their perception of the interrogator's knowledge (Granhag & Hartwig, 2015; Hartwig, et al., 2014). Suspects will attempt to account for the information they believe the interrogator is aware of, as contradicting such information could undermine their credibility. Under such circumstances, guilty suspects may choose to adopt more forthcoming strategies.

The Strategic Use of Evidence Technique

The Strategic Use of Evidence (SUE) technique (Hartwig et al., 2005) is an interviewing technique designed to facilitate deception detection by leveraging suspects' strategizing. The SUE technique aims to differentiate between deceptive and truthful statements by eliciting statement-evidence inconsistencies, i.e., inconsistencies between the suspect's account and the available evidence which signals the interviewer of possible attempts of deception. In its most basic form, the technique involves the interrogator withholding available evidence and asking questions designed to obtain an account from the suspect that addresses the facts known through evidence. In depriving direct insight into how much the interrogator knows, suspects motivated to conceal information are prone to adopt withholding strategies, thereby increasing the likelihood of such suspects contradicting evidence.

The SoS approach is an extension of the SUE technique. While the SoS approach is not primarily concerned with deception detection, eliciting statement-evidence (in)consistencies plays an integral part in prompting shifts in the suscepts' counter-interrogation strategies.

The Shift of Strategy Approach

Granhag and Luke (2018) reviewed the literature on counter-interrogation strategies and on the variations of SUE technique and conceptualized these techniques into the SoS approach. The SoS approach can be briefly summarized as encompassing the following principles: (1) Fostering a social environment where suspects are motivated to maintain, bolster, and recover their credibility; (2) creating the impression that the interviewer is knowledgeable about suspects' activities through strategic disclosure of evidence; (3) reinforcing and discouraging, respectively, suspect behaviors that are desirable (e.g., forthcoming and truthful) and undesirable (e.g., withholding or deceptive), by handling statement-evidence (in)consistencies in a manner that aligns with the first two principles. Essentially, the aim of the SoS approach is to have suspects realize that adopting withholding counter-interrogation strategies can damage their credibility and in doing so, encouraging suspects to adopt more forthcoming strategies.

The first principle is supported by research suggesting that establishing a non-accusatory environment can increase the likelihood suspects will reveal concealed information (Alison et al, 2013; May et al., 2017; Surmon-Böhr et al, 2020). The second principle is based on research that demonstrates that the suspect's perception of the interviewer's knowledge influences their counter-interrogation strategy (Brimbal & Luke, 2022; Luke et al., 2014; Luke et al., 2016). The third principle is supported by the two previous tests of the SoS approach (Luke and Granhag, 2023; Nyström et al., 2024). In both tests, variations of the SoS approach involving immediate confrontations of statement-evidence inconsistencies elicited more information from participants than a technique involving no such confrontations.

General Experimental Procedure

Each of the three studies reported in this paper shared the same general procedure. In each study, participants completed a mock crime procedure consisting of several discreet activities and were subsequently interviewed about them. We included multiple versions of the mock crime procedures within each study, and participants were randomly assigned to one of them. While the context and content varied between mock crimes, we had no hypotheses regarding differences between them. We included different mock crime procedures to reduce the possibility of results being attributable to the features of a specific scenario.

After completing the mock crime procedure, participants were interviewed as suspects about the activities they had carried out. To model a situation where the SoS approach was applicable, we manipulated interviewers' awareness of the participants' activities. Specifically, interviewers were in possession of evidence suggesting that a participant had taken part in some of the criminal activities, but they lacked information about other critical elements of the crime. Thus, the interviewer could elicit both known (noncritical) and previously unknown (critical) information within the interviews.

To further model the circumstances under which the SoS approach is applicable, participants were incentivized to produce a credible impression by learning that they would be entered into a lottery where they could win additional compensation if they convinced the interviewer that they were innocent. In reality, all participants were entered into the lottery and were debriefed about this after they had completed the study.

In all three studies, we measured participants' disclosure of information for each of the activities of the mock crime. For Study 1 & 2 we identified five details with increasing specificity for each activity of the mock crime and coded whether the participants revealed those details. The revelation of each detail necessarily implied the revelation of less specific details, forming a score ranging from 0 to 5 for each activity of each mock crime, where scoring

0 entailed the participant disclosed no information about the activity and scoring 5 entailed the participant giving a complete description of the activity without necessarily admitting culpability (see Table 1). As the coding scheme covered all activities included in the mock crime, the coding captured participants' disclosure of noncritical information and their disclosure of critical information. In Study 3, the coding scheme was revised to reflect participants' consistency with evidence, forming a scale ranging from 0 to 4 for each activity of the mock crime, where 0 reflected the participant providing no information about the activity and 4 entailed the participant providing a description of the activity covering all details implied through the interviewer's evidence.

Beyond measuring participants' disclosure of information, our procedure entailed participants completing a questionnaire regarding their experiences of being interviewed.

Analytic Approach

We assessed our predictions by fitting linear mixed effects models in each of the studies. To fit these models, we used the lme4 package (Bates et al., 2015) for R. Models predicting information disclosure included fixed effects for mock crime activity, detail type (noncritical & critical) and condition (interviewing technique and/or culpability) and random intercepts for participants (nested in mock crime) and interviewers.

The fixed effects for detail type were handled as segmented splines (Marsh & Cormier, 2001), in which the data were divided into different intervals that allowed us to assess different parts of the general information disclosure trajectories (i.e., the slopes for critical and noncritical details). Models were fitted using maximum likelihood estimation. The model selection processes began with models only including main effects. We compared the initial models with ones that added interaction terms for the models' fixed factors in stepwise fashion to test relevant hypotheses.

Study 1

In Study 1, we sought to examine whether the experiential downsides associated with the SoS approach could be mitigated. To this end, we developed two extensions of the SoS approach designed to maintain suspects' motivation to appear credible, SoS-Diversion and SoS-Cooling Off.

The SoS approach can broadly be conceptualized as striving to create productive (forthcoming) shifts in suspects' counter-interrogation strategies. As the approach is intended for use with semi-cooperative suspects, the SoS approach is applicable to use when the suspect's strategy lies somewhere between completely withholding or completely forthcoming. Thus, the approach is not intended for use with suspects refusing to engage in an interview, nor suspects already providing substantial and reliable information. Rather, the approach is aimed at suspects who are willing to answer questions but appear to withhold information by offering denials or vague and evasive responses. Under such circumstances, suspects provide limited amounts of information. However, should suspects adopt more forthcoming strategies, the interviewer stands to obtain more information, potentially generating new investigative leads, whereas increasingly withholding behavior could contribute to stalling the investigation.

The SoS approach rests on the notion that suspects' counter-interrogation strategies can be influenced through strategic questioning and evidence disclosure. One of the main tools interviewers utilize within the approach to shifts suspects' strategies is highlighting the suspect's statement-evidence (in)consistencies. The interviewers do this by presenting available evidence that relates to the suspect's statement and breaking down how the evidence and statement line up before inviting the suspect to explain any identified inconsistencies. This procedure is repeated throughout the interview, resulting in a piecemeal presentation of evidence. The purpose of highlighting (in)consistencies in this manner is (a) suspects discover that the interviewer knows a substantial amount about their activities while keeping them in

the dark about the full extent of the interviewer's knowledge and (b) suspects realize that withholding information could damage their credibility. Through these realizations, suspects may adopt more forthcoming strategies to avoid further inconsistencies and maintain their credibility.

One of the main pillars of the SoS approach is developing a social environment in which the suspect remains engaged throughout the interview and feel they can produce a credible impression. This is vital, as suspects inferring that they have no way of maintaining their credibility may completely disengage from the interview and stunt information gain. While the SoS approach adopts a nonaccusatory approach to questioning suspects, the strategic presentation of statement-evidence inconsistencies does not come without potential drawbacks in this regard. Specifically, presenting suspects with statement-evidence inconsistencies runs the risk of diminishing suspects' motivation to appear credible as receiving direct feedback that one has contradicted evidence can negatively impact their perceived ability to come across as innocent. Indeed, Luke and Granhag (2023) found that, though the SoS approach was effective at eliciting information, suspects interviewed with the SoS approach perceived that they were less successful at convincing the interviewer that they were innocent compared to those interviewed with a technique involving no challenges of statement-evidence (in)consistencies. Furthermore, Nyström et al., (2024) found that a version of the SoS approach that involved additional confrontations of statement evidence (in)consistencies was experienced more negatively compared to the standard variation of the SoS approach. Thus, we sought to explore whether suspects' negative experiences could be mitigated by including tactics aimed at maintaining their motivation. As such, the aim of Study 1 was to test two new extensions of the SoS approach designed to mitigate the experiential downsides associated with presenting statement-evidence inconsistencies: SoS-Diversion & SoS-Cooling Off.

Method

Hypotheses, procedures, materials, data exclusion criteria, and analysis code have been registered on the Open Science Framework prior to data collection and can be found here: https://osf.io/gms8w/?view_only=642bc670e5e9467fac95796cb09a1292.

Participants

159 participants were recruited from the online crowdsourcing platform Prolific (https://www.prolific.co/) to serve as mock suspects. Age and first language pre-screeners were applied to ensure that participants are 18 years or older and had indicated that their first language was English. Participants were paid £9.40 for their participation.

Procedure

Participants were randomly assigned to take part in one out of three online mock crime procedures. The mock crime procedures were embedded within a survey hosted on Qualtrics (https://www.qualtrics.com/). After obtaining informed consent, the participant received detailed instructions about the mock crime. After reading the instructions, the mock crime procedures were implemented using pre-recorded video clips, and participants were asked to imagine they performed the activities depicted in the clips.

Each of the mock crime procedures consisted of seven discrete activities. The first and final three activities (1-3 & 5-7) involved the participant carrying out unlawful acts (such as stealing classified data or planting a bomb) while the fourth activity involved no criminal activity. The fourth activity was implemented in the procedure to create an opportunity for the interviewer to question the participant about a lawful/neutral activity where the new extensions of the SoS approach employed the mitigation tactics. The final two activities served as the critical stages of the mock crime, which the interviewer possessed no information about.

After watching the video clips, the participants were interviewed via a video conference call on Zoom (https://zoom.us/) about their activities. Participants were randomly assigned to

be interviewed using one of three versions of the SoS approach: SoS-Standard, SoS-Cooling off and SoS-Diversion. Regardless of what condition a participant was assigned to, the interviews were structured to model a situation in which the interviewer had access to information about activities one through five (the first four criminal activities as well as the neutral activity) but lacked information regarding the final two activities. Thus, the final two activities were critical activities, in that any information the participant provided about them represented eliciting completely new information from the participant. The interviews were semi-scripted and consisted of four main components: (I) inviting the participant to provide a free narrative about their recent activities, (II) asking specific, focused questions about the suspect's activities that the interviewer had information about, (III) employing mitigation tactics (if applicable) and finally, (IV) covering the two critical stages through open questions. We measured participants' disclosure of information in each of the criminal activities of the mock crime (activity 1-3 & 5-7).

In each of the three SoS variations, the interviewers questioned and confronted statement-evidence inconsistencies in identical manner for the known criminal activities (activities 1-3 & 5). The questioning was derived from the style of questioning found most effective at eliciting concealed information by Luke and Granhag (2023). The difference between the variations concerned whether, and what type of mitigation tactics the interviewer employed during the interview. The three different variations are summarized below.

SoS-Standard. The SoS-Standard variation, which involved no mitigation tactics, served as our control condition. This choice of control allowed us to assess whether the new variations provided any benefits beyond the standard procedure. The questioning closely bore close resemblance to the SoS-Reactive variation in Luke and Granhag (2023) and the SoS-Standard variation in Nyström et al., (2024). The questioning followed a SUE framework

where the available evidence shaped the questioning and followed a funnel approach where questions became more specific over time for each activity.

The interviewer pointed out statement-evidence (in)consistencies immediately after they occurred in the suspects' statements and did so by presenting available evidence regarding the current activity of the mock crime that was being discussed and explained how the suspect's statement and evidence lined up. When the suspect's statement was inconsistent with evidence, the interviewer then encouraged the suspect to explain the inconsistency. When participants were consistent with evidence, the interviewer concluded speaking about the activity by presenting evidence to the participant and stating that the statement and evidence aligned. During the two final critical activities of the mock crime, the interviewer only asked openended and general follow-up questions. That is, they only asked questions that were plausible for an interviewer who previously knew nothing about those activities.

In SoS-Standard, the interviewer did not have any prepared questions regarding the fourth neutral activity. If the participant brought up the neutral activity spontaneously, the interviewer relied on open questions to allow the participant to speak about the activity as not to seem disinterested or interrupt the participant. After that, the interviewer swiftly moved on to discussing the next activity.

SoS-Cooling off. The questioning in the SoS-Cooling Off and SoS-Diversion variations were identical with the questioning in SoS-Standard for the known criminal activities (activity 1-3, and 5). However, during the neutral activity (activity 4) the interviewer employed the mitigation tactics. Broadly, the mitigation tactics gave the participants a chance to recover their perceived credibility by allowing them to share non-incriminating information with the interviewer as well as respite from confrontations of inconsistencies.

In SoS-Cooling Off, the questions mainly concerned describing the area where the neutral activity took place. The purpose of this tactic was to keep the participant engaged by

giving them an opportunity to contribute neutral information that was not self-incriminating. Any information the participant provided that matched the interviewer's knowledge about the activity (i.e., providing an accurate description of the location) was highlighted by the interviewer. Thus, the participant received direct feedback that they had provided information that matched the interviewer's knowledge if they provided any accurate details about the location. This procedure was designed to ensure that suspects providing some degree of accurate statements received positive reinforcement to encourage forthcoming behavior. The interviewer did not challenge inconsistencies whatsoever during this activity. If the participant did not provide any information about the location, the interviewer simply moved on with the interview as to give participants a "break" from having statement-evidence inconsistencies acknowledged by the interviewer. Thus, when discussing the neutral activity, participants had an increased chance of receiving positive feedback on the consistency of their statement and the interviewer never challenged statement-evidence inconsistencies.

SoS-Diversion. The structure of SoS-Diversion variation mirrored the structure in SoS-Cooling off. Again, the mitigation tactics concerned the neutral activity included in the mock crime. However, in SoS-Diversion the participants were asked specific questions about another person who had been present at the location where the neutral activity took place. The interviewer asked questions that were designed to impart the impression that another person was of interest in the investigation, allowing the participant to share information that was not self-incriminating and could divert suspicion onto someone else. The participants' level of consistency was addressed in the same way as in SoS-Cooling off, i.e., anything that matched the interviewer's knowledge was highlighted and inconsistencies were not addressed.

Hypotheses

We predicted that participants in the SoS-Cooling Off and SoS-Diversion conditions would disclose more information during the last two stages of the interview in comparison to

participants in the SoS-Standard condition. Further, we expected participants in the SoS-Cooling Off and SoS-Diversion conditions to assess their performance in the interrogation as more positively compared to the SoS-Standard condition. Finally, we predicted that participants in the SoS-Cooling Off and SoS-Diversion conditions would perceive the interaction more positively compared to the SoS-Standard condition. We had no hypothesis regarding the relative performance of the SoS-Cooling off and SoS-Diversion conditions.

Results

Figure 1 displays participants' disclosure of information for each condition. Adding the interactions did not improve the fit with the data $\chi^2(6) = 5.19$, p = .519, log likelihood -1706.7 vs. -1704.1, and so the main effect model was retained (see Table 2). We observed no significant differences in terms of eliciting information (critical and noncritical collapsed) when comparing the SoS-Cooling off, b = 0.04, t(159) = 0.17, p = .865 and SoS-Diversion, b = -0.38, t(159) = -0.38, p = .708 to SoS-Standard. To follow up, we calculated the effect sizes pertaining to the different techniques' elicitation of critical details, as this was our main measure of interest. Here, we found no significant effects between SoS-Cooling off, d = 0.03, 95% CI [-.35, .41], or SoS-Diversion, d = -0.04, 95% CI [-.42, .34], compared to SoS-Standard. There were no significant differences regarding any of the pairwise comparisons between the conditions regarding participants' self-assessments of performance, nor their perceptions of the interview or interviewer (see Table 3).

Discussion

Counter to expectations, we did not observe any meaningful differences regarding information yield, or participants' experiences during the interview between any of the three different versions of the SoS approach. Thus, the results suggest that implementing "cooling-off" tactics together with the SoS approach is neither beneficial or harmful regarding information yield or the interviewee's experiences of the interview.

Study 2

The SoS approach was originally designed to prompt shifts in suspects' counterinterrogation strategies within the span of a single interview. However, in practice, suspects are
often interviewed multiple times as new evidence is uncovered, and the investigation
progresses. In Study 2, we sought to evaluate the efficacy of the SoS approach in a repeatedinterview context. To this end, we developed an experimental paradigm consisting of three
consecutive interviews concerning the same crime. We simulated the progression of an ongoing
investigation by manipulating interviewers' access to evidence, where one additional piece of
evidence was introduced in each successive interview.

Assessing the SoS approach in a repeated context introduces both opportunities and challenges. While the approach was developed to facilitate suspects shifting from withholding to forthcoming counter-interrogation strategies within a single interview, several obstacles may impede this process. For instance, while suspects may recognize that their withholding strategy has been maladaptive, they may still fail to adopt a new one. Shifting strategies during the stress and immediacy of an interrogation can be cognitively demanding, requiring suspects to unhesitatingly generate and commit to a new strategy. Suspects may therefore fail to shift strategy despite recognizing that their current strategy may harm their credibility. In repeated interviews, however, suspects have time between sessions to reflect on their approach and may use this opportunity to revise their counter-interrogation strategies ahead of their next interview.

Repeated interviews also introduce an additional layer of complexity regarding suspects' strategies. In this context, suspects must not only consider whether their statements line up with what the interviewer knows but they must also consider whether their own statements are consistent across interviews. People tend to use the consistency heuristic when judging the veracity of repeated statements where the assumption is that inconsistency implies

deception, and that consistency implies truth (Granhag & Strömwall, 1999). Based on this heuristic, Granhag & Strömwall (1999) put forth the "repeat vs. reconstruct" hypothesis which posits that liars are more concerned with consistency than truth-tellers. According to the "repeat vs. reconstruct" hypothesis, liars attempt to maintain their credible impression by staying consistent over repeated statements, i.e., liars will try to repeat what they have said previously, whereas truth-tellers are more likely to reconstruct their experiences without the same concern for consistency.

In the context of a SoS interview, guilty suspects may have to weigh the risks associated with producing statement-evidence inconsistencies and across-statement inconsistencies as both could potentially harm their credibility. Depending on suspects' evaluation of these risks, suspects may adopt counter-interrogation strategies that either minimize the number of statement-evidence inconsistencies, or across-statement inconsistencies, as minimizing both types of inconsistencies would typically be incompatible (especially when suspects produce a meagre first statement). This proposed dynamic suggests that the SoS approach may be less effective in repeated interviews if (a) suspects provide minimal information during the initial interview, and (b) they concentrate on being consistent with the initial statement in subsequent interviews.

Implementation of the SoS approach relies on interviewers having access to evidence pointing at a suspect's possible involvement in the crime under investigation. Such evidence is crucial, as it shapes question formulation and enables the interviewer to detect and challenge statement-evidence (in)consistencies. However, in the early stages of an investigation, evidence may be scarce. Consequently, the interviewer's ability to employ SoS tactics is also constrained. By simulating an evolving investigation (in which the interviewer possessed limited evidence during the first interview, and increasing amounts in subsequent ones), we were able to evaluate the SoS approach across different evidentiary contexts. Specifically, this

paradigm allowed us to examine (a) whether suspects shift strategies even when interviewers possess limited evidence (during Interview 1), and (b) whether the SoS approach as effective in a repeated-interview context.

Method

Hypotheses, procedures, materials, data exclusion criteria, and analysis code have been registered on the Open Science Framework prior to data collection and can be found here: https://osf.io/8ge9a/?view_only=2fb39900800b496eb50383907a403216.

Participants

60 participants were recruited from the local community through several channels. We recruited participants by using the Swedish recruitment platform Accindi (https://accindi.com/), posting flyers at public places and through contacting students at the University of Gothenburg. Each participant completed three interviews, resulting in a total of 180 interviews. Participants were paid 150 SEK for each interview, resulting in a total pay of 450 SEK for their participation. Participants were able participate in English or Swedish.

Procedure

Participants were randomly assigned to take part in one out of three in-person mock crime procedures. All three mock crime procedures in the current study consisted of five discrete activities. After obtaining informed consent, the experimenter provided participants with detailed instructions about how to carry out their assigned mock crime. For each crime, participants were asked to imagine they were part of a radical political organization that was conducting an unlawful investigation of possible wrongdoing occurring at the university where the study was being conducted.

After completing the mock crime, participants returned to the laboratory and were informed that they would be interviewed as suspects of the mock crime they had just completed. Before the interview, the participants completed a brief pre-interview questionnaire and had a

few minutes to prepare for the interview. Participants were randomly assigned to one of two interviewing conditions: Direct or SoS.

After participants completed their first lab session, they were asked to return within a few days. During their next two visits, participation only consisted of completing the same questionnaires they had completed during the first session and participating in the subsequent interviews. The three interviews were modeled to reflect an ongoing investigation, where each successive interview covered an increasing amount of information (i.e., covering previous topics and introducing new topics). In the first interview, the interviewer only possessed evidence regarding the first activity included in the mock crime; in the second interview the interviewer possessed evidence regarding the first two activities and in the final interview the interviewer possessed evidence regarding the first three activities. Thus, over the three interviews, the interviewer relied on an increasing number of planned questions as new evidence became available to them. The interviewer never possessed any evidence regarding the final two activities of the mock crime, thus the final two activities constitute the study's critical activities. The interviews were semi-scripted and consisted of three main components: (I) asking the participant for a free recall about their recent activities, (II) asking specific, focused questions about the suspect's activities of the mock crime that the interviewer had information about, and finally (III) covering the unknown activities by asking open questions.

We coded participants statements during all three interviews using the same type of coding scheme used in Study 1, adjusted for the mock crimes implemented in the current study.

SoS. Participants assigned to SoS were interviewed with a standard variation of the SoS approach. The interviewer pointed out statement-evidence (in)consistencies immediately after they occurred in the suspects' statements. The interviewer revealed the evidence they had regarding the activity and explained whether the suspect's statement and evidence aligned. The number of statement-evidence inconsistencies the interviewer could identify varied across the

three interviews as the interviewer had an increasing amount of evidence that they could compare the suspects' statements with.

Direct. In Direct, the interviewer used the same questioning approach as SoS. For the unknown activities, the interviewer relied on open-ended and general follow up questions. For the known activities, the interviewer used the same type of specific questions used in the SoS condition. However, the interviewer never commented on the suspect's consistency with evidence or presented any evidence throughout the three interviews.

Hypotheses

We hypothesized that the SoS approach would outperform the Direct condition in terms of disclosure of information (both noncritical & critical information).

Results

Figure 2 displays participants' disclosure of information regarding the activities included in the mock crimes, for each of the three interviews. We compared the initial model to one that added 2-way interaction terms for the fixed factors and finally compared the 2-way model with a model that added the 3-way interaction for the fixed factors. Adding the 2-way interactions significantly improved the fit with the data $\chi^2(5) = 34.82$, p < .001, log likelihood -129.3 vs. -1201.9 while adding the 3-way interaction did not $\chi^2(2) = 2.21$, p = .332, log likelihood -1201.9 vs. -1200.8. As such, the 2-way interaction effect model was retained. The results of the main and interaction effect models are displayed in Table 4. Appendix A provides an overview of how the coefficients in the model relate to our hypotheses.

Participants interviewed with the SoS approach revealed more noncritical details than those interviewed with Direct, d = 0.60, 95% CI [.30, 0.89]. However, we observed no significant differences between the conditions in terms of eliciting critical information, d = 0.29, 95% CI [-.07, .65]. Participants interviewed with SoS reported less favorable perception of the interview (b = -0.49, t(59.50) = -3.28, p < .001), interviewer (b = -0.54, t(58.15) = -4.48,

p < .001) and assessed their performance in the interviews more poorly, b = -0.45, t(60.41) = -2.58, p = .012, compared to those interviewed with Direct.

Discussion

In repeated interviews, the SoS approach elicited more noncritical information from participants than the Direct approach, but there were no significant differences regarding disclosure of critical information between the two conditions. This result departs from previous single-interview experiments of the approach where the SoS approach has consistently outperformed Direct regarding the elicitation of critical details (e.g. Luke & Granhag, 2023; Nyström et al., 2024).

In the final interview of the current procedure, the interviewer possessed more evidence than interviewers in the study by Luke & Granhag (2023) where interviews using the SoS approach elicited more critical details than when using Direct. Thus, the effectiveness of the SoS approach is not solely determined by the amount of evidence available to the interviewer, the context matters too. Interviewers having one piece of evidence to shift participants' strategies from withholding to forthcoming in the initial interview appear insufficient. Thus, participants interviewed with SoS appear to have maintained withholding strategies, producing short statements regarding their activities (Hartwig, et al., 2007) and withholding potentially incriminating information (Luke et al., 2014).

In a repeated context, suspects may be concerned with providing consistent statements over time (Granhag & Strömwall, 1999). Should the initial interview fail to shift suspects' strategies, they may produce meagre statements and also become committed to staying consistent with that statement, limiting potential shifts in strategy in subsequent interviews. The results of the current study reinforce the recommendation that the SoS approach should not be used without ample evidence pointing at a suspect's involvement in a crime (Luke &

Granhag, 2023), especially when repeated interviews are a likely development within an ongoing investigation.

Study 3

Previous research on the SoS approach has focused on evaluating its ability to elicit information from guilty suspects. Consequently, innocent participants have been deliberately omitted in prior investigations. This decision was based on the rationale that it was necessary to first establish whether the approach achieved its primary goal before examining its impact on innocent individuals. We argue that if the approach was unsuccessful with guilty individuals, its impact on innocent individuals would be largely irrelevant; if such were the case, the approach ought not be implemented at all.

However, as evidence has accumulated demonstrating the approach's effectiveness with guilty suspects (Luke & Granhag, 2023; Nyström et al., 2024), it is now pertinent to assess its effects on innocent individuals. Understanding how innocent suspects respond to the SoS approach is crucial for evaluating its practical applicability in investigative contexts. Regardless of its efficacy with guilty individuals, the approach cannot be considered viable for broader use unless it avoids negatively affecting innocents (see Kassin et al., 2025).

Study 3 therefore examined the behavior of both guilty and innocent suspects when interviewed with the SoS approach, as well as comparing the approach to direct questioning. Specifically, we focused on differences in statement–evidence consistency across culpability and interviewing condition.

Method

Hypotheses, procedures, materials, data exclusion criteria, and analysis code have been registered on the Open Science Framework prior to data collection and can be found here: https://osf.io/jf2h4/?view_only=eefd47ff787e4f4ea7cf6053ef232916.

Participants

75 participants were recruited from the online crowdsourcing platform Prolific to serve as mock suspects. Age and first language pre-screeners were applied to ensure that participants are 18 years or older and had indicated that they spoke English fluently. Participants were paid £9.25 for their participation.

Procedure

Study 3 used a 2 (interview: SoS approach vs. Direct approach) x 2 (suspect culpability: guilty vs. innocent) between-subjects factorial design.

The mock crime procedure was embedded in a survey hosted on Qualtrics (https://www.qualtrics.com), where participants were randomly assigned to one of two culpability conditions (guilty vs. innocent). For each culpability condition, participants could be assigned to one of three procedures (yielding six procedures in total). Those assigned to the innocent condition took part in one of three non-criminal procedures and those assigned to the guilty condition took part in one of three mock crime procedures. Each of the procedures consisted of six discreet activities.

The procedures for innocent and guilty participants were designed as pairs. Specifically, the activities included in one of the innocent procedures and one of the guilty procedures mirrored each other, resulting in three procedure pairs. Each pair involved the participants visiting the same areas and interacting with the same objects. Importantly, this meant that the pairs of procedures produced the same evidence. However, the context varied between them. For instance, for one of the pairs, the participant used a shredder located in a printing room. Within the innocent procedure, the participant was carrying out a work-related task whereas the guilty participant was using the shredder to destroy evidence of wrongdoing.

Participants were randomly assigned to be interviewed as suspects with the SoS approach or the Direct technique. In Study 3, the interviewers were aware of (had evidence)

the first four activities of the procedure, but they were unaware of the final two activities. The evidence at the interviewers' disposal was identical regarding the innocent/guilty pairs of procedures and they were blind to the participants assigned culpability.

SoS. Participants assigned to SoS were interviewed with a standard variation of the SoS approach. The interviewer pointed out statement-evidence (in)consistencies immediately after they occurred in the suspects' statements. The interviewer revealed the evidence they had regarding the activity and explained whether the suspect's statement and evidence aligned. For the unknown activities, the interviewer relied on open-ended and general follow up questions.

Direct. For the known activities, the interviewer used the same type of specific questions used in the SoS condition. However, the interviewer never commented on the suspect's consistency with evidence or presented any evidence. For the unknown activities, the interviewer relied on open-ended and general follow up questions.

Hypotheses

We predicted that guilty suspects interviewed with the Direct approach would be less consistent with evidence compared to innocent suspects interviewed with Direct approach. Along with this group comparison, we predicted that participants in each group would be characterized by a flat disclosure trajectory.

For participants assigned to the SoS approach, we predicted that guilty suspects interviewed with the approach will be less consistent with evidence compared to innocent suspects. For these groups, we predicted that innocent suspects would be characterized by a flat trajectory whereas guilty suspects would be characterized by a positive upward trajectory for phases of the interview where the interviewer has evidence, followed by a downward trajectory for the critical details.

Finally, we predicted that guilty suspects interviewed with the SoS approach will disclose more information during critical activities compared to guilty suspects interviewed with Direct.

Results

The main effect model was outperformed by the 2-way interaction effect model χ^2 (5) = 15.47, p = .009, log likelihood –712.5 vs. –704.7, however the 3-way interaction effect model did not demonstrate better fit with data χ^2 (2) = 4.15, p = .126, log likelihood –704.7 vs. –702.7, so the 2-way interaction model was retained. The main effect and 2-way interaction effect models are displayed in Table 5. As several of our predictions were assessed in the 3-way interaction effect model, we followed up with additional analyses assessing these hypotheses.

Participants' disclosure of information within interviews is presented in Figure 3. Guilty suspects interviewed with the Direct approach were less consistent with evidence compared to innocent suspects (d = -1.49, 95% CI [-1.85, -1.12]) and both groups disclosure trajectories were nonsignificant (Innocent: b = -0.03, t(375) = -0.39, p = .699; Guilty: b = -0.09, t(375) = -0.09, p = .356), suggesting no meaningful shifts in suspects' strategies across the known activities.

As for the SoS approach, guilty suspects were less consistent with evidence than innocent suspects (d = -0.70, 95% CI [-1.02, -0.37]). However, the magnitude of this effect was reduced compared to difference observed for the Direct technique. The specific trajectories for each condition are not detailed in the 2-way interaction model, however the 2-way model suggests that when compiling the conditions the trajectories for noncritical details were positive (b = 0.21, t(375) = 2.16, p = .031), suggesting participants in SoS revealed more noncritical information over time. As for the critical details, the 2-way model suggested a negative trajectory for participants (b = -0.57, t(375) = -2.57, p = .011).

Guilty suspects revealed more critical details when interviewed with the SoS approach than the Direct technique (d = 1.02, 95% CI [0.54, 1.49]).

We conducted an additional exploratory comparison assessing innocent suspects' disclosures. We found that innocent suspects' disclosures were unaffected by interviewing approach. Those interviewed with SoS provided similar amounts of noncritical information (d = 0.32, 95% CI [-0.01, 0.65]) and critical information (d = -0.29, 95% CI [-0.76, 0.17]) compared to those interviewed with Direct.

The pairwise comparisons between innocent and guilty participants' experiences demonstrated that guilty participants assigned to SoS had more negative perceptions of the interaction compared to their innocent counterparts (see Table 6). However, none of the pairwise comparisons between the culpability conditions were significant within the Direct condition. Additionally, guilty participants assigned to SoS reported more negative experiences than those in Direct, whereas innocent participants demonstrated no significant differences across the interviewing conditions.

Discussion

Overall, innocent suspects were forthcoming within both approaches, indicating no tactical advantage or disadvantage of using the SoS approach with this population. In contrast, guilty suspects became more consistent with evidence and disclosed more new information when interviewed with SoS, suggesting the approach is indeed effective at eliciting information from guilty suspects.

In terms of suspects' level of consistency with evidence, the Direct approach produced larger differences in statement—evidence consistency between guilty and innocent suspects than the SoS approach. This pattern is to be expected as the Direct technique closely resembles a late SUE interview which is designed to amplify the differences between guilty and innocent suspects' strategies (Granhag & Hartwig, 2015). As guilty suspects become more forthcoming

when interviewed with the SoS approach, their statements become less distinguishable from innocent suspects compared to when adopting a typical SUE approach. Thus, the techniques should be used for their intended aims, where the SoS approach is appropriate to employ when the investigative goal is gathering new information and the SUE technique should be used when the primary goal is deception detection.

General discussion

The present research provides a multi-study examination of the SoS approach. Collectively, the results support the approach's ability to elicit information from suspects while also highlighting limitations that inform on its optimal use in investigative contexts.

Study 1 tested two SoS variations: SoS-Cooling Off and SoS-Diversion. The first variation (SoS-Cooling off) involved providing participants with an opportunity to speak about relatively neutral topics and to volunteer information that was not self-incriminating during the interview. The second variation (SoS-Diversion) involved giving the participant the opportunity to shift blame to an alternate suspect by asking focused questions about another person during the interview. The new variations of the SoS approach were compared to a version where no cooling-off tactics were employed (SoS-Standard).

Counter to expectations, we did not observe any meaningful differences regarding information yield, or participants' experiences between any of the three different variations of the SoS approach. The results suggest that implementing "cooling-off" tactics together with the SoS approach is neither beneficial or harmful regarding information yield or the interviewee's experiences of the interview.

One of the main pillars of the SoS approach is fostering a social environment that maintains suspects' motivation and confidence in producing a credible impression (Granhag & Luke, 2018). It is possible that our operationalizations of the cooling-off tactics did not sufficiently increase the participants' motivation to appear innocent to influence other

outcomes, such as information yield. In our experimental paradigm, participants were aware that they were not under any real suspicion. It is possible that cooling-off tactics may have a stronger effect in situations with higher stakes, and future research should examine the approach's efficacy under such circumstances. Our paradigm also necessitated that the cooling-off tactics were employed at the midpoint of the interview using a semi-scripted approach. A less rigid approach that is more responsive to the individual interviewee might yield different results.

While we did not observe any differences between the three variations, we observed patterns of information disclosure that were highly consistent with previous tests of the approach (Nyström et al., 2014). To further assess this observation, we conducted additional analyses to compare the different SoS variations' ability to elicit new information by comparing them the Direct condition included in Nyström et al., (2025). The analyses confirmed that participants interviewed with the SoS approaches included in Study 1 disclosed more critical information (M = 3.54, SD = 3.38; d = 0.36, 95% CI [0.11, 0.61]) compared to participants interviewed with the Direct approach (M = 2.41, SD = 2.75) in Nyström et al., (2025). Thus, our results suggest that the SoS approach achieves similar information yield despite introducing considerable variation to the technique.

Study 2 evaluated SoS in a repeated-interview context, simulating an evolving investigation. While SoS elicited more noncritical information than direct questioning, it did not significantly outperform direct questioning in eliciting critical details. This departure from earlier single-interview findings suggests a boundary condition: when initial evidence is scarce, suspects may maintain withholding strategies across sessions, prioritizing consistency over disclosure.

Previous studies demonstrating the SoS approach's capacity to elicit critical information (Luke & Granhag, 2023; Nyström et al., 2024) have tested the SoS approach in

single interviews where the interviewer had access to a substantial amount of evidence. In the current study, the interviewer only had access to one piece of evidence during the initial interview. The evidence available to the interviewer determines the extent of SoS tactics that can be used within the interview. As interviewers relied on very little evidence in the initial interview, interviewers' ability to use SoS tactics was limited. As interviewers relied on just one piece of evidence during the first interview, it is possible that this prevented the SoS questioning from sufficiently influencing participants' perception of the interviewer's knowledge to induce participants to shift counter-interrogation strategy. Should participants not shift to a more forthcoming counter-interrogation strategy, they are likely to produce short statements regarding their activities (Hartwig, et al., 2007) and withhold potentially incriminating information (Luke et al., 2014).

In a repeated context, suspects may be concerned with providing consistent statements over time (Granhag & Strömwall, 1999), possibly anchoring them to their initial statement. Taken together, should the initial interview fail to shift suspects' strategies, suspects will frequently produce a thin initial statement and may become committed to staying consistent with it, thereby limiting potential shifts in strategy in subsequent interviews.

The results of Study 2 reinforce the recommendation that the SoS approach should not be employed without ample evidence pointing at a suspect's involvement in a crime (Luke & Granhag, 2023), especially when repeated interviews are a likely development within an ongoing investigation. In the final interview of the current procedure, the interviewers possessed more evidence than the interviewers in the study by Luke & Granhag (2023) where interviews using the SoS approach elicited more critical details than when using Direct. Thus, the effectiveness of the SoS approach is not solely determined by the amount of evidence available to the interviewer, the context matters too.

We believe participants' commitment to their initial statement (e.g., Granhag & Strömwall, 1999) limited the potential influence of the SoS approach in following interviews, i.e., the SoS approach did not recover its' efficacy regarding critical information despite the interviewer having access to several pieces of evidence during the final interview.

These results highlight the need for future research addressing how and when to implement the SoS approach in repeated-interview contexts, such as exploring the approach's efficacy when a broader attempt at gathering evidence had been made prior to its implementation, thereby securing more evidence to inform its questioning procedure.

Study 3 examined the SoS approach with both innocent and guilty suspects. For guilty suspects, SoS elicited more critical and noncritical information than direct questioning. For innocent suspects, SoS offered no additional benefits or drawbacks in terms of disclosure of information. This finding aligns with research demonstrating that innocent suspects tend to employ forthcoming counter-interrogation strategies regardless of their perception of the interviewer's knowledge (Luke et al., 2014).

The innocent participants in this study had no clear grounds for concealing information from the interviewer. If they had reason to do so (e.g., being somehow involved in the activity or knowing and wanting to protect the perpetrator) they may have adopted different counter-interrogation strategies and responded differently to the SoS approach. This population remains unexplored in relation to the SoS approach, and future research should investigate its effects in such contexts.

Finally, Study 3 demonstrates that the SoS approach only appears to create more adverse experiences for guilty individuals, suggesting that the procedure challenges guilty participants' strategies without negatively impacting innocent individuals' statements or experiences.

Conclusion

The three studies included in this paper move beyond prior work on the SoS approach by advancing the understanding of the approach's applicability across different investigative contexts as well as demonstrating its procedural robustness. When the SoS approach is used by interviewers with ample evidence pointing at a suspect's involvement, the approach improves interviewers' ability to elicit information from guilty suspects despite introducing considerable variability to the questioning procedure. In contrast, when evidence is scarce, the approach's efficacy is reduced and does not recover in a repeated-interview context, even as additional evidence becomes available to the interviewer over time. Thus, we caution against using the technique when evidence is scarce and recommend that other means of information gathering are exhausted before implementing the approach. The SoS approach does not reduce or increase innocent suspects' disclosure of information compared to Direct questioning, suggesting it is generally unproblematic to use with this population. Taken together, these studies illuminate the approach's strengths and practical limitations, while pointing to promising directions for its future development.

References

- Alison, L., Alison, E. K., Noone, G., Elntib, S., & Christiansen, P. (2013). Why Tough
 Tactics Fail and Rapport Gets Results: Observing Rapport-Based Interpersonal
 Techniques (ORBIT) to Generate Useful Information From Terrorists. *Psychology*,
 Public Policy and Law, 19, 411–431. https://doi.org/10.1037/A0034564
- Bates, D., Maechler, M., Bolker, B., & Walker, S. (2015). Fitting linear mixed-effects models using lme4. *Journal of Statistical Software*, 67(1), 1–48. https://doi.org/10.18637/jss.v067.i01
- Brimbal, L., & Luke, T. J. (2022). Deconstructing the evidence: The effects of reliability and proximity of evidence on suspect responses and counter-interrogation tactics. *Journal of Applied Research in Memory and Cognition*, 11, 346–360.

 https://doi.org/10.1016/j.jarmac.2021.10.001
- Granhag, P. A., & Hartwig, M. (2015). The Strategic Use of Evidence technique: A conceptual overview. In P. A. Granhag, A. Vrij, & B. Verschuere (Eds.), *Detecting deception: Current challenges and cognitive approaches* (pp. 231–251). Wiley-Blackwell.
- Granhag, P. A., Hartwig, M., Mac Giolla, E., & Clemens, F. (2015). Suspects' verbal counter-interrogation strategies: Towards an integrative model. In P. A. Granhag, A. Vrij, & B. Verschuere (Eds.), *Detecting deception: Current challenges and cognitive approaches* (pp. 293–313). Wiley-Blackwell.
- Granhag, P. A., & Luke, T. J. (2018). How to Interview to Elicit Concealed Information:

 Introducing the Shift-of-Strategy (SoS) Approach. *Detecting Concealed Information and Deception: Recent Developments*, (pp. 271–295) Elsevier Academic Press.

 https://doi.org/10.1016/B978-0-12-812729-2.00012-4

- Granhag, P. A., & Strömwall, L. A. (1999) Repeated Interrogations Stretching the Deception Detection Paradigm. *Expert Evidence* 7(3), 163–174 (1999) https://doi.org/10.1023/A:1008993326434
- Hartwig, M., Granhag, P. A., & Luke, T. (2014). Strategic Use of Evidence during investigative interviews: The state of the science. In D. C. Raskin, C. R. Honts, & J. C. Kircher (Eds.), Credibility assessment: Scientific research and applications (pp. 1–36).
 Elsevier Academic Press. https://doi.org/10.1016/B978-0-12-394433-7.00001-4
- Hartwig, M., Granhag, P. A., Strömwall, L. A., & Vrij, A. (2005). Detecting deception via strategic disclosure of evidence. *Law and Human Behavior*, *29*(4), 469–484. https://doi.org/10.1007/s10979-005-5521-x
- Hartwig, M., Granhag, P. A., & Strömwall, L. A. (2007). Guilty and innocent suspects' strategies during police interrogations. *Psychology, Crime and Law*, *13*(2), 213–227. https://doi.org/10.1080/10683160600750264
- Kassin, S. M., Cleary, H., Gudjonsson, G. H., Leo, R. A., Meissner, C. A., Redlich, A. D., & Scherr, K. C. (2025). Police-induced confessions, 2.0: Risk factors and recommendations. *Law and human behavior*, 49(1), 7–53.
 https://doi.org/10.1037/lhb0000593.
- Kuznetsova, A., Brockhoff, P. B., & Christensen, R. H. B. (2017). lmerTest Package: Tests in Linear Mixed Effects Models. *Journal of Statistical Software*, 82(13), 1–26. https://doi.org/10.18637/jss.v082.i13
- Luke, T. J., Dawson, E., Hartwig, M., & Granhag, P. A. (2014). How awareness of possible evidence induces forthcoming counter-interrogation strategies. *Applied Cognitive Psychology*, 28(6), 876–882. https://doi.org/10.1002/acp.3019

- Luke, T. J., & Granhag, P. A. (2023). The shift-of-strategy (SoS) approach: using evidence strategically to influence suspects' counter-interrogation strategies. *Psychology, Crime & Law*, 29(7), 696–271. https://doi.org/10.1080/1068316X.2022.2030738
- Luke, T. J., Hartwig, M., Joseph, E., Brimbal, L., Chan, G., Dawson, E., Jordan, S., Donovan,
 P., & Granhag, P. A. (2016). Training in the Strategic Use of Evidence technique:
 Improving deception detection accuracy of American law enforcement officers. *Journal of Police and Criminal Psychology*, 31(4), 270–278. https://doi.org/10.1007/s11896-015-9187-0
- May, L., Granhag, P. A., & Tekin, S. (2017). Interviewing suspects in denial: On how different evidence disclosure modes affect the elicitation of new critical information.
 Frontiers in Psychology, 8, 1–11. https://doi.org/10.3389/fpsyg.2017.01154
- Marsh, L. C., & Cormier, D. R. (2001). Spline Regression Models. SAGE Publications.
- Nyström, L., Luke, T. J., Granhag, P. A., Dönmez, A. K., Ekelund, M., & Stern, P. D. (2024).

 Advancing the Shift-of-Strategy approach: Shifting suspects' strategies in extended interviews. *Law and Human Behavior*, 48(1), 50–66.

 https://doi.org/10.1037/lhb0000554
- Surmon-Böhr, F., Alison, L., Christiansen, P., & Alison, E. (2020). The right to silence and the permission to talk: Motivational interviewing and high-value detainees. *American Psychologist*, 75(7), 1011–1021. https://doi.org/10.1037/amp0000588

Tables & Figures

Table 1
General description of information disclosure coding.

Score	Description
0	The suspect revealed no information about the activity.
1	The suspect placed themselves in the general area where the activity occurred (e.g., placing themselves on the floor/level where the activity took place).
2	The suspect placed themselves in the specific area where the activity occurred (e.g., placing themselves inside the specific room where the activity took place).
3	The suspect mentioned a specific object of interest related to the activity (e.g., mentioning seeing the object from where something had been stolen during the activity).
4	The suspect admitted to interacting with the object (e.g., mentioning touching the object from where something had been stolen during the activity).
5	The suspect provided a full account of the activity (e.g., admitting to taking something from the object of interest).

Note. A score of 4 indicated that the suspect provided information consistent with the available evidence; accordingly, 4 was the maximum score in Study 3. A score of 5 reflected that the suspect's statement went beyond what was known from evidence.

Figure 1

Trajectories of information disclosure across the interview stages (omitting the cool down stage), by interview strategy. Information disclosure (0–5) is plotted on the vertical axis.

Each panel represents an interview condition. Within each panel, the stages of the interview are plotted on the horizontal axis. The bold lines track the group mean information disclosure at each phase (with a 95% confidence interval). The semi-transparent lines plot the trajectory of each individual participant in each condition, jittered slightly horizontally and vertically to more easily distinguish between lines.

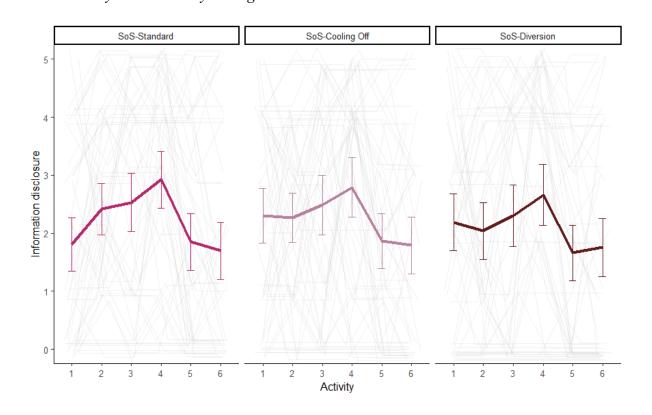


Table 2

Main and interaction models predicting information disclosure in Study 1

Fixed effects	b	SE	t	df	p
Intercept (SoS-Standard)	1.94	0.24	8.02	349.90	< .001
Time	0.17	0.07	2.49	795.00	.013
Time after treatment	-0.69	0.13	3.38	795.00	< .001
Immediate treatment	0.73	0.17	4.23	795.00	< .001
SoS-Cooling off	0.05	0.28	0.17	159.00	.865
SoS-Diversion	-0.10	0.28	-0.38	159.00	.708
Random effects	SD				
Participant	1.34				
Mock crime and order	< 0.001				
Interviewer	< 0.001				
Residual	1.21				

Table 3

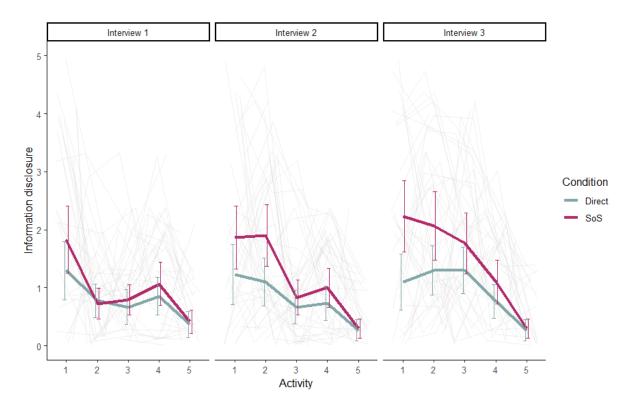
Comparisons of each condition for self-assessment, interview quality, and interviewer perception

		<u>NHST</u>			<u>TOST</u>	
	t	df	p	t	df	p
Self-assessment of Performance						
Standard vs. Cooling off	1.79	102.98	.076	-0.54	102.98	.777
Standard vs. Diversion	1.47	101.89	.145	-0.45	101.89	.673
Cooling off vs. Diversion	0.31	100.96	.757	-0.71	100.96	.241
Perceptions of interview						
Standard vs. Cooling off	0.48	102.85	.633	-0.55	102.85	.293
Standard vs. Diversion	0.20	99.88	.839	-0.81	99.88	.209
Cooling off vs. Diversion	0.24	97.74	.812	-0.78	97.74	.220
Perceptions of interviewer						
Standard vs. Cooling off	0.81	99.25	.418	0.21	99.25	.417
Standard vs. Diversion	-0.32	101.04	.753	-0.70	101.04	.242
Cooling off vs. Diversion	1.07	100.03	.286	0.06	100.3	.523

Note: All t-tests are Welch corrected. TOST equivalence tests use bounds of d = |0.20|.

Figure 2

Trajectories of information disclosure across the interview stages by interview and condition. Information disclosure (0–5) is plotted on the vertical axis. Each panel represents an interview(1-3). Within each panel, the stages of the interview are plotted on the horizontal axis. The bold lines track the group mean information disclosure at each activity. The grey lines plot the trajectory of each individual participant in each condition, jittered slightly horizontally and vertically to more easily distinguish between lines



Residual

Table 4

Main and interaction models predicting information disclosure across interviews in Study 2

Main effect model					
Fixed effects	b	SE	t	df	p
Intercept (Direct)	1.42	0.15	9.27	24.08	< .001
Interview	0.15	0.08	2.01	86.18	.047
Start slope	-0.27	0.09	-3.04	58.33	.004
End slope	-0.31	0.04	-8.53	81.21	< .001
SoS	0.07	0.11	0.70	62.66	.490
Random effects	SD				
Participant (intercept)	0.81				
Interviewer (intercept)	0.16				
Start slope (slope)	0.49				
End slope (slope)	0.18				
Interview (slope)	0.32				
Residual	0.89				
2-way interaction effect model					
Fixed effects	b	SE	t	df	p
Intercept (Direct)	1.08	0.19	5.57	50.53	< .001
Interview	0.88	0.11	0.82	97.17	.412
Start slope	0.10	0.18	0.56	269.00	.577
End slope	-0.14	0.05	-2.62	110.65	.010
SoS	0.41	0.25	1.64	61.75	.106
Interview x Start slope	-0.04	0.07	-0.49	758.63	.627
Interview x End slope	-0.19	0.04	-5.14	754.29	< .001
Interview x SoS	0.29	0.15	1.97	87.74	.052
Start slope x SoS	-0.29	0.17	-1.69	57.71	.097
End slope x SoS	-0.12	0.07	-1.75	81.10	.084
Random effects	SD				
Participant (intercept)	0.80				
Interviewer (intercept)	0.14				
Start slope (slope)	0.48				
End slope (slope)	0.17				
Interview (slope)	0.30				
· · · · · · · · · · · · · · · · · ·	0.05				

0.87

Table 5

Main and interaction models predicting information disclosure in Study 3

Model	b	SE	t	df	p	SD
Main effect model						
Fixed effects						
Intercept	2.63	0.22	11.81	102.23	<.001	
Activity	0.03	0.05	0.54	375.00	.587	
Critical	-0.26	0.11	-2.31	375.00	.021	
SoS	0.78	0.23	3.35	75.00	.001	
Guilty	-1.37	0.23	-5.82	75.00	<.001	
Random effects						
participant						0.93
Înterviewer						0.00
Mock crime						0.00
Residual						1.02
	Interaction	effect m	odel			
Fixed effects						
Intercept	3.03	0.27	11.15	145.72	<.001	
Activity	-0.03	0.09	-0.39	375.00	.699	
Critical	-0.13	0.20	-0.68	375.00	.495	
SoS	-0.10	0.36	-0.26	119.44	.794	
Guilty	-1.90	0.36	-5.28	120.80	<.001	
Activity x SoS	0.22	0.10	2.16	375.00	.031	
Critical x SoS	-0.57	0.22	-2.57	375.00	.011	
Activity x Guilty	-0.09	0.10	-0.93	375.00	.356	
Critical x Guilty	0.31	0.22	1.40	375.00	.162	
SoS x Guilty	1.21	0.45	2.69	75.00	.009	
Random effects						
Participant						0.88
Interviewer						0.00
Mock crime						0.00
Residual						1.00

Table 6

Pairwise comparisons of participants' experiences in Study 3, split by culpability and condition.

Condition - culpability	Perception of Interview	Perception of Interviewer	Self-assessment of Performance
	M(SD)	M(SD)	M(SD)
Direct - innocent	3.65 (0.57) ^a	3.98 (0.41) ^a	3.46 (0.72) ^a
Direct – guilty	3.99 (0.76) ^a	4.04 (0.41) ^a	3.79 (1.01) ^a
SoS – innocent	3.99 (0.88) ^a	3.95 (0.70) ^a	3.65 (0.87) ^a
SoS - guilty	3.29 (0.97) ^b	3.50 (0.59) ^b	2.51 (0.92) ^b

Note: Within a column, means without a common subscript differ (p <.05)

Innocent and guilty participants' information disclosure trajectories across activities.

Information disclosure (0–4) is plotted on the vertical axis. Each panel represents a culpability condition. Within each panel, the activities are plotted on the horizontal axis. The bold lines track the group mean information disclosure at each activity. The thin lines plot the trajectory of each individual participant in each condition, jittered slightly horizontally and vertically to more easily distinguish between lines.

