A Test of Three Refresher Modalities on Child Forensic

Interviewers' Post-Training Performance

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Abstract

This study aims to advance the field of child forensic interviewing by assessing the impact of different refresher training modalities on police officers' abilities to adhere to the steps of an interview protocol and on the types of questions used. Previously-trained police officers ($N = 46$) were randomly assigned to one of three experimental conditions: 1) supervision with an expert, 2) peer group supervision, and 3) computer-assisted exercises on children's investigative interview techniques. Comparison of interviews conducted before ($n = 136$) and after ($n = 124$) the refresher modalities revealed an improvement in performance across time for almost all steps of the protocol. With regard to question types, during episodic memory training, directive questions increased for the peer group and decreased for the expert group. Suggestive questions decreased for all conditions while summaries increased. For the substantive phase of the interview, option-posing questions decreased when feedback was provided by an expert and did not change for the other conditions. A main effect of time revealed an increase in the number of invitations and a decrease for the suggestive questions for the three groups. Results suggest that all modalities could be useful in refreshing adherence to the steps of an interview protocol and use of best practice questioning approaches. The discussion highlights that the time devoted to the three modalities was likely not enough and that further studies are needed to determine the most optimal delivery of refresher training.

Keywords: child forensic interview, supervision, police officer, peer, computer-assisted, expert

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Interviewers' Post-Training Performance

Investigative interviewing is a complex skill that necessitates specialized training (Powell, 2013; Powell, Wright, et al., 2010). Experts have identified that the training delivered to child forensic interviewers appears to improve knowledge about good interviewing practices but transfer to on-the-job skills is incomplete or fades over time (Lamb, 2016; Powell, 2013; cf Lindholm et al., 2016). Questions about transfer of training are age-old in the field of organizational psychology (see Bell et al., 2017 for a review), but are comparatively emerging in the literature on training investigative interviewers. Researchers in the latter field have recently been urging trainers to consider alternatives to the traditional didactic approach to interviewer training (Benson & Powell, 2015a; Lamb, 2016; Powell, 2008). In this approach the dominant form of learning is via an expert imparting knowledge to a group of trainees primarily through lectures, but also through feedback on field or mock interviews. The primary reason for this shift is that the traditional training has generally resulted in immediate skills acquisition, but not enduring improvements. Other reasons to consider new training models include desire to limit travel to training facilities, reduce costs, and make learning more flexible (Donavant, 2009; Powell, 2002). The importance of these other reasons has increased in a post-COVID-19 era (e.g., Li, Lin, Wang, Bao, & Li, 2020).

One promising approach to address the transfer challenge in investigative interviewing is to provide refresher training. Refreshers might be built into the original training (i.e., planned to occur within some timeframe after initial sessions, e.g., Price & Roberts, 2011) or could take place after the learner has been back in the work force for a long time and needs reskilling

(Wang et al., 2013). Several studies have demonstrated that interviewing skills are bolstered when interviewers are given the opportunity to revisit learning concepts (Cyr et al., 2012; Lamb, Sternberg, Orbach, Hershkowitz, et al., 2002; Lamb, Sternberg, Orbach, Esplin, et al., 2002; Price & Roberts, 2011). Given society's likely increased reliance on internet-based communication since the onset of COVID-19 (Li et al., 2020), it is a worthwhile investigation to determine whether refresher training is equally successful online as it has been face-to-face. The goal of the current research was to test three modalities of delivering refresher training in improving interviewing skills in a group of police officers who had previously received traditional didactic training.

Key Learning Elements

Regardless of delivery mode (e.g., online, face-to-face), there are a number of critical features that are known to facilitate learning. These features include: spaced learning (Donovan & Radosovich, 1999; Rischke et al., 2011), feedback, interactive features, flexible delivery, multiple practice attempts, regular evaluation (Powell, 2008), and modelling of negative and positive behaviors (Taylor et al., 2005) provided through multiple learning strategies such as self-tests, case analysis, role play, and discussion (Ford et al., 2019). Trainees also need to be given opportunities to make mistakes and then shown how to identify and correct these errors (Ford et al., 2019). When training comprises these elements, it has a greater chance of being successful. Indeed, no differences in interviewing performance were observed post training between a group of social workers who learned face-to-face in a classroom versus those who were trained in an online instructional environment, in both cases with an instructor (Ouellette et

al., 2006). A close examination of the training explains why: the content and training activities were as similar as possible across the modalities and included many desirable learning elements.

Of all the learning elements, appropriate and regular performance feedback is arguably the most critical. Of course, the feedback has to be manageable and has to show learners how their current behavior matches or does not match with the targeted standards (Kluger & DeNisi, 1996). The amount required and role of feedback modality, however, is unclear. For example, in one study, verbal reviews of interviews conducted in groups were as effective as adding an individualized written and verbal feedback condition (Lamb, Sternberg, Orbach, Esplin, et al., 2002). In the study of Krause et al. (2017), results showed that expert feedback improved performance but adding a self-reflection component did not yield any additional gains.

Taken together, research suggests that periodic review of some type is probably necessary for maintenance of interview skill, and its effectiveness may vary across modalities. In the current study, three different modalities of refresher training were tested.

Expert Supervision

The most common modality in the research literature for initial and ongoing/refresher training is via an expert, such as an academic, experienced practitioner, or forensic interview trainer (Brubacher et al., 2018; Rivard & Schreiber Compo, 2017). Within this model, however, a wide range of training activities may exist. Lamb, Sternberg, Orbach, Hershkowitz, et al. (2002) delivered interview training by experts in four different ways. One group received didactic conceptual training of research on child development as it pertains to the interview. The second group was similar to the first but included practice components focused on rapport building of the NICHD protocol. Interviewers in the third and fourth groups received the same

initial conceptual training but also attended monthly daylong meetings in which actual field interviews done with the full NICHD protocol were analyzed, and desirable and undesirable practices were highlighted. The monthly meetings incorporated key learning elements such as feedback, spacing, interactivity, and models of positive and negative behaviors. Interviewers in the third group conducted mock interviews, and received individualized verbal and/or written feedback on their mock and field interviews conducted during the study period. The fourth condition was similar to the third but instead of reviewing their own interviews, trainees in this group reviewed exemplary interviews. Overall, the quality of interviews conducted by participants in the third and fourth conditions did not differ from each other but they outperformed the first two in terms of increasing the number and proportion of high quality questions (e.g., invitations) and decreasing the number and proportion of low quality questions after training (e.g., option-posing, suggestive). These results suggest that ongoing training from an expert supported skill maintenance, and that feedback need not be individualized to accrue benefits.

Other similarly intensive ongoing supervisions have demonstrated benefits to interviewer performance (Cederborg et al., 2013; Cyr et al., 2012; Price & Roberts, 2011). In these studies, the effect of ongoing supervision or spaced learning with an expert was observed on the types of questions used and adherence to a protocol (where included). Ongoing and refresher training using experts conducting face-to-face sessions, therefore, has clear benefits but is resource-intensive, expensive, and limits the number of interviewers who can receive that training.

Peer Group Supervision

Peer supervision exercises encourage trainees to interact with their colleagues to build knowledge and enhance skills. It promotes self-efficacy and confidence, and allows for vicarious learning (Christensen & Kline, 2001). Peer group supervision that accompanies initial training has been empirically demonstrated to be effective in increasing positive interviewing behaviors from baseline to post-training (Stolzenberg & Lyon, 2015). In peer group sessions, interviewers can give each other feedback on interviews and the group can learn via observation. However, the quality of peer feedback can be highly variable, which means that peer supervision as a refresher model may not be uniformly effective. If peer interviewers make errors in recognizing or coding question types, they may give incorrect or incomplete feedback. Several studies have illustrated common patterns of errors that interviewers make in identifying question types, which can impact their own interviewing performance (Henderson et al., 2019; Powell et al., 2013; Yii et al., 2014). In New Zealand, nearly a quarter of forensic interviewers expressed dissatisfaction with their ongoing reviews, which usually took place in groups, citing concerns that supervisors were not skilled in interviewing knowledge and were not able to give effective feedback (Wolfman et al., 2017; see also Taylor et al., 2005).

A study with 50 psychiatric nursing students showed how peer feedback can become more aligned with that of experts as peers gain experience (Lai, 2016). Peers were given a 23-item scale upon which to assess the interviews (e.g., explains treatment options, maintains eye contact). Two experts also rated the qualities of the interactions. Peer and expert evaluations were correlated the second time reviews were performed (at the end of the course) but not the first time (mid-way through the course), suggesting that the students gained a better understanding of the performance measures as their learning increased.

The research on peer group supervision underscores the importance of peers having a framework upon which to evaluate each other's work. Benefits of quality peer group supervision include that it is cheaper and more widely available than relying on an expert. However, peer group supervision means that at certain times multiple interviewers in an organization are concurrently unavailable, or it may not be available to all interviewers due to geography and staffing (Wolfman et al., 2017), at least as a face-to-face activity.

Computer-Assisted Learning

Like peer group supervision, computer-assisted and blended learning places greater responsibility for the learning on students rather than instructors; an orientation consistent with recent perspectives on adult training (Ford et al., 2018; Paterson, 2011). The effectiveness of computer-assisted learning lies not in its modality, but rather in its ability to incorporate many of the key learning elements, and it will not be effective if these are absent (Powell, 2008; Powell et al., 2016). As a result, literature on the success of computer-assisted learning is somewhat mixed.

Several studies in social work have shown computer-assisted learning to be at least as effective as face-to-face classroom learning (e.g., Cummings et al., 2019; Ouellette et al., 2006). Reviews from the behavioral health field have suggested that computer-assisted training is effective under certain conditions (Jackson et al., 2018). Jackson and colleagues' review (2018) included psychologists, social workers, and counselors. They reviewed 45 studies, and classified them according to Shapiro (2001) as *virtual classroom* (lecture style to a group in a web-environment), *serial instruction* (all users complete modules in the same order), *self-directed* (learners decide which learning materials they should access to meet their personal goals), and

simulation (virtual avatars and similar). Serial instruction was the most frequent, and is also the design used in the current study. Of the 37 studies that involved serial instruction, 35 (95%) were associated with positive training outcomes. Nine studies directly compared serial instruction to face-to-face, with mixed findings: five studies found equivalent outcomes, two found better performance in the face-to-face condition, and two found advantages and disadvantages of both training modalities.

The computer-assisted self-assessment activities in this study were based on prior research that has shown them to be effective (Benson & Powell, 2015a; Brubacher et al., 2015; Powell, Cavezza, et al., 2010; Yui et al., 2014). Some key components of this prior body of work, however, could not be included. Specifically, Powell and her colleagues have frequently included role play with trained actors in their computer-assisted training. We necessarily excluded this exercise from the current study because it would create methodological overlap with the other two conditions.

In summary, each of the modalities presented could be applied to the context of refresher training for investigative interviews conducted with children. These modalities were chosen because they appear realistic to implement in real work settings and each has demonstrated its effectiveness in maintaining skills in different contexts. However, each one presents some advantages and constraints.

Purpose of the Present Study

The aim of the current study was to determine which modality of refresher training (expert, peer, computer-assisted) is the most efficient to maintain investigative interview skills after training on both the adherence to the structure of the interview protocol as well as on the

types of questions used. We compared pre- and post-training interview skills in a group of police officers who had previously received face-to-face training. We predicted all three modalities would help investigators to demonstrate better performance after receiving the refresher training compared to baseline. We did not make predictions about the relative performance of each modality, since these modalities have not been directly compared with regards to their impact on interviewing ability.

Method

Participants and Procedure

The current research project is based on an experimental design with two phases (pre and post experimentation of modalities). A total of 77 police officers specialized in child forensic investigation provided their names to receive more information regarding the research project. After explanations were provided by the researchers, 10 decided to not participate because of time constraint or lack of interest. Among the 67 police officers who completed the consent form and started the research project, 11 terminated early because they changed job duties during experimentation, 5 due to lack of time and 5 because they were sick or on maternity leave. More men than women did not complete the two phases of the project [$\chi^2(1, 75) = 4.84$, $p < .05$]. For those who started the study but were unable to complete it ($n = 17$), the attrition rate did not differ according to the three experimental groups [$\chi^2(2, 62) = 0.48$, ns]. The 46 participants who participated did not differ from the non-participants based on their other characteristics (see Table 1).

The final sample comprises 46 police officers who were randomly assigned to one of three experimental conditions: 1) supervision with an expert ($n = 15$), 2) peer group supervision

($n = 17$), and 3) computer-assisted exercises on children's investigative interview techniques ($n = 14$). These investigators received a 5-day training on the use of the National Institute of Child Health and Human Development (NICHD) protocol at least one year before beginning the present study ($M = 8.5$ years, $SD = 3.9$, range 1-10 years). The final sample included a majority of women (70.5 %), in their early forties ($M = 41.2$, $SD = 4.9$), with a mean of 18.3 years working as police officers ($SD = 4.8$) and close to four years of experience in child investigative interviews ($M = 3.8$, $SD = 2.5$). Two-thirds (71.8%) of them conducted at least 20 interviews each year. The characteristics did not significantly differ among the three modality conditions (see Table 1).

The researchers analyzed a total of 260 investigative interviews performed by these police officers: 136 interviews conducted before (Time 1) and 124 interviews conducted after (Time 2) the refresher training modalities. Most trainees submitted three interviews at Time 1 (91%) and Time 2 (78). The remaining trainees submitted one or two interviews at each time point. These interviews were randomly selected from the set of interviews carried out in the 6 to 9-month periods before and after the training modalities for each participant. The selection criteria were: child under 14 years old, for sexual or physical abuse in which the child has disclosed, up to three interviews by participant. These interviews involved children with a mean age of 8.5 years ($SD = 3.0$), a majority of females (60.8%). The allegations included physical (46.7%) or sexual (54.3%) abuse and they were often perpetrated by a member of the family (61.3%). The perpetrator was a male in 82.3% of the cases with a mean age of 35.2 years ($SD = 16.0$). There was no significant difference among the three experimental groups at both times on these characteristics.

Refresher Modalities

For each group experiencing one of the three refresher modalities, three sessions of three hours were prescribed over a 6-month period. The intensity of the refresher modalities was based on results from a meta-analysis (Schwalbe et al., 2014) indicating that studies that provided 5 to 12 hours of post-training contact had increased skills at the 6-month follow-up compared to studies with fewer than 5 hours of post-training contact. For this reason, refresher modality totalled 9 hours within a 6 month-period. These sessions were conducted at participants' workplaces with the exception of some computer-assisted participants who preferred to do it at home. To ensure that the activities were finished, participants in the expert or peer groups completed a sheet with the characteristics of the interviews they watched and discussed during the sessions. For the computer-assisted participants, the time dedicated to each exercise could be assessed on the web-learning platform and they had to submit a final document with their analysis of one of their interviews with children.

With regard to nature of feedback, results of a meta-analysis by Kluger and DeNisi (1996) suggest that feedback changes the locus of attention among three general and hierarchically organized levels of control: task learning, task motivation, and meta-tasks (including self-related) processes. Feedback is more effective when centered on task learning. For this reason, in the three post-training modalities, feedback was centered on protocol adherence and questions (relevance, timing, formulation). To structure the post-training activities, participants in all modality conditions received a grid with the steps and questions prescribed in the NICHD protocol (see Lamb et al., 2008). This also helps to provide an objective evaluation of the quality of the interviews performed. A short manual with definitions

and examples of types of questions was included to help participants with the identification of the appropriateness of their questions. A detailed description and justification of the use of NICHHD protocol was also included (Cyr, 2014).

Expert and Peer Group Supervision Conditions.

In these conditions, participants met alone with the expert or in groups of up to four and viewed one or more of their recently conducted interviews (time permitting). They discussed how the interview was conducted, the degree to which each step of the interview protocol was followed, and how questions were worded. They practiced generating better alternatives when less-optimal questions arose in the interviews, to increase their use of invitation questions. In the expert condition, these sessions were facilitated by a forensic interview trainer in charge of the NICHHD training at the police school for more than 10 years. In the peer group condition, participants received instructions to guide their sessions in the same manner as the expert condition, but the sessions were not facilitated.

Computer-Assisted Condition.

To keep the self-learning condition as similar as possible to the group conditions, participants engaged in the same type of guided interview assessment and reflection. They completed practical exercises on question types and steps of the protocol, watched interview segments and answered related quiz questions, and evaluated an interview transcript of their own as well as one of an anonymous peer, via written reflection.

Measures

Interviewers' Characteristics.

Police officers completed a short questionnaire providing information about their age, gender, number of years as police officer, number of years of experience conducting child investigative interviews, mean number of interviews per year, date of the initial training to the NICHD protocol.

Protocol Adherence.

The adherence to protocol was documented with the steps of the NICHD protocol structure coded as present or absent. These steps included for the pre-substantive phase: interviewer introductions, four ground rules (5 items), the rapport building section asking about things children like to do (using invitations, child's name, not using specific questions, keeping short, etc. 5 items), episodic memory training using invitations (first complete account, general invitations, up to three cued, as well as time-segmentation invitations, etc., 15 items). For the substantive phase the steps included: transition questions to substantive phase (getting the allegation), a completed first recall using invitations, the verification of one or more incidents of abuse, and taking a break to check for missing information (8 items). In addition to the steps, this grid included judgement about the qualities of the interview (wording of the questions, no directive questions in pre-substantive phase, time devoted to the step, relevance of the question, etc.), which explained the number of items for some steps. A global adhesion score is based on the 12 major steps that reflect the core structure (interviewer introduction, four ground rules, building rapport, episodic memory practice with at least one time-segmentation and with one cued invitation, non-suggestive transition to declarative phase, investigation of one incident, verification of one or more incidents [including investigation of other incidents, if relevant], take a pause to consult the monitor) (Cyr et al., 2012). In addition, researchers also coded appropriate

behaviors by the interviewer (e.g., used an appropriate level of vocabulary, catches attention using child's first name, being empathic, listening, reassuring, respects child rhythm/silence, 6 items). This score constituted the interviewer behavior score. The scores for each scale were used for each interview included in the analysis.

Interviewer Utterances.

The types of questions used during the episodic memory training of the pre-substantive phase as well as during the substantive phase were coded by two independent raters (doctoral student and PI) using the French version (Cyr et al., 2001) of a codebook developed by Lamb and his colleagues (see Lamb et al., 2008; Orbach et al., 2000). Only substantive questions were coded (off-topic conversation, such as asking for a glass of water, were not coded). Invitations included general invitations ("Tell me more about that?"), cued invitations ("Tell me more about person/object/ action/time/location [already mentioned by the child]?") and time-segmentation invitations ("Tell me everything that happens from the time [action/moment mentioned by the child] to [action/moment mentioned by the child]? "). Directive questions (Wh-/how) asked the child to recall information associated with details the child had already reported. Option-posing questions comprised all questions proposing a choice, including yes-no questions. Suggestive prompts grouped all prompts that communicated what responses were expected, or introduced new forensic information not disclosed by the child. Finally, correct interviewer restatements of what the child had said earlier, without requesting additional information about the incident, were code as summaries. Throughout coding, the inter-raters' reliability was assessed on 30% of the interviews with a kappa of 0.85 for the question types and a kappa that ranged from 0.80 to 0.97 for adherence to steps of the protocol. The proportion was used in the analysis to take into

account the different lengths of the interviews. For example, the ratio of invitation type of questions was obtained by calculating the number of invitations divided by the total number of prompts.

The research was approved by the Ethics Board of the (anonymous). Police officers signed an informed consent form. To protect children's identities, names and descriptive information (e.g., address, street name) were omitted from the transcripts. All members of the research team also signed a confidentiality agreement.

Results

The analyses are based on linear mixed-effect models (LMM) that allow control for the repetition of observations within each participant (Hayes, 2006). As preliminary analyses, some variables related to the abuse (relation with the perpetrator, number of abuse, type of abuse), the child (age, gender) and police officers (age, gender, years of experience) characteristics were tested in order to identify possible covariates with our outcomes. Also, these same variables were compared on the three refresher modalities to ensure that our groups were not different at baseline and at follow-up. Preliminary analyses revealed that these variables were not significantly related to our outcomes or groups and were therefore not used as covariates. For the main analysis, Linear Mixed Models in SPSS v.25 were used, as interviews are nested into interviewers, thus violating the independence criteria of the analysis of variance. Linear Mixed Models are very useful to assess nested or dependent outcome while providing an overall fit measure based on the Bayesian Information criteria. Each analysis will thus include the three modalities and the time measurement, while being defined by each interviewer.

Protocol Adherence

As expected, LMM analyses done on the 260 interviews indicated a main effect of time, but there was no effect of modality condition (see Table 2). Interviews conducted following any one of the refresher modalities were more often in compliance with the protocol compared to those conducted before. This was true for the rapport building phase ($b = -.44$, $SE = .19$, $z = -2.31$, $CI = -.83, -.07$, $p < .01$), substantive phase ($b = -.60$, $SE = .26$, $z = -2.32$, $CI = -1.10, -.07$, $p < .05$), and adherence global ($b = -.91$, $SE = .34$, $z = -2.65$, $CI = -1.59, -.23$, $p < .01$), but not for the ground rules and the episodic memory training steps of the protocol, nor for the interviewer behaviors. It is important to note that for the ground rules step, the lack of significant results can be attributed to ceiling performance even prior to the refresher modalities.

A closer look at the items of the rapport building scale indicated a significant increase from pre- to post-refresher in the use of the child's name (34.1% vs 52.5%; $\chi^2 [1, 256] = 8.85$, $p = .01$), and in the number of interviews using invitations instead of directive and option-posing questions to build rapport (8.9% vs 19.8%; $\chi^2 [1, 256] = 6.33$, $p = .01$); these are based on the items of the adherence grid and not on the proportion of question. Moreover and as predicted, more post-refresher interviews (65.6% vs 50.4%) reduced time spent asking unfocused questions about the child's interests, leaving more time to engage in episodic memory training ($\chi^2 [1, 256] = 6.06$, $p = .01$). For the substantive phase, a slight increase was noted for all items, and significant post-hoc tests indicated that interviewers more often started the transition after 5 to 7 minutes of episodic memory training after they received refresher training (77.1% vs 91.7%; $\chi^2 [1, 256] = 6.06$, $p = .01$). Results also demonstrated an increase in the number of interviews that contained an appropriate question about abuse frequency (79.2% vs 90.0%; $\chi^2 [1, 256] = 6.06$, p

= .01), and in which enough investigation-relevant evidence was obtained (67.4 % to 81.8 %; $\chi^2 [1, 256] = 6.85, p = .001$).

Question Types

The effects of time and refresher modality on the use of each question type were examined with LMM analyses in the episodic memory training and the substantive phases of the interview (see Table 3) based on the proportions. As mentioned earlier, the episodic memory training should focus on the use of invitation questions. In the episodic memory training phase, a time x modality interaction was noted for the directive questions ($b = -.19, SE = .05, z = -3.69, CI = -.30, -.09, p < .001$). Post-hoc analysis revealed that the proportion of directive questions increased by 11% in the peer condition between Time 1 and Time 2, $F(1, 185.83) = 7.19, p = .008$, in contrast to the expert group for whom a decrease of 9% was observed between Time 1 and Time 2, $F(1, 163.71) = 6.35, p = .01$. Although only marginally significant, the same results were observed for the computer-assisted group with a small increase in the proportion of directive questions between Time 1 and Time 2 ($b = -.09, SE = .05, z = -1.92, CI = -.19, -.00, p = .057$), however post-hoc analysis were non significant $F(1, 167.01) = .09, p = .75$. The analysis also revealed a main effect of time for the suggestive questions ($b = .05, SE = .02, z = 2.57, CI = .01, .08, p < .01$) with a decrease between Time 1 ($M = .08, SE = .01$) and Time 2 ($M = .05, SE = .01$). and for summaries ($b = -.05, SE = .02, z = -2.37, CI = -.09, -.01, p < .02$) with an increase between Time 1 ($M = .11, SE = .01$) and Time 2 ($M = .13, SE = .01$). No significant difference was obtained for the proportions of invitations and option-posing questions in the episodic memory training phase.

For the substantive phase of the interview, the results revealed a significant interaction between time and modality for option-posing questions ($b = -.05$, $SE = .02$, $z = -2.06$, $CI = -.09, -.00$, $p < .05$) and a main effect of time for the invitations ($b = -.04$, $SE = .02$, $z = -2.08$, $CI = -.09, -.00$, $p < .05$) and suggestive questions ($b = .002$, $SE = .01$, $z = 2.09$, $CI = .00, .03$, $p < .05$). The interaction revealed a small decrease in the proportion of option-posing questions in the group with an expert (3%; $F [1, 213.95] = 5.51$, $p = .02$) compared to the two other modalities which did not change significantly from Time 1 to Time 2, $p = ns$. A small increase was observed between the proportion of invitation questions between Time 1 ($M = .24$, $SE = .02$) and Time 2 ($M = .26$, $SE = .02$) irrespective of refresher modality. For the suggestive questions, a decrease was noted between the proportion of these questions between Time 1 ($M = .05$, $SE = .01$) and Time 2 ($M = .03$, $SE = .01$).

Discussion

The objective of this research was to advance knowledge about potential modalities of delivery for effective refresher training that could be offered in the context of child investigative interviewing. As we know, interviewing children is a difficult task, and best practices tend to diminish over time after conclusion of training (Ford et al., 2018; Lamb, 2016; Powell, 2013). It is therefore important to better understand the effect of various post-training refreshers on interviewers' abilities to follow a protocol and ask effective questions. The effects of three refresher modalities were contrasted with regard to adherence to the NICHD protocol and the types of questions used by the interviewers. Overall, few significant effects were observed between the modalities. This finding is not surprising because it aligns with literature in other fields showing that modality of training should matter little if learning features are similar (e.g.,

Ouellette et al., 2006). We purposefully designed each modality to deliver similar content and to include similar learning features (e.g., feedback, spaced learning, interactivity). Despite few differences across modalities, all conditions saw general improvements in adherence to the protocol and in the questioning behaviors.

The finding that modality made little difference in outcomes suggests that organizations' decisions about how best to deliver refresher training should rest on the quality of the training (incorporation of known learning elements) and on the organization's specific needs and capacities. From a cost-benefit perspective, the online condition may offer the best solution because it is less resource-intensive than the other two conditions and evinced positive improvements. Although peer supervision seems like an inexpensive option, it means that multiple interviewers are concurrently not available for periods of time, and managers may not recognize these sessions as an important aspect of their workload models (Wolfman et al., 2017). Further, to be most cost-effective, initial training needs to promote: deep learning of the skills that underlie good interviewing, strategies for interviewers to self-reflect and accurately assess their own performance on an ongoing basis, and long-term adherence to best practice (Benson & Powell, 2015). Such training, coupled with inexpensive maintenance sessions, may yield sustained good quality interviewing performance.

The expert feedback condition is arguably the most costly. There were some benefits to the this condition relative to the other groups, but they were slight. Participants who received post-training refresher from the expert significantly decreased use of directive questions compared to participants who received post-training refresher in peer groups during the episodic memory training. This phase should be devoted to inviting the child's free narrative instead of

focusing on specific details (e.g., when, how long, where) in the narrative (Lamb et al., 2018; Powell, Wright, et al., 2010; Roberts et al., 2011). During the substantive part of the interview, participants who received refresher training from the expert also showed a small decrease in option-posing questions from pre- to post-refresher training. The results add to previous research that has shown the effectiveness of feedback provided by an expert in forensic context (Cyr et al., 2012; Lamb, Sternberg, Orbach, Esplin, et al., 2002; Price & Roberts, 2011) and with the use of the NICHD protocol in particular. An expert has the credibility and the skills to provide specific and personalized feedback and to explain the rationale of his/her comments based on theory or empirical data. This credibility, and the dyadic interaction that probably allows for a closer and more secure relationship, could explain why this modality had more impact on some behaviors of the participants than the peer group or computer-assisted group (albeit differences were small).

The increase of directive questions during episodic memory training for the participants in the peer group was unexpected and in the wrong direction. It suggests that the main objective of episodic memory training was not fully understood—that children should be encouraged to practice providing narrative information in response to invitations (Roberts et al., 2011). Wolfman and colleagues (2017) reported that one of the difficulties of peer groups may be the ability of peers to give feedback that is completely aligned with best practice principles (see also Talyor et al., 2005). The peer interviewers may not be wholly accurate in identifying question types (Henderson et al., 2019; Powell et al., 2013; Yui et al., 2014), in which case they cannot give accurate feedback to others about their questioning. In contrast, refresher training provided by experts (either face-to-face or through computer-assisted means) can ensure that best practice

principles are imparted. Lai (2016) showed that peer assessment (in the context of nursing students learning communication skills to do psychiatric interviews) needs to be compared at some points with the evaluation of an expert to ensure the quality of the peer feedback. Taken together, these findings suggest that peer supervision may be enhanced by having senior colleagues who are trained to a high standard facilitate the sessions and provide input as needed during discussion, as in a ‘train the trainer’ model (see Hershkowitz et al., 2017). Alternatively, the development of computer-assisted guidance for peer supervision could reduce the need to rely on the time-intensive resources of others.

In the present study, the computer-assisted modality was composed of several activities (theoretical and technical aspects of forensic interviews, practice and discrimination of question types, videos, and assessments of interviews), but it did not include personalized feedback on a trainee’s own interview. This difference could explain the more limited results in this study in contrast to the ones observed by Benson and Powell (2015a) who showed that computer-assisted learning involving interaction with an expert is effective to learn the skills required to conduct effective investigative interviews with children. We necessarily removed this interactive component from our computer-assisted condition to avoid creating overlap with the expert condition. Results of the present study suggest that the acquisition of more complex skills like eliciting a narrative account using invitations should require more time and exercises as well as personalized feedback on interview assessments. It is important that the learners can target their weaknesses through the exercises, and thus benefit from oriented content. Computer-assisted training could therefore provide modules adapted according to the learner's difficulties.

Overall, all modalities of refresher training increased adherence to the NICHD protocol, with the exception for the steps of episodic memory training and interviewers' appropriate behaviors. These findings indicate that, even when interviewers use a structured interview protocol, adhesion to the recommended steps needed to be refreshed over time. Because these steps are clearly operationalized within the NICHD protocol and its revised version (see Lamb et al., 2018), it is easy to check whether these have been completed or not. All three modalities were given the same opportunities to review the steps of the protocol, which could explain why they did not differ in their effectiveness at renewing adherence.

Irrespective of refresher modality, interviewing performance pre and post refresher training was not optimal. Invitations made up a quarter of questions in the substantive phase and the proportion of them increased imperceptibly following refresher training. Invitations are not in the natural repertoire of interviewers but they are crucial in the context of forensic interviews (Poole, 2016). Our results suggest that refresher sessions in three blocks of three hours may not be sufficient to boost ability to pose effective invitation questions especially taking into account that the nine hours also included other dimensions of feedback (e.g., adherence to the protocol). Future studies are needed to determine the optimal amount of time and the frequency of sessions. Among the three groups, both the proportions of invitations during episodic memory training (between 40 % and 47 %), as well as during the substantive phase (between 22 % and 28 %), could be increased. With written and oral feedback provided by an expert to police officers on each real interview after initial training, Cyr et al. (2012) observed that their proportion of invitations increased from 8% to 37%. A comparison group who received the same training but did not get the written and oral feedback also increased their use of invitations

from 3% to 24%. The feedback group improved significantly more than the non-feedback group, but both increased their use of invitations by over 20% following training. Therefore, the present results probably do not suggest a ceiling effect in the capacities of forensic interviewers to use invitations, but instead that the nine hours of refresher training over a 6-month period was not either not long enough to produce the expected change, sessions were spaced too far apart, or initial training was not deep enough and too long ago.

Recently, Hershkowitz et al. (2017) showed that a day-long group session of practice and exercises combined with a two-hour individual feedback with a trainer each month allowed experienced interviewers to learn complex skills related to the quality of the relationship and the support to provide over a 8 month period. Rischke et al. (2011) observed that it was only after a two-day refresher group session that the interviewers, who had previously received a two-day training in addition to oral feedback each week on their forensic interviews, demonstrated an increase in some types of appropriate questions and interview components. These results suggest the need for more intensive refresher training, and/or that initial training needs to be achieved at a deeper level (Lamb, 2016; Powell, 2013).

In order to take into account the operational realities of the police force, it could be wise to develop and test a hybrid refresher modality combining feedback by an expert, with peers, and computer-assisted learning. This type of training would capitalize on the benefits offered by each type, and is congruent with Herschell and colleagues' (2010) findings that multiple-modality training tended to be more successful than training offering just one type of learning modality. Based on our findings, we propose to test a model whereby computer-assisted refresher training is delivered soon after the initial training to offer a reminder of the structure of

the interview and to practice effective question types. This computer-assisted training could involve expert and peer components, whereby interviewers complete some foundational modules at their own pace and then experts facilitate group sessions that include expert and peer feedback (and these could occur via videochat if need be).

Limitations

This study is not without limitations. First, it did not include a comparison group who received no refresher training. Such a comparison group would permit identification of changes that occur over the experimentation period in the absence of any refresher training. It would also permit disentangling the effects of the refresher training from interviewer knowledge about being assessed (i.e., interviewers knew that their Time 2 but not Time 1 interviews would be inspected). However, given that performance after refresher training was still not exemplary, we believe that expectations about being assessed did not underlie performance improvements.

The small number of police officers is another weakness which is explained by the difficulty of carrying out prospective studies with police officers who change their duties regularly, as indicated by the number of participants who have left the study before completing the Time 2. Nevertheless, the high number of interviews collected, and the within-subject design are among the strengths of the study, as well as the random distribution of participants and the random selection of their interviews.

Implications for Policy and Conclusions

As the world considers the inevitable changes caused by the COVID-19 pandemic, educators in most professional fields are rethinking about the most effective ways to train (Li et al., 2020). The present study adds knowledge about the types of refreshers that could be

provided after an initial training. All of the modalities were effective in increasing some positive interviewing behaviors. Although nine hours of refresher over a six-month period was perceived to be time-intensive for the police officers and their organizations (Anonymous et al., under review), our results suggested that it was not sufficient to significantly impact many dimensions of forensic interviews, at least among the present sample. The complexity of forensic interviews with children imposes a wide range of potential feedback on both the structure of the interview, the types of questions asked, the quality of the relationship with the child and the support provided, and the forensically relevant information obtained (Benson & Powell, 2015b, Powell, 2013; Powell et al., 2016).

The first policy implication of this work is that good quality interviewing performance needs to be supported by effective initial training (where learning occurs on a deep level). Refresher training should be in place to catch slippage, rather than compensate for poor initial training; some revisiting of concepts should occur as temporal distance from initial training increases, in order to maintain a high level of skill. The second key policy implication of this work is that, as long as refresher training adheres to principles of effective human learning and is overseen by interviewing experts, the modality of that training may matter little. The constraints and/or the support of the police organization (Powell & Barnett, 2015; Powell et al., 2010), as well as the pros and cons of each modalities (Anonymous et al., under review), are other factors to take into account in the decision of the refresher training modality to implement.

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Table 1.

Characteristics of Police Officers and Child Abuse for Expert, Peer, and Computer-Assisted (CA) Groups.

Characteristics	Expert	Peer	CA	Total
Gender (F %)	73.3	70.6	71.4	71.7
Age (years)	42.2 (5.0)	40.4 (5.0)	41.1 (5.2)	41.2 (4.9)
Years of police experience	18.7 (4.1)	18.5 (5.6)	17.4 (4.7)	18.3 (4.8)
Years of NICHD experience	3.1 (2.0)	3.9 (2.7)	4.4 (2.8)	3.8 (2.5)
Interviews $\geq$ 20/year (%)	80.0	64.7	71.4	71.8
Children Gender (F %)	55.2	61.4	65.9	60.8
Children Age (years)	8.4 (2.7)	8.4 (2.9)	8.8 (3.2)	8.5 (3.0)
Perpetrator Gender (M %)	83.9	78.4	84.7	82.3
Perpetrator Age (years)	37.3 (14.0)	33.1 (16.0)	35.5 (17.5)	35.2 (16.0)
Perpetrator member of the family	71.1	66.7	51.2	63.1

Table 2.

Mean Score (Standard Error) for the Adherence to the Steps of the Protocol as well as the Interviewer Behaviors for Expert, Peer, and Computer-Assisted (CA) Groups.

Adherence	T 1			T 2			Test
	Peer						
	Expert		CA	Expert	Peer	CA	
Ground rules	4.73 (.11)	4.67 (.11)	4.91 (.11)	4.82 (.11)	4.75 (.11)	4.81 (.11)	ns
Rapport building	2.29 (.21)	1.97 (.20)	1.93 (.21)	2.73 (.22)	2.68 (.21)	2.32 (.22)	T
Memory training	4.91 (.85)	4.75 (.81)	4.26 (.85)	6.13 (.86)	6.61 (.84)	6.03 (.86)	ns
Substantive phase	2.40 (.25)	2.58 (.25)	2.41 (.26)	3.00 (.26)	2.89 (.25)	2.94 (.26)	T
Global adhesion	9.36 (.39)	8.91 (.38)	9.49 (.39)	10.27 (.39)	9.91 (.39)	9.99 (.40)	T
Interviewers'							ns
	4.27 (.18)	3.59 (.17)	3.64 (.18)	4.40 (.18)	3.97 (.18)	4.02 (.19)	
Behaviors							

Note. T = time, ns = not statistically significant

Table 3.

Means (Standard Error) for the Types of Question during the Episodic Memory Training (EMT) and the Substantive Phase for Expert, Peer, and Computer-Assisted (CA) Groups.

Question	T 1			T 2			
	Expert	Peer	CA	Expert	Peer	CA	T
EMT							
Invitation	.37 (.05)	.47 (.05)	.40 (.05)	.44 (.05)	.44 (.05)	.40 (.05)	ns
Directive	.27 (.03)	.18 (.04)	.24 (.03)	.18 (.03)	.29 (.03)	.25 (.03)	T x M
Option-posing	.17 (.03)	.17 (.03)	.18 (.03)	.18 (.03)	.11 (.03)	.16 (.03)	ns
Suggestive	.09 (.02)	.07 (.02)	.07 (.02)	.04 (.02)	.05 (.02)	.06 (.02)	T
Summary	.10 (.02)	.11 (.02)	.10 (.02)	.16 (.02)	.11 (.02)	.13 (.02)	T
Substantive							
Invitation	.22 (.03)	.28 (.03)	.24 (.03)	.26 (.03)	.27 (.03)	.24 (.03)	T
Directive	.26 (.02)	.27 (.02)	.31 (.02)	.27 (.02)	.28 (.02)	.30 (.02)	ns
Option-posing	.30 (.02)	.27 (.02)	.27 (.02)	.27 (.02)	.27 (.02)	.28 (.02)	T x M
Suggestive	.04 (.01)	.04 (.01)	.06 (.01)	.03 (.01)	.03 (.01)	.04 (.01)	T
Summary	.18 (.02)	.15 (.02)	.13 (.02)	.18 (.02)	.15 (.02)	.15 (.02)	ns

Note. T = time, M = modalities, ns = not statistically significant