Development and Aging

Can rapport building strategies, age, and question type influence preschoolers' disclosures of adult wrongdoing?

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In the present experiment, we examined preschoolers' disclosures of a secret as a function of rapport building strategies used in Scandinavian field settings (verbal rapport building vs. prop rapport building), age in months (33–75 months) and question type (open-ended free recall invitation vs. suggestive questions). Fifty-three preschoolers ($M = 60.5$ months old, $SD = 11.4$) witnessed a researcher break a toy and were asked to keep the toy breakage a secret. The children were thereafter interviewed about the incident. Overall, 18.9% of the children disclosed the secret after an open-ended free recall invitation. The disclosure rate rose to 83% after the final phase of the interviews when questions containing suggestive details were asked of the children. Notably, we did not observe any significant effects as a function of manipulating rapport building strategy. A linear regression model showed that child age (in months) significantly predicted the amount of reported details, with younger preschoolers reporting fewer details compared to older preschoolers. Age also predicted the amount of correct details, but not the amount of incorrect details. No age differences were found with regard to children's disclosure tendencies or proportion of central details about the secret. Methodological limitations and practical implications will be addressed.

Key words: Children's testimony, child witnesses, police interviewing techniques, rapport building, preschoolers.

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INTRODUCTION

Children can be vital sources of information during criminal investigations and court proceedings. In recent years, there has been a growing interest in examining ways to help children overcome reluctance during investigative interviews through interviewer support and rapport building (e.g., Hershkowitz, 2011; Lyon, Wandrey, Ahern, Licht, Sim & Quas, 2014; Saywitz, Larson, Hobbs & Wells, 2015). Although research-based interviewing guidelines emphasize the importance of building rapport early in an interview, few controlled experiments have examined strategies developed for this purpose in situations analogous to investigative child interviews (Goodman, Jones & McLeod, 2017; Saywitz *et al.*, 2015). In the present study, we aimed to contribute to this literature by investigating preschoolers' disclosures of a secret as a function of two different rapport building strategies currently used in Scandinavian field settings (Langballe & Davik, 2017); verbal strategies such as asking about personally meaningful interests or, prop-based strategies such as solving and describing a jigsaw puzzle. Furthermore, we sought to replicate past findings with regard to children's secret-keeping abilities as a function of age and the question types used during the substantive part of their interviews. To our knowledge, this is the first replication carried out in a Scandinavian context. Before turning to a detailed description of the current experiment, we will discuss past findings relating to each of the independent variables (i.e. rapport building strategies, age, and question type).

Rapport building strategies

Although people often have an intuitive sense of what rapport is, the phenomenon has been difficult to conceptualize with clearly defined parameters. Consequently, many different definitions and operationalizations have been used in the research literature. In Tickle-Degnen and Rosenthal's classic paper (1990), rapport was defined as a dynamic structure between two or more people that involves three main components; *mutual attentiveness*, *coordination* and *positivity*. Since rapport was seen as dynamic, the model accounted for changes over time. Moreover, while Tickle-Degnen and Rosenthal (1990) did acknowledge that some people are more adapt at building rapport than others, rapport was defined as a shared experience between two or more people and hence, not a personality trait. Successful factors for establishing rapport may, however, be closely intertwined with interviewer characteristics such as warmth, friendliness, empathy, humor, and sensitivity (Saywitz *et al.*, 2015).

Research-based child interviewing techniques typically include a phase designated for building rapport in the initial stages of a child interview (e.g., Lamb, Brown, Hershkowitz, Orbach & Esplin, 2018; Poole, 2016; Saywitz *et al.*, 2015). It is suggested that rapport building has a range of benefits, such as decreasing children's reluctance and anxiety (Almerigogna, Ost, Bull & Ahehurst, 2007), building trust (Hershkowitz, 2011), providing an opportunity to practice answering questions (Brown, Lamb, Lewis, Pipe, Orbach & Wolfman, 2013), enabling the interviewer to assess the child's cognitive and verbal abilities (Collins, Doherty-Sneddon & Doherty, 2014), and potentially making children more resistant to suggestive influence by making the interviewer more approachable (Saywitz *et al.*, 2015). These benefits are, in turn, assumed to potentially help increase children's willingness to disclose sensitive information, as well as to positively affect the completeness and accuracy of their accounts (e.g., Brown *et al.*, 2013; Hershkowitz, 2009; Lyon

et al., 2014; Roberts, Lamb & Sternberg, 2004; Sternberg, Lamb, Hershkowitz, *et al.*, 1997; Teoh & Lamb, 2010; Yi & Lamb, 2018). Due to difficulties operationalizing and measuring the degree of experienced rapport during child interviews, scholars have primarily focused on measuring indirect effects such as the quality and quantity of information given by children (Saywitz *et al.*, 2015).

The recommended content and length of the rapport building phase differ between child interviewing techniques. One common rapport building strategy is to ask children open-ended questions about non-threatening topics or personally meaningful interests (see Hershkowitz, 2011; Saywitz, Goodman & Lyon., 2018). Early use of open-ended questions compared to more directive questions has been associated with longer accounts during the investigative phase of an interview (Hershkowitz, 2009), more detailed responses to open-ended invitational prompts (Brown *et al.*, 2013; Sternberg *et al.*, 1997), improvements in accuracy (Roberts *et al.*, 2004; Yi & Lamb, 2018), and increased resistance to misleading questions (Roberts *et al.*, 2004; Yi & Lamb, 2018). Research comparing differing topics covered during rapport building has mainly shown non-significant results. For example, Lyon *et al.* (2014) reported no significant differences in children's disclosures (of playing with, and accidently breaking, toys) when asking children open-ended questions about their likes/dislikes/ what they did the previous day when compared to direct questions about the child's life. Similarly, neither Hardy and Van Leeuween (2004) nor Yi and Lamb (2018) found any substantial differences in the informativeness or accuracy of children's statements (regarding staged events) when asking questions about hobbies compared to asking children to describe a past event during the rapport building phase.

Other rapport building strategies involve prop-based activities, such as comfort drawings (Goodman *et al.*, 2017; Poole, 2016) or jigsaw puzzle tasks (Langballe & Davik, 2017). The use of props in the interviewing room is a controversial and highly debated area. History shows that there is merit for concern when it comes to using props during the investigative phase of an interview. For example, the use of anatomical dolls can increase the number of inaccuracies in children's testimony and is therefore discouraged (e.g., Lamb *et al.*, 2018; Poole, 2016). The use of props during the rapport-building phase has, however, not been thoroughly investigated. An exception is Collins (2012), who in her dissertation compared asking questions about neutral topics with the use of interactive props (jigsaw, building blocks, handicrafts) during the rapport building phase. Collins found that children aged 8–10 reported more information after participating in a prop-based rapport phase compared to a control condition. However, the experiment suffered from methodological limitations and needs to be replicated to increase the validity of these findings.

In the present experiment, we chose to study the use of a jigsaw puzzle task compared to a verbal rapport strategy. This type of prop-based rapport building is currently used by Norwegian police officers (see Langballe & Davik, 2017). Furthermore, the Swedish child interviewing guidelines recently included the use of jigsaws following the Norwegian approach (The Prosecution Authority, 2018). However, although the use of jigsaw puzzles during rapport building have been implemented in Scandinavian settings, the effects of the procedure have as of yet

not been closely examined and compared to other rapport building techniques. This study thus aimed to fill this gap by examining the effects of a prop-based rapport strategy compared to a standard verbal rapport on preschoolers' statements. Due to the limited number of studies trying to measure rapport during child interviewing, we also aimed to explore whether the subjective level of experienced rapport, as rated by the child and interviewer, would mediate the expected effect.

Developmental trends and secret-keeping

From around three to four years of age, children are able to provide reliable information about past events given the right prerequisites (Goodman *et al.*, 2017; Hershkowitz, Lamb, Orbach, Katz & Horowitz, 2012). Nonetheless, young children tend to provide less information than older children to open-ended questions (Lamb *et al.*, 2018). Young children can also be more susceptible to suggestibility and inaccurate responding to misleading questions (Goodman *et al.*, 2017; Saywitz *et al.*, 2018). Research findings regarding children's secret-keeping tendencies during different ages are mixed. Some studies report that older children are more likely to keep a secret. For example, Gordon Lyon, and Lee (2014) examined 4 to 12-year-old children's disclosure of a parental transgression and found that secret-keeping increased with age. Likewise, Bottoms, Goodman, Schwartz-Kenney and Thomas (2002), found that children aged 5–6 years, who were asked by their mothers to conceal that they had been playing with toys, provided less truthful information than children aged 3–4 years.

Other studies have found that younger children are more likely to conceal a secret. For instance, Pipe and Wilson (1994) found that when a magician asked children to conceal that he had spilled ink on a pair of white gloves, 40% of their six-year-old-participants kept the secret during an initial interview, compared to only 16% of the ten-year-old participants. Lastly, some studies have not observed any significant age differences. For instance, Talwar, Lee, Bala and Lindsay (2004) did not find age to be a significant predictor of secret-keeping to protect a parent among children aged 3 to 11 years. Similar results were reported by Talwar, Yachison, Leduc and Nagar (2018) regarding children 4 to 7 years of age who witnessed a research assistant (RA) break a toy. The researchers did, however, see qualitative differences in the content of the children's accounts, where older children were more likely to use a cover story than younger children. This indicates that children's secret-keeping strategies might differ between developmental stages during early childhood (Talwar *et al.*, 2018).

Question types and secret-keeping

It is widely known that question types can impact upon the information reported by children. Open-ended questions that encourage a child to freely retrieve and report their memories (e.g., "Tell me everything that you remember?") elicits longer and more accurate accounts compared to closed questions (e.g. "Did it happen yesterday?", see Brown *et al.*, 2013; Goodman *et al.*, 2017). Option-posing questions, where a child is asked to choose one of several options, and suggestive questions,

where the interviewer introduces information or indicates a preferred answer, are associated with a higher likelihood of inaccuracy (Lamb *et al*., 2018). Child interviewing protocols (e.g., Lamb *et al*., 2018; Poole, 2016; Saywitz & Camparo, 2014) therefore advise that interviewers primarily use free recall invitations (e.g., "Tell me everything that happened, from beginning to end"), cued recall invitations (e.g., "You said X, tell me more about that"), and facilitating utterances or non-verbal behaviours (e.g., nodding, Ok," "Uh-huh"). Specific questions that are needed for investigative purposes are recommended to be used towards the end of an interview and if used, be coupled with open-ended follow-up questions (Goodman *et al*., 2017).

Experimental research on children's concealment of secrets involving adult transgressions shows that many children do not disclose the secret when asked initial open-ended questions. For example, Gordon, Lyon, and Lee (2014) reported that 82.2% of their child participants (4–12 years old) kept a secret for their parent about the breakage of a toy when asked "Tell me everything you did with mum or dad?." When asked a more direct question about what happened to the toy, the rate of secret-keepers dropped to 62.5%. Similarly, Talwar *et al*., (2018) found that 89.7% of their child participants (4–7 years of age) kept a secret about a broken toy when asked to report everything that happened. However only 44.8% maintained the secret throughout the interview after being asked more direct questions. Hence, secret-keeping through errors of omission (i.e., denial or omission of truthful information) is more common in experimental settings when children are asked initial open-ended questions compared to more specific directive questions. This pattern has been found in studies were children are bystanders to the transgression (watching another person break a toy, e.g., Gordon *et al*., 2014; Talwar *et al*., 2018) as well as in studies were children are jointly implicated in the transgression (e.g., the child breaks a toy, e.g., see Lyon *et al*., 2014; Rush, Stolzenberg, Quas & Lyon, 2017).

The findings above highlight the difficulties involved in introducing the topic of interest during child interviews, particularly since the police rarely have reliable knowledge from independent sources about what may or may not have happened. A specific or leading question might increase children's inaccuracy and could reflect negatively on the credibility of the child's testimony. On the other hand, reluctant children might not disclose true experiences of abuse in response to free recall invitations. Child interviewing techniques therefore recommend using a funnel approach. One of the most commonly studied methods for interviewing children, the National Institute of Child Health and Development (NICHD) protocol, for example advises interviewers to begin with non-suggestive introductory questions (e.g., "Now that I know you a little bit better, I want to talk about why you are here today" or "I understand that something may have happened to you"), followed by free recall invitations (Lamb *et al*., 2018, p. 245). If a child does not approach the topic of interest in response to these open invitational questions, the interviewer becomes progressively more specific in their questioning. However, balancing the specificity of questions can be challenging and further research is needed to better understand how different introductory strategies affect children's accounts and disclosure tendencies (Saywitz *et al*., 2018).

The present study

The aim of the present study was to compare effects of two rapport building strategies, age, and question type on preschool-aged children's testimony about a secret involving the breakage of a toy by an unfamiliar adult. The different rapport building strategies derived from child interviewing techniques used in Scandinavian field settings and will henceforth be referred to as the *verbal rapport strategy* (i.e., asking question about personal interests; as advocated by Lamb *et al*., 2018; Poole, 2016) and the *prop rapport strategy* (i.e., solving and asking questions about a jigsaw; as advocated by Collins, 2012; Langballe & Davik, 2017). Due to the lack of empirical research comparing these types of rapport building strategies in child interview settings, we decided to include several outcomes measures of importance for children's secret-keeping and witness abilities. First, drawing on the suggested benefits from field and laboratory research on rapport building (Saywitz *et al*., 2015), we predicted that there would be a difference in *disclosure rate* (Hypothesis 1a), *quantity of details* (Hypothesis 1b), *statement accuracy* (Hypothesis 1c) and *proportional amount of central details* (Hypothesis 1d) between accounts provided by children interviewed with the verbal rapport strategy and the prop rapport strategy. We employed non-directional hypotheses for our comparisons due to the lack of past studies on the topic. Second, the relationship between rapport building strategy and the predicted effects on the children's accounts was expected to be mediated by the quality of rapport experienced by the children and interviewers as measured via self-report questionnaires (Hypothesis 1e).

Furthermore, we aimed to examine age differences in children's secret-keeping abilities and account qualities. Previous research on children's disclosures of adults' minor transgressions has shown that children as young as three years of age can understand some basic motivational aspects surrounding secret-keeping for someone else (e.g., Bottoms, Goodman, Schwartz-Kenney & Thomas, 2002; Talwar, Yachison & Leduc, 2016). However, the development of children's secret-keeping abilities seems to quickly evolve in a linear fashion during the preschool years. Consequently, we hypothesized that younger children would exhibit a higher *disclosure rate* compared to older children (Hypothesis 2a). On the other hand, we expected older children to provide *more details* (Hypothesis 2b), have a higher *accuracy rate* (Hypothesis 2c) and report more *central information* (Hypothesis 2d) compared to younger children.

Lastly, we intended to replicate and extend past findings regarding children's disclosure tendencies in relation to different question types during the substantial phase of their interviews (e.g., Gordon *et al*., 2014; Rush *et al*., 2017; Talwar *et al*., 2018). Using a funnel approach, the children were asked a free recall invitation, followed by more specific questions containing suggestive details about the target event. In line with current recommendations in the field, the specific questions were directly followed by open-ended requests for the child to elaborate. The purpose of this procedure was to investigate during which part of the questioning the children would disclose the secret, if at all.

METHOD

The study was pre-registered on the Open Science Framework; https://osf.io/x7846/?view_only=f89bcff0359b4afc9e4aba31d8dba6fe

Participants

All preschools located within the metropolitan and suburban areas of a large city in Sweden (approximate population: 1 million including surrounding municipalities) were invited to participate in the study through advertisement in connection to an annual Science Festival. In Sweden, children have universal access to preschools and 95% of children aged 3–5 are estimated to attend (National Agency for Education, 2013). A total of 15 preschools, spread across low-, middle- and high-income areas, chose to participate. Informed written consent was collected beforehand from the children's carers. The children were asked for their assent in connection to the experiment (seven children chose not to participate).

The analyses are based on interviews with 53 children (33 girls and 20 boys) ages 33–76 months[1] ($M = 60.5$ months, $SD = 11.4$). A total of 18 children were between 2 and 4 years ($M = 47.2$ months, $SD = 8.7$, 61.1% girls) and 35 children were between 5 and 6 years ($M = 67.4$, $SD = 4.5$, 62.9% girls). The children were randomly allocated to one of the two rapport building conditions, with 27 children ($M = 59.4$ months, $SD = 13.8$, 57.7% girls) in the prop rapport condition and 26 children ($M = 61.7$ months, $SD = 8.4$, 66.7% girls) in the verbal rapport condition. There was no significant age or gender difference between the two rapport conditions, $t(51) = 0.7$, $p = 0.487$ and $X^2(1, N = 53) = 0.45$, $p = 0.50$, respectively. A sensitivity analysis was conducted using G*Power (Faul, Erdfelder, Buchner & Lang, 2009). Our sample size could detect large effect sizes ($d = 0.78$) between the rapport building conditions with 80% power ($\alpha = 0.05$, two-tailed).

Materials

Interview guide. We created a semi-structured interview guide inspired by the NICHD protocol for interviewing children (Lamb *et al.*, 2008, see also Lamb *et al.*, 2018), and past studies on children's secret-keeping abilities (e.g., Gordon *et al.*, 2014; Talwar *et al.*, 2018). The interview guide contained five sections; *introduction, rapport building* (verbal rapport or prop rapport), *episodic narrative practice, substantive phase,* and *closure.* The content of each section is described in more detail under the Procedure section.

Procedure. The study was part of an activity at the University for smaller groups of preschoolers (5–10 children per session) and also included singing, dancing, story-telling, and a debriefing about good and bad secrets. The experimental procedure consisted of three central phases: the event, the pre-substantive interview phase, and the substantive interview phase.

The event. We employed the broken toy paradigm, a commonly used research method for examining children's concealment of sensitive information involving adult wrongdoing (e.g., Bottoms *et al.*, 2002; Talwar *et al.*, 2016). After an introduction session, an unfamiliar male RA entered the room, opened a suitcase placed on the floor containing a soap bubble machine, said "I don't think I am allowed to play with this toy" and picked it up. The soap bubble machine was rigged so that cables and electronics fell out on the floor. The RA feigned concern, tried unsuccessfully to fix the toy, placed it back in the suitcase and said "Don't tell anyone that I broke the toy. It can be our secret" before leaving the room.

During a break (from here labeled a 'retention interval'), the participants ate fruit and colored drawing sheets. There was no significant difference in retention interval length in minutes between the two rapport conditions (verbal condition $M = 28.65$, $SD = 7.29$; prop condition $M = 27.52$, $SD = 7.32$), $t(51) = 0.57$, $p = 0.57$. Furthermore, potential effects of retention length were controlled for in our statistical analyses (see the Results section). One of the researchers closely monitored the conversations during the retention phase and redirected the topic in case a child started to discuss the secret to avoid social influence effects between the children.

The pre-substantive interview phase. The children were individually interviewed in separate rooms by one of ten female RAs. Our interviewers, who were all naïve to the aim and hypotheses of the study, were experienced at working with children and had received a three-hour training course in child interviewing. The interviews started with a brief introduction phase where the interviewers introduced themselves, demonstrated the video equipment, explained that they wanted to ask some questions and asked the child if he or she wanted to participate. The children gave their assent by saying yes and/or pressing a green start button. Seven children chose not to participate. The interviewers thanked these children for meeting with them and reassured them that all was well before walking them back to the main activity room.

If they agreed to participate, the children were allocated to either the verbal rapport condition or the prop rapport condition. The verbal rapport condition consisted of open-ended questions about the child's personal interest ("Tell me about things you like to do?"). The children's accounts were followed up with cued prompts (e.g., "You said you like painting, tell me more about that?"), facilitating utterances ("Uhmh," nodding, "okay"), and open-ended directive questions (e.g., "What is your favorite color"). In the prop rapport condition, the children were asked to help the interviewer make a jigsaw puzzle portraying a cartoon dog (comprising 4, 6 or 9 pieces depending on a child's age) and answer open-ended questions about the task ("Tell me what you see on the jigsaw puzzle?"). The children's accounts were, as in the verbal condition, followed up with cued prompts (e.g., "You say a dog, tell me more about that"), facilitating utterances and open-ended directive questions (e.g., "What color is the dog?"). The rapport building phase lasted approximately 2–3 minutes (verbal condition $M = 149.3$ sec, $SD = 50.7$; prop condition $M = 132.3$ sec, $SD = 62.3$) and there was no significant time difference between the two conditions, $t(51) = -1.09$, $p = 0.28$.

All children were thereafter asked a brief set of questions about a recent event in their life ("Tell me how you got here from your preschool") and asked to elaborate ("Tell me more"). Conducting this type of episodic narrative practice directly after a prop-based or verbal rapport is included in both the Swedish and Norwegian interviewing guidelines. The rationale for including this phase was therefore to simulate real child interviews from Scandinavian settings and ensure that all children had a chance to practice elaborating on a previous event before transitioning to the substantial part of the interview. The phase typically lasted between 1–2 minutes (prop rapport condition, $M = 82.9$ sec, $SD = 44.8$; verbal rapport condition, $M = 94.2$ sec, $SD = 47.3$), with no significant time difference between the rapport conditions, $t(51) = -0.88$, $p = 0.38$. Considering that rapport strategy could have affected the children's informativeness during the episodic narrative practice phase, we also measured the amount of details reported during this phase (see the Results section for more information).

The substantive interview phase. The interviewers thereafter transitioned to the substantive phase following the structured interview guide. Initially, the interviewer started to direct the child's attention to the topic by asking "Tell me everything that happened in the other room?" (i.e., free recall invitation). If the child had difficulties understanding which room the interviewer meant, they were given instructions to clarify the statement. If the child started to talk about the event, the interviewer used cued prompts (e.g., "You said a toy, tell me more"), encouraging facilitators (e.g., "okay," nodding their head, mirroring the child's last word) and open-ended directive questions (e.g., "What color was it?," however for a recent discussion on the limitations with wh-questions, see Ahern, Andrews, Stolzenberg & Lyon, 2018).

If the child did not mention the broken toy event in the initial free recall phase, the interviewers were instructed to state "I heard something happened with a big suitcase, tell me about that" (i.e., suggestion followed by an open-ended prompt). If the child started to talk about the event or other activities during their visit, the interviewers were again instructed to follow up the child's narrative with cued prompts, encouraging facilitators,

and open-ended directive questions. If the child still did not disclose any information about the secret the interviewers were instructed to say, "A toy broke before, tell me what happened" and given the same instructions for following up the child responses. Lastly, if the child had not disclosed the secret, the interviewers stated, "I heard an adult broke a toy before, tell me what happened?" and followed the instructions described above if a child disclosed. When the interviews came to a natural stopping point after exhausting the children's narratives, or if the children had not disclosed the secret after the four scripted prompts, the interviewer thanked the children for their participation, told them that it was good that they disclosed the secret (if they had disclosed during their interview), and asked if the children had any questions. The children thereafter took part in a debriefing session.

Ethical considerations

The study was approved by the Regional Ethics Board. Since the project involved secrets, additional safeguards where put in place. During each data collection session, a police child interviewer from the local Children's House attended the event to provide educational information to the preschool staff. All children were debriefed after their participation via a theater performance and discussion. During the former, the RA who broke the toy came back and said that the secret made him feel sad, so he wanted to disclose it to the owner of the toy. He and the toy owner repaired and demonstrated the soap bubble machine, and thereafter talked to the children about good and bad secrets.

Coding

The interviews were video-recorded and transcribed verbatim. Trained coders, who were naïve to the hypotheses, coded the verbal content of the interview transcripts and inter-rater reliability analyses were conducted for each variable on 20% of the material. The proportional agreement for each category reached a satisfactory level at 87.8%–99.8% (Cohen's κ: 0.78–0.99). Disagreements were examined and resolved through discussion.

Dependent variables

Disclosure of secret. The children's accounts were coded as either a disclosure or a non-disclosure to each of the scripted questions. To be coded as a disclosure of the secret, the account needed to contain at least one piece of information about someone breaking an object (e.g., "A man broke the toy" was considered a disclosure, "I don't what happened to the toy" was coded as a non-disclosure).

Total amount of information units. The children's accounts were quantified into information units using a coding system similar to Brown *et al*. (2013) and Yi and Lamb (2018). All information relating to people (e.g., a <u>man</u>), actions and affective states (e.g., <u>broke</u>), attributes (e.g., the <u>blue</u>), objects and settings (e.g., <u>toy</u>), and temporal information (e.g., <u>afterwards</u>) was given one point. When a detail was reported several times during the interview, it was only counted the first time it occurred.

Type of detail. Similar to Brown *et al*. (2013), each information unit was coded as central (i.e., details about the target event), peripheral (i.e.,

details about other activities the children had participated in during their visit before and after the toy breaking event), or non-codable (i.e., subjective experiences and incomprehensible utterances). The percentage of central details was calculated from the amount of central details divided by the total amount of central and peripheral details × 100.

Accuracy of details. The information units were compared to a video recording of the event to assess accuracy. Each unit was coded as accurate, inaccurate, or non-codable. A percentage accuracy rate was calculated from the amount of accurate details divided by the total amount of accurate and inaccurate units × 100.

Rapport measurement. Directly after each interview, the interviewers were asked to rate on a seven-point Likert scale "How good a connection did you feel that you got with the child?," henceforth referred to as the interviewer's subjective assessment. The children were also asked to rate "How did it feel to talk here today?" using a Smiley scale consisting of five steps from a very smiley face to a very unhappy face. However, the younger children demonstrated difficulties using the scale (e.g., choosing several smileys or pointing towards their favorite color) and we have therefore chosen to omit the children's assessments from our analysis.

RESULTS

Preliminary analyses

Due to differences in retention interval length between child participants, the length of time in minutes was statistically controlled for using linear regression models. The inclusion of said covariate did not have a substantial impact on the results of the inferential tests and we have therefore chosen to report the original tests (without the covariate) in the following sections.

Rapport building strategy

Due to the limited number of children who did not disclose (see Table 1 for an overview), a Fisher's exact test was performed to examine the association between rapport building strategy and disclosures. The test was non-significant (Fisher's exact test = 0.52). Furthermore, two between-subjects Welch's *t*-tests were conducted to compare children's amount of reported details and proportion of central details across the verbal rapport and prop rapport conditions. There were no significant differences between the two rapport building conditions for any of the dependent measures, total amount; $t(49.769) = 0.8$, $p = 0.33$, $d = 0.27$; and central details; $t(49.04) = -0.73$, $p = 0.47$, $d = 0.21$. See Table 1 for means and standard deviations.

Due to skewness in the accuracy rate data, we conducted a Mann-Whitney U test to examine differences between the rapport conditions (Mean rank for the verbal condition = 28.96, prop-based condition = 25.11). The test did not reach the significance

Table 1. *Means (and standard deviations) by rapport building strategy and child age across entire interviews*

	Disclosure rate	Amount of details	Accuracy rate	Central details rate
Rapport strategy				
Verbal rapport (*n* = 26)	84.6%	54.96 (36.43)	97.0% (0.03)	68.8%
Prop rapport (*n* = 27)	81.4%	45.70 (32.16)	94.2% (0.10)	73.7%
Child age				
2–4 years (*n* = 18)	72.2%	29.67 (18.58)	93.1% (0.12)	67.1%
5–6 years (*n* = 35)	88.6%	60.83 (35.89)	96.9% (0.04).	73.4%

threshold, $U = 300$, $z = -0.94$, $p = 0.35$. Furthermore, there was no significant difference between the verbal rapport condition ($M = 5.54$, $SD = 1.56$) and prop rapport condition ($M = 5.59$, $SD = 1.50$) for the interviewers' subjective assessments regarding the level of contact they achieved with a child, $t(50.72) = -0.13$, $p = 0.90$. Thus, Hypotheses 1a–e were not supported. Lastly, we also explored whether there was a significant relationship between rapport condition and the amount of details reported during the early episodic narrative practice phase. Due to non-normality in the data, a Mann-Whitney U test was performed (Verbal rapport condition mean rank = 27.34, *Mdn* = 19; prop-based rapport condition mean rank = 24.71, *Mdn* = 17). The test was non-significant, $U = 291.5$, $z = -0.63$, $p = 0.53$.

Age differences

A series of regression analyses were carried out to examine the predicted linear relationship between age (in months) and children's amount of reported details, accuracy, and proportion of central details. In line with our prediction (Hypotheses 2b), a linear regression showed that child age (in months) could statistically significantly predict the amount of reported details, $F(1, 51) = 17.07$, $p < 0.001$, $B = 1.5$ ($SE = 0.36$), [95% CI for B: 0.77, 2.23] and age accounted for 25.1% of the explained variability in total amount of details (R^2).The equation was: predicted amount of details $= -40.68 + 1.5 \times$ (age in months). A second linear regression was carried out to examine the predicted relationship between child age and the proportions of central details. The regression model did not reach the specified significance threshold, $F(1, 51) = 3.33$, $p = 0.074$, $B = 0.01$ [95% CI: -0.001, 0.011], $R^2 = 0.06$.

With regard to accuracy rates, a visual inspection indicated substantial ceiling effects with a non-normal distribution of the residuals. We therefore chose to examine the amount of accurate and inaccurate details separately. A simple linear regression analysis indicated that age significantly predicted the amount of correct details, $F(1.51) = 19.91$, $p > 0.001$, $B = 1.42$ ($SE = 0.32$) [95% CI for B: 0.78, 2.06], $R^2 = 0.28$. Due to a negative skew in the residual distribution with regard to inaccurate details, we performed a Log10 (+1) transformation on the data. A regression analysis with the log transformed data indicated that age did not significantly predict the amount of inaccurate details, $F(1, 51) = 0.07$, $p = 0.80$, $\beta = 0.04$, $R^2 = 0.001$. Lastly, a Fisher's exact test was carried out to examine whether age (2–4 years vs. 5–6 years) was significantly associated with disclosure tendencies. The test was non-significant, Fisher's exact test = 0.245. See Table 1 for means and standard deviations.

Scripted question types

A total of 18.9% of the children ($n = 10$ of 53) disclosed the secret after a free recall invitational question ("Tell me everything that happened in the other room"). Interestingly, almost all of the remaining children (38 of 43 children) provided at least one detail about events that occurred before and after the toy breaking incident with an average number of 10 peripheral details ($SD = 9.6$). Among the children who did not disclose initially, 69.4% ($n = 29$ of 43) disclosed to the first question containing

Table 2. *Number of disclosures (and disclosure rates) to the scripted questions divided by child age*

Scripted question	Age	
	2 to 4 years $n = 18$	5 to 6 years $n = 35$
"Tell me everything that happened in the other room?"	2 (11.1%)	8 (22.8%)
"I heard something happened with a big suitcase, tell me about that?"	8 (50%)*	21(77.8%)*
"A toy broke before, tell me what happened?"	1 (12.5%)	2 (33.4%)
"I heard an adult broke a toy before, tell me what happened?"	2 (28.6%)	0 (0.0%)

Notes: The disclosure rates in the parentheses were calculated from the number of disclosures divided by the number of children who were asked each question (e.g., to the first scripted question 2 out of 18 children aged 2–4 years disclosed, resulting in a disclosure rate of 11.1%. To the second scripted question, 8 out of the remaining 16 young children who did not disclose to the first question chose to disclose, indicating a disclosure rate of 50.0%).

suggestive details ("I heard something happened with a big suitcase, tell me about that"). Furthermore, three of the remaining 14 children (21.4%) disclosed for the first time to the third question ("A toy broke before, tell me what happened") and 2 of 11 children (18.1%) disclosed to the fourth question ("I heard an adult broke a toy before, tell me what happened"). Nine children (17%) did not disclose at all during their interview. See Table 2 for children's disclosure rates, by age, after the free recall prompt and the three questions with suggestive details.

DISCUSSION

In the present study, we sought to investigate the influence of rapport building strategies, age, and question types on preschool-aged children's disclosure of a secret. First, we compared the effects of two different rapport building strategies currently used in Scandinavian field settings (verbal rapport vs. prop rapport). Contrary to our expectations, we did not see any significant differences between the two rapport conditions for the children's disclosure rate, amount of information, accuracy rate, or type of detail. While unexpected, these findings concur with several past studies that have not found a significant difference between different verbal rapport building strategies (Hardy & Leeuwen, 2004; Lyon *et al.*, 2014; Yi & Lamb, 2018). Furthermore, these results contradict the findings by Collins (2012) who did observe a difference in productivity with school-aged children when using a jigsaw compared to a verbal rapport condition. Consequently, we cannot make any recommendations regarding the most effective method with preschoolers since both strategies were associated with equal outcomes. Future research would benefit from including a control condition without rapport building, to compare with different methods of rapport-building. Furthermore, future studies could also consider examining the effectiveness of different rapport building strategies in relation to other child specific factors such as level of shyness (Fängström, Salari, Eriksson & Sarkadi, 2017) and whether children display early signs of reluctance (Hershkowitz *et al.*, 2006).

Secondly, we observed substantial age differences with regard to the amount of details reported by children, with the younger preschoolers on average only providing half the amount of details provided by the older preschoolers. This finding is in line with past research that has reported similar observations with regard to age differences among preschoolers' productivity (e.g., Hardy & van Leeuwen, 2004). Furthermore, age in months accounted for approximately 25% of the explained variance with regards to the amount of details. In the present experiment, we chose to include children aged 2–6 years (33–75 months) which differs from past studies that generally have not included children below the age of 3. While we found that youngest children could provide some details about the event, their statements were typically very brief. Importantly, both the younger and older children's accounts were highly accurate, with accuracy rates above 90% for both groups (for similar results, see for example Bottoms *et al.*, 2002). However, when we examined the amount of correct details, we again found an age effect with older preschoolers reporting more correct details. Again, this concur with past research (e.g., Hardy & van Leeuwen, 2004; Pipe & Wilson, 1994), although other studies have not found an overall difference in accuracy among children of different ages (e.g., Lyon, Malloy, Quas, & Talwar, 2008).

The relationships between child age and amount of details is likely to be connected to preschoolers' developmental limitations. More specifically, young preschoolers' limited verbal abilities, memory retrieval strategies, and attention spans may for example influence their witness capabilities (Lamb *et al.*, 2018). Future research could examine ways to adjust the interviewing technique when questioning very young children. This might, for example, include exploring the benefits of conducting linguistic assessments of children's verbal abilities beforehand (Marchant, 2013), asking more open-ended directive questions to facilitate preschoolers' memory retrieval (Lamb *et al.*, 2018), or sequencing interviews into shorter sessions with scheduled breaks in between to prevent fatigue (Langballe & Davik, 2017).

Third, in line with past research from primarily north America and the UK (e.g., Gordon *et al.*, 2014; Talwar *et al.*, 2018), we found that children frequently kept a secret in response to an initial free recall prompt. Interestingly, many children did however, following the free recall prompt, report peripheral details about the activity including what they did before and after the toy breaking incident. This is an important observation, since this may imply that the children understood the purpose of the question (i.e., to report lots of detail about the event), but actively chose to omit the sensitive information. For example, one of the children (5 year-old boy) said in his interview "It's a secret so I can't tell" when asked what happened. However, similar to past findings on children's incremental disclosures (e.g., Gordon *et al.*, 2014; Rush *et al.*, 2017; Talwar *et al.*, 2018), most of our participants did disclose the secret when asked a more specific question containing some suggestive details. Notably, the suggestive questions in the present study were coupled with an open-ended request to elaborate (e.g., "I heard something happened with a big suitcase, tell me everything about that"). This procedure deviates from many other secret-keeping studies that have phrased the specific questions more or less suggestively using a yes/no format (e.g., "Did your mum or dad break it?";

Gordon et al., 2014, "I found a pair of white gloves with ink spilt on them. Do you know anything about them?" Pipe & Wilson, 1994). Our phrasing instead followed Swedish child interviewing guidelines stating that interviewers should try to phrase their introductory topic prompts in an open-ended format even when they need to become progressively more specific if a child does not respond to the initial invitations (e.g., "We heard that you have talked to your teacher about have you have it at home. Tell me about that?"; the Prosecution Authority, 2018).

We believe it is important to note that our specific questions, while open-ended, did contain highly suggestive details. In real investigations, legal practitioners rarely have this type of information available and thus need to be particularly careful in the formulation of their questions since suggestions could decrease children's accuracy (Lamb *et al.*, 2018). Suggestive questions might also receive criticism in court and could negatively affect observers' credibility assessments of children's testimony (Saywitz *et al.*, 2018). Future research may benefit from focusing on how to encourage child disclosures through question specificity while avoiding suggestive details. One recommendation from the revised NICHD protocol is for example to state "I heard that something may have happened to you" (Lamb *et al.*, 2018, p. 245). Vague and abstract questions could, on the other hand, be difficult for young children to comprehend. In particular since preschoolers might not understand the purpose of the police interview. Consequently, we encourage scholars to search for, and empirically test, age appropriate introductory question types that encourage disclosures without increasing the risk of incorrect reports. Furthermore, the specificity of topic prompts may not be enough to help child victims' overcome reluctance to disclose traumatic experiences. Promising lines of future research to overcome reluctance for example include repeated interviewing (e.g., Langballe & Davik, 2017), increased socio-emotional support (e.g., Lamb *et al.*, 2018), and identification of case-specific barriers for disclosure (e.g., Magnusson, Ernberg & Landström, 22017).

A major limitation with previous research examining rapport building during child interviews has been that the quality of rapport has not been studied (Saywitz, *et al.*, 2015). In the present experiment, we therefore tried to include measurements of the children's and interviewers' subjective experiences of rapport. However, this proved difficult for several practical reasons and the issue regarding how to directly measure rapport building during child interviews still needs to be addressed. In line with Saywitz *et al.* (2015), we also believe it could be beneficial to study rapport building techniques from the clinical field (e.g., empathic listening and anxiety reducing strategies) and examine their potential value in an investigative interviewing context.

LIMITATIONS

Some methodological concerns need to be addressed. First, it is important to bear in mind the limited power of the present experiment. While our sample size was sufficient to detect large effect sizes ($d = 0.8$) between the rapport building conditions, smaller effect sizes may have gone undetected. Furthermore, the restricted sample limited our abilities to analyze interaction effects

that may have helped shed more light on the influence of different variables. On a similar note, the exploratory statistics regarding children's incremental disclosures to different question types were descriptive and could not capture whether children disclosed to a specific question by chance. Beyond child age and gender, we did not collect data on other demographic factors (e.g., parental educational level) that could be informative with regard to the representativeness of the sample for the intended population.

On a broader level, we also need to comment on the generalizability of experiments in this line of research. Since laboratory studies can never replicate the mental and affective state of victims involved in a police investigation, the external validity is limited. Other studies have tried to increase the external validity by, for example, jointly implicating the children in the transgression (e.g., Rush *et al.*, 2017), using family members as confederates during the toy breakage (e.g., Gordon *et al.*, 2014), and comparing behaviours among maltreated and non-maltreated children to examine potential differences in their secret-keeping tendencies (e.g., Lyon *et al.*, 2014). Furthermore, during the present interviews we included a brief episodic narrative practice directly after the verbal/prop-based rapport conditions in line with the interviewing guidelines used in Scandinavian settings. The narrative practice could however, have made it more difficult to detect potential differences from the rapport manipulation. We did therefore also examine whether children differed in the amount of details provided during their episodic narrative practice but did not find a significant difference as a function of the two rapport conditions.

CONCLUSIONS

It is concerning that so many preschoolers in the current experiment initially complied with the request for secrecy from a complete stranger. Although this line of laboratory experiments cannot directly be applied to children's disclosures of abuse, we believe findings from the secret-keeping literature can have a guiding value during the development of interventions to help children's talk about secrets. For example, educational programs during the early preschool years focusing on teaching young children the differences between good and bad secrets might potentially be useful to facilitate children's disclosures. Furthermore, since young children are dependent on adults to report suspicions of abuse to the police, research-based guidelines regarding how to react to young children's disclosures of secrets may be targeted towards common disclosure recipients, such as parents and preschool teachers (Magnusson *et al.*, 2017).

The current study contributes to the growing literature on preschool-aged children's disclosures of secrets in settings analogous to investigative interviews. In line with past research from other countries, we found that, after a prompt for a free recall, many Swedish preschoolers kept a secret for an unfamiliar adult about his transgression. However, the majority of children did disclose the secret when asked more specific questions. The children's age significantly predicted both the total amount of reported details and the amount of correct details. However, we found no significant relationship between age and the amount of incorrect details or disclosure tendencies. Lastly, the rapport building strategy used during the initial phase of the interview did not differ significantly in terms of the children's accounts. Considering the presumed benefits of early rapport building (e.g., Saywitz *et al.*, 2015), more knowledge is needed on the effects of different rapport building strategies during investigative interviews with preschool-aged children.

AUTHOR NOTE

NOTE

1 The ages of the child participants were as follows; 2 children were 2 years old, 7 children were 3 years old, 9 children were 4 years old, 28 children were 5 years old, and 7 children were 6 years old.

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