I'll show you what I witnessed. Children's abilities to use non-anatomical dolls in forensic

interviewing

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Abstract

Two studies examined the effectiveness of using non-anatomical (non-AD) dolls as an interview tool, to aid children's communication about body positioning. In the first study, 49 6-8-year-old children took part in a game. Thirty minutes to an hour later, they were interviewed using the Specialist Child Witness Interview model. This was done verbally or with the opportunity to use non-AD dolls to clarify their own and others' body positioning. There was no difference in the amount of information reported nor the accuracy of children's reports when comparing both conditions. To complement the first study, the second study examined jurors' perceptions of children's abilities to use non-AD dolls. Non-AD dolls were generally thought to be helpful, but jurors identified some risks. However, jurors did not have strong beliefs about how non-AD dolls would influence the evidence that children provided. When jurors viewed a video of a child recounting a past event, their beliefs about non-AD dolls were more influential when evaluating a child's credibility than whether or not a non-AD doll was used during the interview. Overall, even when used in conjunction with evidence-based techniques, these findings do not support the use of non-AD dolls to help communicate body positioning in child forensic interviewing.

Acknowledgements

Ehara taku toa i te toa takitahi, engari he toa takitini kē

Mine is not the strength of one, but the strength of many

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Context for Thesis

This thesis was originally designed to explore the impact of using non-AD dolls when communicating children's body positioning after a staged event. However, partway through data collection, the coronavirus-19 pandemic occurred. With associated lockdown periods and social distancing restrictions, data collection was paused. This meant that it was not possible to complete the original research in the time frame available. Due to these limitations, a second study was designed to complement our understanding of children's use of non-AD dolls. It is important to understand what children can do with dolls, yet, it is also equally important to understand what people *think* children can do with dolls. Those beliefs are likely to influence how testimony is evaluated in court. No-one to date has assessed jurors perceptions of using non-AD dolls to communicate body positioning. Thus the second study examined mock jurors' beliefs and expectations about how non-AD dolls might be helpful or harmful to testimony, and if viewing a child interacting with a doll whilst recounting an event influenced perceptions of their credibility. Therefore, two complementary but distinct studies are examined. Each is presented as a stand-alone study, followed by integrated concluding comments. In the two studies this thesis examines questions relating to 1) whether young children can use dolls to communicate aspects of their experiences, 2) potential jurors' beliefs about the utility of dolls in forensic interviews with children, and 3) jurors credibility ratings of children who are interviewed with dolls.

Study 1: Dolls Study

Introduction

Emily is a 6-year-old girl who is going to be interviewed by a Specialist Child Witness Interviewer (SCWI), about alleged touching from her uncle. Emily might have difficulty providing the kinds of details the interviewer needs to inform any criminal investigation and/or care and protection proceedings. She might also be unwilling to talk because she is anxious, shy or embarrassed. To support Emily in talking about her experience, the interviewer might opt to give her a non-anatomical (non-AD) doll (a soft, human-shaped doll, without genitals). Emily might use this doll to demonstrate the positioning of her own and her uncle's bodies.

Unfortunately, thousands of children like Emily are interviewed each year about suspected maltreatment. Over the 2020 financial year, there were 2,971 reports of sexual assault related offences against New Zealand children under the age of 19 (New Zealand Police, n.d.). If reports of acts intended to cause injury to children were also included the number were included then the number of reports would be substantially higher. Many of these children were victimised more than once (Oranga Tamariki, 2018). Since numerous child abuse cases are never reported, these figures are also likely to underestimate the actual rates of child maltreatment in New Zealand (Adigun & Hatcher, 2019). Clearly, there are a substantial number of children interviewed about abuse. So, it is essential that interviewers are utilising evidence-based practices that aid the recall, and maintain the reliability, of the child's evidence. This study examines whether young children can use non-AD dolls to communicate information about body positions. Comparisons were made between children interviewed verbally or with non-AD dolls in terms of amount and the accuracy of body positions reported.

New Zealand research indicates that 10% of forensic interviews with children end up using a non-AD doll (Wolfman et al., 2018). When surveyed, interviewers indicated that non-AD dolls were beneficial when working with younger children, by helping to overcome

language barriers, enable demonstration of touch, indication of body parts, and, central to this study, to indicate body positioning (Hill, 2017; Hlavka et al., 2010). Given that 10% of interviews evaluated in the Wolfman et al. (2018) study included non-AD dolls, we could estimate that this is the equivalent of at least 297 children each year when interviewing solely about child sexual abuse (based on the number of interviews conducted during 2020; New Zealand Police, n.d.). So, although a small proportion of interviews might use non-AD dolls, a sizable number of children will still be asked to communicate with them. Because of this, we need to understand whether non-AD dolls support or undermine the reliability of children's reporting.

Current Interviewing Model and Practice in New Zealand

Forensic interviews conducted in New Zealand are guided by the Specialist Child Witness Interview (SCWI) model (Westera et al., 2017), which is based closely on the National Institute of Child Health and Human Development (NICHD) Investigative Interview Protocol (Lamb et al., 2018).

The SCWI model allows interview aids, such as non-AD dolls, to be used in interviews with children as long as the interviewers adhere to protocol guidelines (New Zealand [NZ] Police & Child Youth and Family [CYF], 2017; Westera et al., 2017). The SCWI guidelines state that interviewers should introduce the visual aid as late into the interview as possible. Suppose the aid is included, then the same verbal interviewing techniques should be used (New Zealand [NZ] Police & Child Youth and Family [CYF], 2017). In accordance with the guidelines, the non-AD doll might be used for several different reasons, such as clarifying body parts, body positioning, and gaining greater detail of the events. Our study mimicked a forensic interview as closely as possible by following a similar interview protocol, and introducing the non-AD dolls once the children's initial free narratives had been elicited. Afterwards, the non-AD dolls were introduced during cued recall and recognition phases to clarify body positioning.

Benefits and Risks of Using Non-AD Dolls

Studies on the use of non-AD dolls as a memory or communication aid to support children's event memory, have focused on their impact on what children report when asked to show what happened. However, these studies did not outline what particular type of information (e.g. body positioning, clarification of body parts, level of detail or breadth of reporting) dolls impacted in recall. We know of no studies that have examined whether they are useful in helping children to specifically remember and/or describe body positioning, despite interviewers reporting that they use them in this way (Hill, 2017). This is problematic because it means the current interviewing protocols, which allow for the use of non-AD dolls, have adopted practices that lack an evidence-base. Research findings regarding the impact of dolls on children's testimony have been inconsistent. Some research shows positive effects (e.g., report more information, Priestley & Pipe, 1997; Salmon, & Pipe, 2000), whereas others show negative effects (e.g., increasing inaccurate recall, Thierry et al., 2005; Bruck et al., 2000; Steward et al., 1996; Saywitz et al., 1991; Deloache & Marzolf, 1995), and others show no effects in laboratory (e.g., Salmon et al., 2012;) or field studies (Lamb et al., 1996; DeLoache et al., 1995). Forensic interviewers' consensus is that the benefits of using dolls likely outweighs the risks of compromising the reliability of children's testimony (Hlavka et al., Hill, 2017; 2010; Shamroy, 1987). However, literature states the opposite: instead, that dolls comprise the accuracy of children's recall, and thus provides too much risk to warrant being included in forensic interviews (Thierry et al., 2005; Bruck et al., 2000; Steward et al., 1996; Saywitz et al., 1991; Deloache & Marzolf, 1995). Whether they facilitate the recall and reporting of particular types of information (e,g., body positions) is unknown.

How Using Non-AD Dolls Might Help Children

This section highlights some of the challenges children face when recounting their experiences, and how non-AD dolls might help children talk about what happened to them.

Hoff (2013) highlighted that language development occurs throughout childhood, which includes understanding conversational rules, exchanges, and expectations (Berman, 2004). Forensic interviews differ from everyday conversations in terms of the level of detail needed, and because the child is the driver of the recall and reporting process (Lamb & Brown, 2006). Children who are still developing their understanding of spatial relations, and the language used to indicate body positioning (e.g., prepositions, spatial terms), might find describing such information difficult. Research with English-speaking children shows that spatial language development occurs from ages 2-6 years, yet mastery could take several years (Kuczaj & Maratsos, 1975; Johnston, 1984; Sowden & Blades, 1996). Moreover, the types of prepositions used in relation to spatial locations develop at different stages across childhood. For instance, the use of prepositions relating to the arrangement of objects (e.g., on and below) are acquired by children as young as 2-years-old (Clark, 1972). However, 'front/back' is not thought to emerge until 5 years of age. The use of 'left/right' and object location does not emerge until approximately 11 to 12 years old (Johnston & Slobin, 1979; Choi & Bowerman, 1991; Sinha et al., 1994). Thus, developing competency with spatial language might contribute to children struggling to describe their body positions in space and in relation to another person. Describing body positioning also requires the capacity to understand another person's perspective, which children might still be acquiring (Premack and Woodruff, 1978). Therefore, young children might provide limited or incomplete verbal reports of touch. Using non-AD dolls might help children overcome such difficulties by showing, rather than telling, about their own and others' bodies in space.

Some studies suggest that asking children to gesture while recounting an event might facilitate recall (Stevanoni & Salmon, 2005; So et al., 2012). Providing children with props to re-enact an event might also lead to the provision of information that was not reported verbally (Simcock & Hayne, 2002; Priestley & Pipe, 1997; and Salmon, & Pipe, 2000). Non-AD dolls

might therefore complement children's verbal recall, and allow for more complete retrieval and reporting of an event.

Finally, allowing children to show rather than tell what happened might also mitigate minimal reporting from children that are reluctant or embarrassed to talk about specific details of alleged abuse (Saywitz, Goodman, Nicholas, & Moan, 1991; Saywitz et al., 2007; Hershkowitz et al., 2007; Brown, 2011; Pipe & Salmon, 2008; Poole et al., 2011).

Using Non-AD Dolls Could be Problematic

Clearly, there might be benefits to using non-AD dolls to help children talk about body positioning in forensic interviewing. Nevertheless, there are also potential risks with using non-AD dolls in this way.

Theory of Mind (ToM) is a cognitive skill that refers to a person's ability to understand that their own emotions, beliefs, thoughts, actions, intentions, and desires, can differ from others (Premack and Woodruff, 1978). Part of embodied ToM is the development of *symbolic representation*, which is the concept of understanding that an object can be a representation of another object or person. For children to use a non-AD doll to effectively represent themselves and their experiences, they need to understand the dual representation that this requires – the non-AD doll acts as a representation of the child, whilst also having an identity as a doll (Zhang et al., 2019). Literature shows that basic concepts of ToM are typically developed in preschool years (3-5 years) (Flavell, 1999). However, others argue that it continues to develop throughout life (Moran, 2013; Devine, & Hughes, 2013; Dumontheil et al., 2010). Similarly, symbolic representation competency emerges at approximately age four, but mastery continues beyond the preschool years (Dick, Overton, & Kovacs, 2005). So, supposing a child confuses the purpose of using a doll (that is, to represent themselves), then they might interact with the doll as a plaything (its primary identity) and their actions might erroneously be mistaken as communicating an experience (Ceci & Bruck, 1995; Faller, 2005; Poole et al., 2011). For

instance, research conducted with potential sexual abuse victims found that children (3-12 years) who were given dolls reported more fantastic details and used them for play, compared to children who did not have the opportunity to use dolls (Thierry et al., 2005). Thierry's et al., (2005) research demonstrates how a child's lack of understanding of symbolic representation could impact child sexual abuse cases. Moreover, suppose children have acquired symbolic understanding and can appreciate the dual representation problem in isolation. In that case, children might still struggle to apply this in the context of a cognitively demanding task, such as recalling an event in detail (Lytle, 2012; Pool et al., 2011). For instance, during forensic interviews, children must recall and describe potentially traumatic experiences after possibly substantial delays.

Researchers have examined whether anatomical dolls (dolls with genitalia) assist children in reporting past events. They have found that their use might increase children's reporting of information, however, that also meant that the number of inaccurate details recalled will increase (Bruck et al., 2000; Deloache & Marzolf, 1995; Steward et al., 1996; Saywitz et al., 1991). Researchers have concluded that dolls should be discouraged in forensic interviewing, especially with children under 5 (Bruck et al., 2000; Deloache & Marzolf, 1995). Bruck et al., (2000), examined young children's (3–4 years) recall of a routine medical examination which included genital examinations for half of the children. They found that children were more inaccurate when reporting touch on dolls and their own bodies, when responding to questions regarding genital touching, compared to verbally interviewed children. Some studies have found that when children use anatomical dolls, they report equal or less information than children who verbally report events (Dickinson et al., 2005). Similarly, DeLoache et al., (1995) found that 3-5-year-old children reported the same number of details when not using and using dolls. Yet, the number of errors was greater when children used dolls compared to verbal interviews. However, other studies infer that the presence of dolls decreases

the amount of information the child reports (Santtila et al., 2004). Because these studies' findings were found using anatomical dolls, it is logical to assume a similar pattern of responsiveness would also occur with non-AD dolls. Whilst it might seem reasonable to expect that non-AD dolls might assist young children in communicating, the evidence suggests that they are in fact counter-productive – either having no effect on amount of information but increase errors, or they reducing the richness of children's responses. Although most of this literature focused on anatomical dolls, the concerns raised are likely equally relevant whether or not the doll has genitalia (representational issues). But the issue of exploring genitals is so novel (and this being misinterpreted as communication of experience) and so might be exclusive to anatomical dolls. Thus, we need to complement the anatomical doll research with non-AD doll research to determine whether they (non-AD dolls) might offer a safer alternative to supporting children's recall. There are limited studies that address this, but Salmon et al., (2012) examined whether non-AD dolls supported 5-7-year-old children to describe a recent past event. They found no significant difference between the amount of information and accuracy of the child's recount when using a non-AD doll, compared to children who only verbally reported their experiences. Results could be due to three reasons, which are not mutually exclusive. 1. Perhaps somewhat older children are less likely to include incorrect details when using a non-AD doll, 2. non-AD dolls are less problematic with somewhat older children because they have more developed cognitive and social skills, 3. perhaps non-AD dolls are not especially helpful.

Research Aims

This study examines whether young children can use non-AD dolls to communicate body positioning. This was explored by conducting an event that involved benign touch (in pairs) with 6–8-year-olds. This research was stripped of all the demands often present in child maltreatment cases (e.g. memory delay, experiencing trauma etc) to specifically examine

children's abilities to communicate using non-AD dolls. The effectiveness of interview types (non-AD doll vs verbal interview) was measured by the amount and accuracy of information reported. Despite the intuitive appeal to use body-positioning dolls in forensic practice, the literature to date does not inform a clear set of hypotheses. The lack of a clear consensus and contrasting findings regarding; amount and accuracy of the information, might be due to differences across studies in ages studies, types of dolls used, and interview methods. Whether findings from previous studies extend to understanding how non-AD dolls might influence children's recall and reporting of specific types of information (e.g., body positions and spatial terms) is likewise unclear.

Method

This study was granted ethical approval by the School of Psychology Human Ethics Committee, under delegated approval from the Victoria University of Wellington Human Ethics Committee application 0000027531.

Participants

Forty-nine children recruited from the Greater Wellington region's primary schools participated in this study. The children's ages ranged from 6.00-8.16 years ($M = 6.94$, $SD = 0.58$) with 29 being female, and 20 were males. Of the 49 interviews, 25 children were in the verbal condition, and 24 were in the non-AD doll condition. Parents consented for the children to be a part of the study. Each child provided verbal assent before each session of the research began.

Power Calculations And Statistics

Power estimates were completed using the statistical programme G*Power (Faul et al., 2007). It was estimated that 128 children total would be required, with 64 children per condition to give an 80% power at the 5% level of significance to detect a difference (see Appendix H).

However, due to the Coronavirus-19 Pandemic, recruitment was interrupted due to school closures and nationwide lockdowns.

Table 1

Demographic information

Demographics	Response Types	n
Languages spoken	English only	32
	Multiple Languages	15
Main language at home	English	41
	Arabic	1
	Chinese	2
	Māori	1
	Malayalam	1
	Marathi	1
	Tamil	2
Ethnicity	New Zealand European	31
	Māori	4
	Asian	9
	Danish	1
	Indian	4
	Middle eastern	1
	American	1
	Greek	1
	Samoan	1
	South African	1
	European	1

n = number of participants. Ethnicity frequencies sum to over the sample size since participants were able to indicate multiple ethnicities.

Procedure

Children took part in two sessions: 1) a game of Musical Statues and, 2) an interview about the game 30-minutes to an hour later.

Event

Musical Statues Game – Children participated in pairs. The Research Assistant (RA) invited the children to play a game of musical statues and gained verbal assent from both participants. Children were asked to fill a glass jar each with marbles while music was playing. When the music stopped, children were given five seconds to make a "statue" described by the RA, and freeze in position for a photograph. Children were told they would earn points for how

many marbles they put in the jar and how many statues they could correctly make and hold long enough for their photo to be taken.

Each statue was photographed to provide a record and was used to compare the accuracy of children's descriptions during the interviews. Each child was given a band to indicate their "colour", which corresponds to what action they did in the statue (e.g. "blue pretend to be an armchair and, purple pretend to read a book on the armchair"). After each statue was photographed, the music resumed, and children continued with the marble task.

During the game, children created eight different statues with their partner (see Appendix A & B). Statue positions were selected to mimic body positioning or contact that might occur during sexual abuse. The statues were created to elicit descriptions that would include prepositions such as "on top of" (e.g., piggyback ride) and "next to" (e.g., link your arms like a chain), because distinguishing between these prepositions might influence the severity of sentencing for alleged offenders (Stolzenberg & Lyon, 2017). The musical statues game lasted approximately 10-15 minutes. On completion of the Musical Statues game, children were given a small prize that ostensibly reflected how many points they earned (e.g., rubber or pencil). In reality, all children chose from the same prize box.

Interviews

Training - Two RAs were trained by an expert that also trains New Zealand Specialist Child Witness Interviewers (SCWI). Training consisted of attending three training sessions and extensive interview practice with each other and with the trainer's children (both parents and children consented). Afterwards, the RAs transcribed each other's mock interviews to promote consistency in the interviewing approach, and fidelity to the protocol.

Interview Structure - The interview was conducted following a 30-minute to 1-hour delay after the Musical Statues game. A different RA conducted the interview with each child in a private room at the participant's school. The interviews lasted approximately 25-30

minutes. Each interview was video- and audio-recorded so that all non-verbal and behavioural explanations were documented. Both interview scripts were the same regardless of the condition. The only differing factor between the verbal and dolls conditions was that in the dolls condition, the non-AD dolls were introduced during the 'cued recall' and 'recognition' phases of the interview. Further details are outlined below.

The interview was modelled on the National Institutes of Child Health and Human Development (NICHD) Investigative Interview Protocol (Lamb et al., 2018). At the start of the interview, children were given ground rules that they should use during the interview: 1) tell the truth, 2) tell the interviewer when they do not understand a question, 3) say "I don't know" when appropriate, and 4) correct the interviewer when they are wrong. To build rapport, the interviewer talked with the child about their interests and conducted a short practice interview about what the child did the day before.

Next, during the free recall phase, the interviewer in both conditions used open-invitation questions (e.g., "Tell me everything you can remember about the game Musical Statues") when asking the child to recall the Musical Statues game. Once the child's recall had been exhausted (e.g. "I don't know anymore" or they fail to provide new information). The interviewer then entered into the cued recall phase of the interview. In both conditions, the interviewer used cued invitations, formed using the child's words, to encourage further elaboration of information they had reported (e.g., "You mentioned you made a chain with your arms, tell me more about that"). However, in the dolls condition the cued recall phase began when the dolls were introduced. Children were encouraged to use the dolls when they provided elaboration on the information they originally reported (e.g., "You mentioned you made a chain with your arms, show and tell me more about that"). When clarifying children's responses, the interviewer in both conditions sometimes used closed "yes/no" and "wh-" questions and followed these with a return to an invitation-style of questioning.

Afterwards, all children were asked 16 recognition questions that included aspects that did occur (e.g., "Did you give your partner a bear hug?") and aspects that did not occur (e.g., "Did you make a triangle with your partner?") during the Musical Statues game. If the children responded "yes" to any of the recognition questions, they were then asked to elaborate by telling (verbal group), or showing and telling (dolls group), the interviewer what happened (e.g., "Show/Tell me what happened when you made a chain with your partner").

Lastly, the interviewer thanked the child and sent them back to class with a small gift (e.g., a pencil). The interviews were then transcribed, including descriptions of all non-verbal information.

Coding

Codes were given to all non-verbal and verbal responses to reflect their quality (correct, incorrect, and misremembered details) and relevance to the event. Two main domain codes were used; information for the General event (e.g., "we played musical statues", the partners name), and information about Body Positioning (e.g., "we did poses", "I gave my partner a bear hug"). Each pose also had an allocated code for when the child talked about that particular body positioning. Information provided about the game was cross-referenced with the RAs notes, and the Musical Statues Game script and photographs of the poses, to ensure correct or incorrect recall was identified appropriately (Appendix A & B).

Inter Rater-Reliability

The reliability of coding the transcripts was established between two RAs. The first RA coded 25 transcripts (51%). The second RA completed 49 transcripts (100%). The RAs trained until a minimum (80%) agreement was reached (10 transcripts were used to establish this). This level of agreement took approximately two months to reach. Then reliability coding with 25 (51%) transcripts was conducted, with 'almost perfect agreement' being found between the two coders ($\kappa = .822$, $p<.01$), when assigning all codes (Viera, & Garrett, 2005).

Results

Missing data

Several children did not complete all recognition questions during the memory interview due to responding with "I don't know", or because the interviewer did not administer the question (n= 11). Overall, the data set had 1.63% missing data. Exception-Maximization (EM) imputation of missing data was pursued since it can be effective in small samples (n= 17-50) with missingness of 10% (Rubin et al., 2007; Niu et al., 2005).

The most common missing value pattern was for participants to have no missing data, followed by no recognition question for the mirror pose. This pattern suggests that the interview script had been incorrectly printed or interviewers forgot to ask the question out of fatigue. A Missing Values Analysis determined that Little's (1988) test of Missing Completely at Random (MCAR) was not significant, $\chi2 = 82.45$, (118, $p = 1.00$). When non-significant, this test suggests that the missing data is MCAR, which means there are no biases as to why individuals did not complete specific questions. Due to MCAR being met, Exception-Maximization (EM) was conducted to impute the missing data in SPSS statistics software. The parameters of the data are estimated by EM, and then the missing values are estimated from these parameters (Little & Rubin, 2014). The imputation does not affect the means, variances and covariances (Little & Rubin, 2014).

Amount of Overall Information

The majority of the information children recalled was general information about the game (e.g., playing with the marbles, and their coloured wrist bands) rather than body position-specific information. For the comparisons made below, only free recall and cued recall are compared, with recognition phases being analysed separately. This is because free and cued recall are both recall-orientated phases, unlike recognition questions that commonly provide

brief responses (e.g. yes/no). Moreover, the recognition phase occurs at the very end of the interview, meaning that new information was less likely to be included.

A mixed-methods repeated measures ANOVA with a Greenhouse-Geisser correction determined that the amount of overall information provided by the children was statistically significantly different between interview phases of free recall and cued recall ($F(1) = 31.39$, $p < .05$, $\eta p^2 = .40$. Post hoc tests using Bonferroni correction revealed that regardless of interview type, the free recall phase ($M = 18.36$, $SD = 1.09$), elicited the most information from children compared to cued recall ($M = 10.27$, $SD = .83$, $p < .05$). There was no significant interaction between interview type and phase of interview $F(1,47) = .24$, $p = 0.62$, $\eta p^2 = .005$. This indicates that the type of interview conducted did not influence the amount of information recalled by the child at different phases of the interview. Therefore, we conclude that the earlier phases of interviews elicit a statistically significant amount more information from a child. This is likely to be because children have a greater opportunity to provide information at the earlier phases rather than at later stages of the interview.

An independent samples t-test was conducted to compare the amount of information provided by the children in the recognition phases, and was not statistically significantly different between interview types ($t(47) = .91$, $p = .37$). There was no significant effect for interview type, $t(47) = .70$, $p = .49$, despite the verbal group ($M = 7.71$, $SD = 4.37$) providing more information than the dolls group ($M = 6.76$, $SD = 2.82$). Again, it appears that the type of interview conducted with the child did not influence the amount of information that children provided.

Amount of Body Positioning information

The majority of children only spontaneously recalled half of the body positions completed in the game. However, when prompted with recognition questions, most children correctly recalled all body positions (see Table 2). The frequency of the number of body

positions recalled in the free recall, and cued recall phases ranged between 1-6 poses being

recalled, and for both interview types, with the modal amount of body positions recalled was 4

(see Table 2 for reference). An independent samples t-test was run on the data with a 95%

confidence interval (CI) to measure the mean difference between the number of poses recalled

by those interviewed verbally or with non-AD dolls. The overall difference in the number of

poses recalled by children from either interview group was not significantly different (verbal:

3.00, dolls: 3.40), $t(47) = -1.18$, $p = 0.243$ [CI = -1.08 - 0.28].

Table 2

Frequency of body positions recalled at each phase for each interview type

Interview Phase	Interview Type	M	SD	Mode	Min	Max
Free recall	Verbal	1.8	1.18	2	0	4
	Dolls	2.6	1.32	2	0	6
	Overall	2.2	1.31	2	0	6
Cued recall	Verbal	2.46	1.5	4	0	5
	Dolls	3.00	1.19	4	0	5
	Overall	2.73	1.37	4	0	5
Recognition	Verbal	7.29	0.95	8	5	8
	Dolls	7.10	0.93	8	5	8
	Overall	7.20	0.94	8	5	8

Overall = verbal and dolls interviews, M = mean, SD = Standard deviation, Min = minimum, Max = maximum

Following on, the amount of information specifically reported in terms of body

positioning was examined. A mixed-methods repeated measures ANOVA with a Greenhouse-

Geisser correction determined that the amount of information provided by the children about

body positioning was not statistically significantly different between interview phases of free

recall ($M= 5.83$, $SD = .47$) and cued recall ($M = 6.44$, $SD = .63$) ($F(1) = 0.55$, $p = 0.46$, $\eta p^2 =$

.012). Post hoc tests using Bonferroni correction revealed that there was no significant

interaction between interview type and phase of interview $F(1,47) = .004$, $p = .95$, $\eta p^2 < .01$.

This indicates that interview types did not have effects on the amount of information provided by the child in different phases of the interview.

An independent samples t-test was conducted to compare the amount of body positioning information provided by the children in the recognition phase. There was no significant effect for interview type, $t(47) = 0.68$, $p = .49$, despite the verbal group ($M = 7.46$, $SD = 4.11$) providing more information than the dolls group ($M = 6.76$, $SD = 2.82$).

Overall, these results show that children do not provide statistically different amounts of body position-specific information regardless of the interview type.

Accuracy of Body Positioning Information

Accuracy Transformation

The accuracy scores for each child was calculated by the number of correct pieces of information divided by the sum of correct and incorrect details recalled. This then provided each child with a proportional score from 0 to 1. Therefore, an Arcsine transformation was conducted on the data (Fields et al., 2012). However, for readers' ease, the means and standard deviations reported are from the raw data, so it is more interpretable and provides a better reflection of the amount of details recalled.

Overall Accuracy

During recall across all phases of the interview, children appeared to be generally accurate in their recollection of events; recalling greater correct information than incorrect. A mixed-methods repeated measures ANOVA with a Greenhouse-Geisser correction determined that the amount of information provided by the children was statistically significantly different between free recall and cued recall phases ($F(47) = 18.25$, $p < .05$, $\eta p^2 = .28$). Post hoc tests using Bonferroni correction revealed that free recall phase elicited more amounts of accurate information from children ($M = .95$, $SD = .09$), which was statistically significantly different from cued recall ($M = .83$, $SD = .20$). There was no significant interaction between interview

type and phase of interview $F(1,47) = 0.24$, $p = .64$, $\eta p^2 = .005$. This indicates that the type of interview conducted did not affect the accuracy of children's recall at different phases of the interview. The results show that free recall phase of interviews elicits a statistically significant greater amount of accurate information from a child. This is likely to be because children had a greater opportunity to spontaneously provide more detail since it was the first-time children were asked about the event. Nevertheless, the type of interview (verbal or dolls), did not elicit a more accurate recount of events.

An independent sample t-test was conducted to compare the accuracy of information provided by the children in the recognition phase. There was no significant effect found for interview type, $t(47) = -0.09$, $p = .93$, since the verbal group ($M = .87$, $SD = .21$) and dolls group were similarly accurate ($M = .87$, $SD = .17$).

Body Position Accuracy

During spontaneous recall of body positions, children were typically accurate in the body positioning details reported. A mixed-methods repeated measures ANOVA with a Greenhouse-Geisser correction determined that the children's accuracy was statistically significantly different between interview phases $F(1) = 33.26$, $p < .05$, $\eta p^2 = .43$). Post hoc tests using Bonferroni correction revealed that the free recall phase elicited the most accurate information from children ($M = 1.47$, $SD = .26$), which was statistically significantly different from cued recall ($M = 1.09$, $SD = .51$). This shows that the earlier phases of interviews elicited a statistically significant greater amount of accurate body positioning information from a child. This is likely to be because children had a greater opportunity to provide more detail in earlier phases of the interview, allowing more opportunity to include accurate information. There was no significant interaction between interview type and phase of interview $F(1, 45) = 0.41$, $p = .06$, $\eta p^2 = .08$. This indicates that interview types did not affect the accuracy of children's recall of body positions in different interview phases.

An independent samples t-test was conducted to compare the accuracy of body positioning information provided by the children in the recognition phase. There was no statistically significant effect for interview type, $t(47) = -0.10$, $p = .92$, despite the verbal group ($M = 7.2$, $SD = 3.95$) appearing to have slightly more accurate information than the dolls group ($M = 6.24$, $SD = 2.76$).

Discussion

This study explored the impact of using non-AD dolls when describing body positioning, to determine whether children can use them to communicate their experiences effectively. The amount and accuracy of the information that children reported were used to answer this research question.

A significant finding of this research was that the use of non-AD dolls did not influence the amount of general or body positioning details reported, compared to the verbal interviews. This finding is inconsistent with most previous literature (Simcock & Hayne, 2002; Stevanoni & Salmon, 2005; Pipe & Salmon, 2008; Poole et al., 2011), which found visual aids are likely to increase the amount of information that children recall. However, this current study's findings are consistent with Salmon et al. (2012). They also found that dolls did not elicit a greater amount of information than verbal reports. Salmon et al. (2012) also used best-practice interview standards (only used dolls for elaboration and clarification of content), unlike the other studies which commonly used dolls to produce information. Therefore, the inconsistency with other literature might be because the current research used gold-standard interview techniques. Because these techniques are likely to maximise children's recall, this might mean that there was no scope for non-AD dolls to enhance children's reporting (Lamb & Brown, 2006; Sternberg et al., 2001). Literature has demonstrated that even very young children can report large amounts of information in response to open-ended questions (Lamb & Brown, 2006). Since no significant difference was found in terms of the amount of information

reported, this might indicate that when children are interviewed appropriately, non-AD dolls' need diminishes (Salmon et al., 2012). Like Salmon et al. (2012), the current research found that non-AD dolls were not heavily relied upon by children. We know this because most information (general and body positioning specific) was reported during the interviews' free recall phases before non-AD dolls were introduced, and open-ended follow-up questions had occurred.

Moreover, in the current study, there was little delay between the event and interview (30 minutes to an hour), unlike other studies where delays spanned several days or months (Simcock & Hayne, 2002; Stevanoni & Salmon, 2005; Pipe & Salmon, 2008; Poole et al., 2011). Since the children in this study had hardly any memory load, this might explain why the use of non-AD dolls did not affect recall. However, another noteworthy finding of the current study was that, even after a short delay, children did not spontaneously report all information they could recall about the event. All children omitted a large portion of the body positions (commonly 50%) from the event during recall-oriented phases of the interview (free and cued recall) regardless of interview type. Large omissions of body positions recalled shows that a child-led interview approach might elicit incomplete reports of what has occurred. During the recognition phase, most children reported all body positions and did so accurately. This finding demonstrates that the children had encoded the memory and could accurately respond to forced yes/no questions. This shows that children can use language that would indicate prepositional positioning and spatial awareness relevant in a forensic interview when prompted. Yet, clearly, children do not report all known and available information about an event even when interviewed in best-practice ways. Accordingly, the current research demonstrates that more specific questioning is an important investigative tool. This was similar to research conducted by Stolzenberg and Lyon (2017) who found that, in child sexual abuse interviews, children often did not spontaneously report specific location information. Instead, interviewer "wh"

prompts (e.g., "where were your clothes?") produced the most discussion about locations. Nevertheless, most child eyewitness protocols caution against the use of recognition questioning for good reason. Such questions elicit less information, and greater errors and inconsistencies, in children's reporting (Cederborg et al., 2000; Korkman et al., 2006; Lamb, & Fauchier, 2001; Waterman et al., 2000) compared to open-ended questioning. Also, younger children might provide more details when questioned using a more directive style, but this can compromise accuracy (Lamb et al., 2008). However, the current research study used recognition questioning consistent with (NICHD) best-practice interview techniques. Recognition questions were paired with open-ended questions to elicit further information. Even after questioning that gained minimal responding (yes/no), the child's report became more elaborate when followed by an open-ended question. Children were highly accurate in their responding to both the recognition and elaboration portion of questions. This finding demonstrates that even though recognition questions are not ideal in interviewing, they can be useful when interviewers need to discuss particular aspects of an event. So, at least in this research context, children were good at rejecting leading questions about body positioning with little recall delay.

It was unclear how using non-AD dolls would impact the accuracy of a child's reporting. The present study found that non-AD dolls' use did not significantly compromise the accuracy of children's recall. This finding is inconsistent with some studies (Bruck et al., 2000; Lytle, 2012; Saywitz et al., 1991; Steward et al., 1996) but consistent with Salmon et al. (2012). As mentioned prior, using best-practice interview techniques would likely account for this finding, because the interview techniques used are to maximise the accuracy of reporting and amount (Brown & Lamb, 2015; Brown et al., 2013). It is also noteworthy that both studies that showed no impact on accuracy used non-AD dolls rather than AD dolls. Again, similar to Salmon et al. (2012) children remained accurate in their recall when questioning became more directive (e.g.

recognition questions). A reason for this finding might be due to one of two things, the interviewing protocol used, and/or when the non-AD doll was introduced. Children's use of the non-AD doll's in this study was only to obtain further details or clarifying body positioning information, rather than eliciting new information like the studies that found that dolls increased inaccuracies.

It appears that 6-8-year-old children can effectively represent themselves and their experiences when using non-AD dolls. All children who used the non-AD dolls could correctly represent their own and a partner's body positioning with the dolls more than once during the interview. The children's capability indicates that 6-8-year-old children have developed enough ToM to understand symbolic and dual representation and understand that the non-AD dolls could represent themselves and others. It appears that these children could understand these aspects of representation and could effectively communicate using dolls in conjunction with cognitive demands such as recalling and describing an experience. This finding is consistent with Flavell (1999) and Dick et al. (2005). They found that basic concepts of ToM and symbolic representation are present during preschool years (5 years and below). Since ToM mastery increases with age development, it is likely that older children are also capable of communicating their body positioning using non-AD dolls.

A key limitation of this study is that the sample was sustainably smaller than anticipated meaning that the study failed to meet statistical power. Thus, it is recommended that caution is taken when interpreting significant and non-significant effects due to the Coronavirus-19 pandemic ceasing data collection and leading to a restricted sample size. Instead, this study can be viewed as a preliminary study on non-AD dolls' effects on children's recall of body positions. It is suggested that this research is replicated with a larger sample size to make conclusive claims about the effects of non-AD dolls on children's reporting for forensic interviews. Additionally, Hill (2017) and Wolfman et al., (2018) demonstrated that non-AD dolls are not

always appropriately implemented in the field. They found that non-AD dolls might be introduced at early in child forensic interviews. It is unclear what impact this might have on children's accounts. Results from this research suggests that 6-8-year old's are capable of communicating using non-AD dolls, meaning that in forensic interviews, children should be able to use a non-AD doll appropriately to communicate their own and others' body positioning. However, it is unclear whether younger children would be similarly capable. Because New Zealand interviewing protocols do not provide restrictions on ages of children using the non-AD dolls, it would be beneficial to examine whether younger children can also use them to communicate body positioning. Therefore, it is recommended that future research replicates this study but with children under the age of 6.

This study was deliberately stripped of all the demands that most forensic interviews include: delays in recall, emotional experiences, socially unsanctioned experiences (can often be recurrent), highly weighted outcomes, and suggestive questioning styles. We stripped the possible demands to provide the best opportunity to test if non-AD dolls are effective communication tools in general. Since this study was produced as preliminary research, the conclusions drawn are limited. They might not be an accurate reflection of how children will use non-AD dolls to report body positioning during forensic interviewing. Therefore, it is recommended that future studies expand on this research by making it more generalisable, like providing events that are more indicative what a child would experience. For instance, increasing the cognitive complexity (delay in the recall, significant outcomes attached, and multiple occurrences) and including emotionally salient experiences (distressing event). Moreover, a field study that explores legitimate child forensic interviews of child sexual abuse that has used non-AD dolls would be useful to examine. A field study would help to determine the genuine impact that non-AD dolls have on body positioning reporting.

Overall, when using interview protocols consistent with evidence-based practices, it appears that children can use dolls to communicate their body positioning effectively. However, neither the amount of general or body positioning information reported differed from verbal interviewing. Additionally, non-AD dolls did not comprise the accuracy of children's reports. Based on this study, it appears that non-AD dolls are a neutral interview aid. When deciding if a visual aid should be utilised in child forensic interviewing the benefits and risks should be examined. Although there appeared to be no risks in using non-AD dolls, there also appears to be no benefit compared to the gold standard verbal interview techniques. These findings are supported by Salmon et al. (2012) who made similar conclusions. Thus, it appears that using non-AD dolls might be redundant in child forensic interviewing since it does not provide any cost or benefit. Due to this, police and other agencies (that interview children about maltreatment) might be recommended that non-AD dolls are not used as an interview aid in future investigations.

Study 2: Jury Study

Introduction

Due to the inherent secrecy of child sexual abuse, cases often lack corroborating witnesses and physical evidence, meaning that jurors make decisions predominately based on children's testimony (Bottoms et al., 2007). So far, we have focused solely on whether children can appropriately use non-AD dolls to demonstrate body positioning during forensic interviews. But it is also essential to consider how children are perceived by jurors when non-AD dolls are used in interviews. Jurors' perceptions of children's testimony can influence the verdict of a trial. Suppose there are incongruencies between jurors' beliefs about children's abilities to demonstrate body positioning and children's actual abilities. In that case, expert evidence might be needed to address this. Moreover, if non-AD dolls' presence influences jurors' perceptions about a child's credibility, then forensic interviewers might need to consider this when deciding whether using one is warranted.

Children's eyewitness testimony research shows that jurors are influenced by several things, such as individual characteristics (e.g., juror beliefs, juror gender, prejudices) (Bottoms et al., 2014; Bederian-Gardner & Goldfarb, 2014), as well as case characteristics (e.g., intrafamilial abuse, age of complainants) (Devine, & Caughlin, 2014; Bottoms et al., 2007). We know less about whether jurors are sensitive to the impact of interviewing techniques on what children report, and whether they can identify appropriate versus problematic practice (Johnson, & Shelley, 2014). A small amount of literature has examined the effects of anatomical dolls and human figure drawings on children's credibility and guilting ratings (Thomas, 2016; Tessier & Krackow, 2013 as cited in DiSciullo, 2018). Yet, to our knowledge, no studies have examined the specific uses (e.g., body positioning) of non-AD dolls and how they might influence jurors' appraisals of children's evidence.

Jurors Knowledge About Interview Techniques

Some studies have examined laypersons' knowledge about interview factors that affect children's testimony (Quas et al., 2005; McAuliff & Kovera, 2007). It appears that jurors' beliefs about children's use of dolls during testimony are not consistent with empirical evidence. Quas et al. (2005) compared jurors' beliefs with research findings of children's testimony. They found that most jurors' beliefs about children's ability to use anatomically detailed dolls were incorrect. For instance, fewer than 30% of participants correctly identified that using anatomically-detailed dolls to demonstrate events might lead children to give false testimonies of sexual abuse. Yet, researchers have not examined jurors' perception of specific uses of non-AD dolls, so jurors' beliefs about this remains unknown.

Additionally, McAuliff and Kovera (2007) examined the differences in laypersons and experts' knowledge about witness suggestibility. They found that laypeople, compared to experts, had little knowledge about the things (witness participation in the event, detail centrality, and prestige of the witness) that increased suggestibility but they also underestimated suggestibility differences between age groups. Laypeople were aware of their lack of knowledge and rated themselves unfamiliar with the content and thought expert witnesses would be helpful. Ultimately, it appears that laypeople, such as mock jurors, have a lack of knowledge about child interviewing techniques. Laypersons showed an inability to identify, or a tendency to overestimate, problems in forensic interviewing techniques (McAuliff & Kovera, 2007). Due to mock jurors having inconsistent views with the literature, it is important to understand their beliefs about children's abilities to communicate body positioning using non-AD dolls. This study will address this gap in the literature, since children's abilities have been comprehensively researched, but jurors' perceptions of children's abilities have not.

Jurors Understanding of Children's' Accuracy

It has been commonly found that even when accuracy is controlled (Leippe et al., 1992) younger children in child sexual assault cases are viewed as being less accurate than adults (Goodman et al., 1984; Goodman, et al., 1987; Newcombe & Bransgrove, 2007; Pozzulo & Dempsey, 2009). Research suggests that mock jurors' decisions about children's accuracy can also be influenced by a child's confidence when reporting the abuse (Leippe et al., 1992; Goodman et al., 1998, Goodman et al., 1998; Wells, Turtle, & Luus, 1989). It is important to note that literature also shows that interviewing techniques can profoundly affect the accuracy and amount of information a child recounts (Brown et al., 2013; Lamb et al., 2007). However, limited research has addressed jurors' awareness of these impacts, and whether their assessments of children's credibility are influenced by how they were interviewed. Moreover, laypeople appear to lack the ability to determine what child interviewing techniques are problematic and could lead to an inaccurate testimony (Buck et al., 2011). It has been shown that dolls can influence the amount, and accuracy, of children's reporting (Priestley & Pipe, 1997; Salmon, & Pipe, 2000; Thierry et al., 2005; Bruck et al., 2000; Steward et al., 1996; Saywitz et al., 1991; Deloache & Marzolf, 1995). Yet, to our knowledge, no studies have examined jurors' perceptions of these two things with regards to how children might communicate information about body positioning through demonstrations using dolls. Thus, the current study will examine jurors' beliefs about the amount and accuracy of information acquired when children use a non-AD doll during interviewing.

The Impacts of Interview Techniques on Children's Perceived Credibility

There are mixed findings with regards to jurors' sensitivity to interview strategies for child sexual abuse cases. Fisher et al. (1999) examined whether college students' perceptions of children's credibility was influenced by the type of interview they received. Children aged seven years were interviewed about a game of 'Simon Says' using a Standard Police Interview

or a Cognitive Interview (CI). The CI and Standard Police Interview were the same in terms of question types and interview structure (rapport building, a narrative account of the game and then specific probing questions), except the children interviewed with the CI. They were first told to close their eyes and recreate the room. If children could not verbalise actions, they were also encouraged to demonstrate them. They found that children were not perceived differently according to the type of interview they received. However, the CI interviewer was thought to be less manipulative than the standard police interviewer. This demonstrates that jurors might not be sensitive to interview techniques used.

Castelli et al. (2005) explored the impacts of three levels of leading interviewing styles (highly, moderate, and less leading) on jurors' perceptions of children's (4-year-olds and 7-year-olds) credibility and reliability. They also examined the impact of the defendant and complainants relationship (familial or not) had on credibility and conviction rates. When interviews were highly leading, jurors viewed children as less credible, reliable, and they were less likely to convict, compared to when interviewed with a moderate or less leading interview technique. Age had no effect in their first study; however, when they introduced relationship type (incest), jurors were more likely to convict when 4-year-olds were interviewed with a less leading style. Another study examined interviewing style (leading vs non-leading), age of the complainant (5, 10 and 15-year-olds) and communication style (powerless: hesitation and no eye contact; vs powerful: confident and eye contact) (Schmidt & Brigham, 1996). Schmidt & Brigham (1996) found that a leading questioning style affected the defendant's perceived believability (less believable), but did not affect perceptions of the witnesses, or the juror's nor guilty verdicts.

A small number of studies have explored the impact of anatomical dolls' inclusion during interviews on jurors perceptions. Tessier & Krackow (2013, as cited in DiSciullo, 2018) examined mock jurors' beliefs about children's credibility, and the defendant's guilt, when using

anatomical dolls in child sexual abuse cases. Mock jurors were given a case vignette, and presented one of five conditions: doll and not aware of research findings about dolls, dolls and research findings, cognitive interview-revised (verbal) and research findings, cognitive interview-revised (verbal) research no findings, and a control group (no specified interview technique). Children who used anatomical dolls were viewed as more credible (when jurors were not aware of research findings) than when interviewed with no specified technique. However, other studies have found no effects (Thomas, 2016). Thomas (2016), examined the influence of anatomical dolls and human figure drawings on jurors perceptions of the child complainant, and guilt of child (15-year-old) vs adult (32-year-old) perpetrators of sexual abuse. Similarly, jurors were presented with cases to read. These cases were the same except for defendant age and type of interview technique; no interview technique stated, anatomical dolls, human figure drawings or both. Overall, they found that the interview conditions did not differ in the child's perceived credibility or guilty verdict. Instead, jurors commonly thought the defendants to be guilty and that the children were credible.

On the whole, it appears that there are mixed findings about the effects dolls have on jurors beliefs about complainants. Yet, no study has explored the specific use of non-AD dolls for body positioning. To build on the literature about jurors beliefs about dolls, the current research study will explore mock jurors' perceptions of child competency and suggestibility after witnessing a child use a non-AD doll to communicate body positioning. This will extend our knowledge of non-AD dolls and their use, and enable us to compare research findings with jurors' perceptions.

The Impact that Dolls have on Verdicts

Interestingly, Kovera et al., (1994) found that mock jurors were more likely to convict when the child had used an anatomically detailed doll in their testimony. Kovera et al., (1994) explored different types of evidence; anatomical dolls, syndromal (literature about typical

emotional and behavioural responses) and witness credibility, and their influence on verdicts with the presence, or absence, of expert testimony. The expert witness was a clinical psychologist who supported the use of each evidence type. They also found that information from expert witnesses about dolls and witness credibility was more important to jurors than syndromal evidence. These findings might also hold true for non-AD dolls, since they are similar modes of communication. Buck et al. (2011) researched the impact of expert testimony on mock jurors when distinguishing between good- and poor-quality child forensic interviews. When expert witnesses were not included, the researchers found that there was no consideration about the interview quality when reaching a verdict. Yet, jurors were more likely to give a guilty verdict for good quality rather than poor interviews when expert testimony was given. This research indicates that expert testimony about interviewing techniques might aid mock jurors in decision-making about child eyewitness reliability and decision-making about verdicts. Therefore, we need to know if jurors are particularly persuaded by a child using non-AD dolls to communicate so we can develop an evidence base to inform whether jurors expectations are accurate or not. Nevertheless, if jurors find the testimony compelling, and if we see that non-AD dolls help, it is not a problem. Only if the findings are mismatched would expert witnesses be required.

Research Aims

This study examined jurors' beliefs about children's ability to use dolls when recalling a past event. The online survey focused on jurors' beliefs about whether using dolls in interviews with children would be helpful or harmful to the amount, and reliability, of the information that children report. In addition, participants rated the credibility of a child interviewed either with or without a doll when describing the game from Study 1.

Hypotheses

Given other inaccuracies in juror beliefs, and the assumptions that initially drove the use of dolls in interviews (e.g., that they would help overcome developmental and motivational limitations), we anticipate that jurors might expect dolls to assist children, that is; increase information, accuracy, and be a useful tool. It is also hypothesised that mock jurors will perceive children as more credible when using non-AD dolls to describe body positioning (Kovera et al., (1994).

Method

This study was granted ethical approval by the School of Psychology Human Ethics Committee, under delegated approval from the Victoria University of Wellington Human Ethics Committee application 0000028564.

Research Design

The survey employed a One-Way Repeated Measures ANOVA and General Linear Univariate Model to examine the differences between age groups' beliefs, and moderating effects of interview type on jurors' perceptions of children.

Recruitment

Participants were recruited using the internet pool Prolific, an online platform that recruits participants. It is an effective method for collecting large amounts of data over short timeframes (Palan, & Schitter, 2018). Researchers provide eligibility criteria for potential participants, which is then advertised to individuals who meet these demographics. The participants then choose if they would like to participate in the study. Once the study is completed, participants then receive payment for their involvement.

Participants

Participants were recruited from the Prolific platform, and 185 individuals responded to the advertised survey (see tables X and X). Participants who completed the survey were compensated for their time with $5USD . This payment is roughly equivalent to the national

living wage in the UK, and in NZ and a "good" rate for compensation on Prolific, since the survey took roughly 20-30 minutes to complete.

Power calculations and statistics

Power estimates were completed using the statistical programme G*Power (Faul et al., 2007; see Appendix H). It was estimated that 186 participants would be required, with 93 participants per condition to give a 99.8% power at the 5% level of significance to detect a difference.

Table 3

Sample Characteristics

Characteristics	($n = 186$)
M age (SD)	27.46 (8.11)
Gender (n)	
Male	114
Female	71
Other	0
English as First Language (%)	
Yes	58.10
No	41.90
Have Own children (%)	
Yes	25.30
No	74.70

Table 4

Frequency of contact with children (%)

Age group (years)	Frequently (daily/weekly)	Occasionally (monthly yearly)	Hardly ever or never
Pre-schooler (Under 4)	17.70	40.30	40.90
Early Childhood (5-8)	18.80	43.50	37.10
Middle Childhood (9-12)	18.80	41.90	38.70
Adolescent (13-18)	10.80	21.00	67.70

Eligibility.

The prolific platform had two conditions for people to access and complete the survey: fluency in English and over 18 years of age.

Materials and Procedure

Survey Layout.

Consent was automatically implied by participants continuing to answer the survey questions after selecting the advertisement on Prolific. The Qualtrics research platform was used to administer the survey (Appendix E). The survey consisted of: the questions about participants' views on the children's ability to use dolls (including instructions on how to answer the questions), one interview video (verbal or doll interview), video rating questions, and the research debrief message (Appendix F) which linked participants to Prolific to claim their money. Half of the participants were randomly assigned to one of the video conditions. Participants were also asked to rate their confidence for every belief-related question.

Ability Questions

Each eligible participant responded to 11 questions regarding children's ability to use dolls, referencing three age groups of children: preschoolers (5 years and under), early childhood (6-8 years) and middle childhood (9-11years). Participants answered the statements on a scale of one to seven, with eight being an "I don't know" option (1 = strongly agree, and 7 = strongly disagree, 8 = I don't know). They were then asked to rate their confidence in each of their responses (0% = Not at all Confident, 100% = Extremely Confident). The following dimensions were explored: usefulness of dolls, amount of information children report, and riskiness or helpfulness of using dolls (Appendix E).

Questions relating to the usefulness of dolls, amount of information children report, and riskiness or helpfulness of using dolls, were formulated specifically for this research. These rating questions were developed for the survey to assess mock jurors beliefs about children's abilities to use non-AD dolls in interviews.

Figure 1.

Screenshot from the survey showing children's ability to use dolls on an 8-point Likert Scale.

Children able to use dolls to react their own experiences.

	Strongly Agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree	I don't know
Preschooler (5 years and under)	○	○	○	○	○	○	○	○
Early childhood (6-8 years)	○	○	○	○	○	○	○	○
Middle childhood (9-11 years)	○	○	○	○	○	○	○	○

Figure 2.

Screenshot showing survey confidence rating question on a 100 point sliding rating scale.

How confident are you with your answers to the above statements (for each child age group)?

Not at all confident								Extremely confident	
0	10	20	30	40	50	60	70	80	90	100

Pre-schoolers (5 years and under)

Videos

There were two videos – the videos' scripts were developed from children's statements given during interviews about a game that children played in pairs, as part of a different study (ethics: 0000027531). Both the child and his parents permitted for him to feature in the video, and the footage was presented from behind him so that his face did not feature. However, his interactions with the dolls were clearly visible.

The videos varied only with respect to whether they included dolls in the interview; the verbal exchanges between the interviewer and child were identical. The videos lasted 4:12 (verbal) and 4:25 (dolls) minutes.

Video Competency Questions.

Witness credibility questions assessed constructs of children's credibility. These dimensions were memory, capability, accuracy, confidence, honesty, talkativeness, believability, suggestibility, informativeness, coherency, and reliability. For each question, they were also asked to rate their confidence in their answering each question. The witness credibility questions were always presented in the same order. Participants from each group rated the child on a percentage scale of 0-100 where 0% was labelled 'not at all', and 100% was labelled 'extremely' (e.g., 0% = Not at all honest, 100% = Extremely honest). The video credibility rating questions were adapted from Pierce (2020) and Brown and Lewis (2013).

Attention Checks

Two attention checks were included in the survey to improve the data's quality (Abbey, & Meloy, 2017). These attention checks told participants what response they should give (e.g., "click strongly agree"). To be excluded from the research a participant was required to fail both attention checks – no participants did, thus none were excluded for this reason. However the recorded time to complete the questionnaires was recorded in Prolific. If a participant completed the questionnaire in a suspiciously short amount of time (e.g less than 5 minutes which would only just cover the video), then they were excluded from the research. Only one participant was removed from the data set due to this rationale.

Coding of Responses

Coding of the scale questions was completed within the Qualtrics survey platform. Scores were then exported from Qualtrics into SPSS. The data was collated to show individual

participants' belief ratings about children's abilities to use non-AD dolls, and their ratings of the video interview presented in the survey.

Results

Helpfulness of Dolls

It was clear that when examining the participant's opinions per age group about whether non-AD dolls were helpful or unhelpful. That the majority of individuals thought regardless of age, dolls would be a helpful memory aid. Jurors thought non-AD dolls would help children who are shy to communicate, enable talking about a shameful event, help clarify body parts, and help if children have difficulties with vocabulary or prepositions. However, opinions on the unhelpfulness of dolls varied greatly and were not as widely agreed upon.

Figure 3.

Frequency of juror's beliefs about the helpfulness/unhelpfulness of non-AD dolls

Frequency of juror's beliefs about the helpfulness/unhelpfulness of non-AD dolls
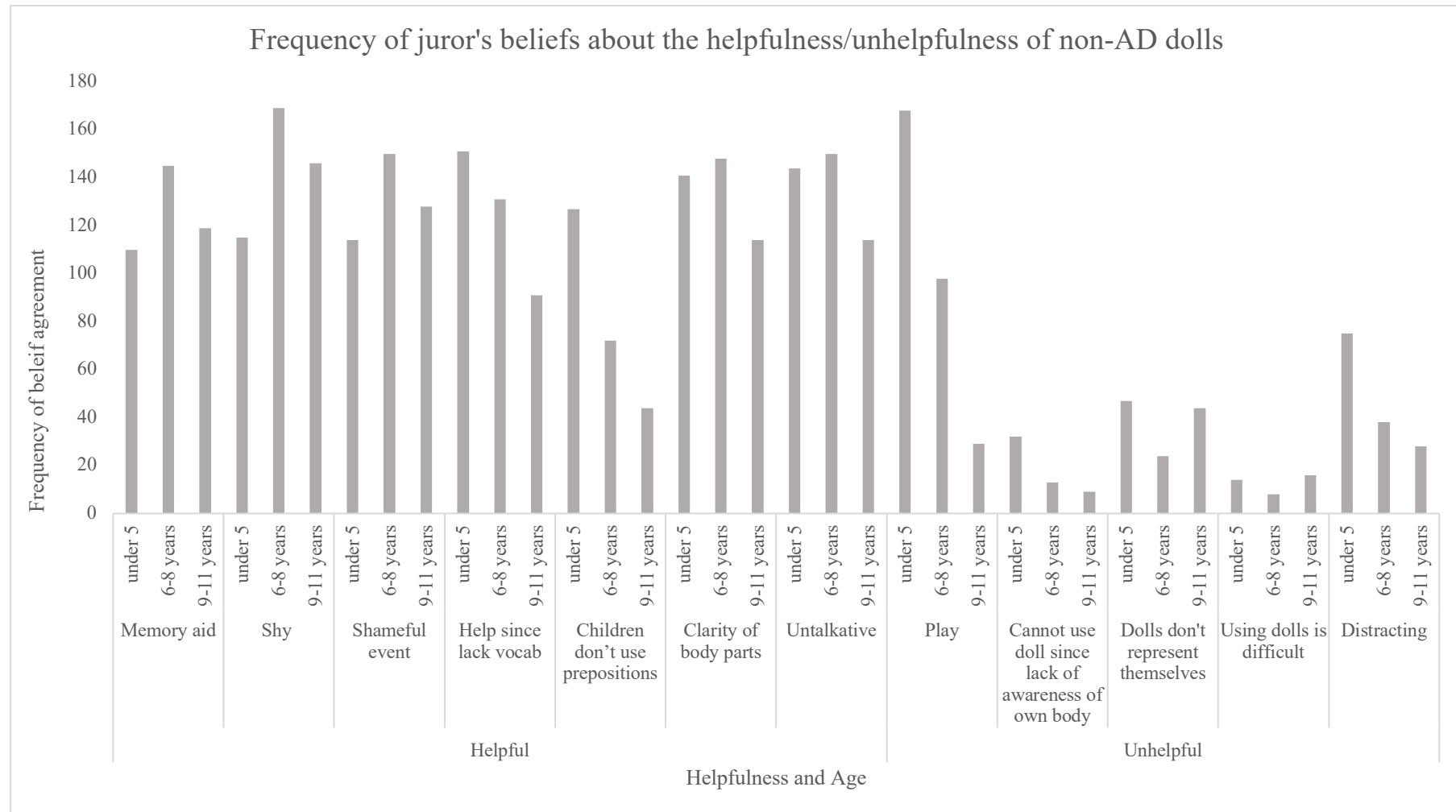
Jurors perceptions of children's abilities to use dolls

The frequency of people rating children's abilities showed that "I don't know" (Likert ratings of 8) was used as a response by several people regardless of group and question asked (see figure 4). These responses represented a small minority of individuals responding. Because for those items, individuals could not provide a confirmatory response. Only the individuals who responded expressing an opinion to items were included in the further analysis (Likert ratings of 1-7).

Figure 4.

Frequency of jurors Likert ratings regarding children's use of non-AD dolls. Likert Scale Ratings: 1 = Strongly Agree - 7 = Strongly Disagree, 8 = I don't know
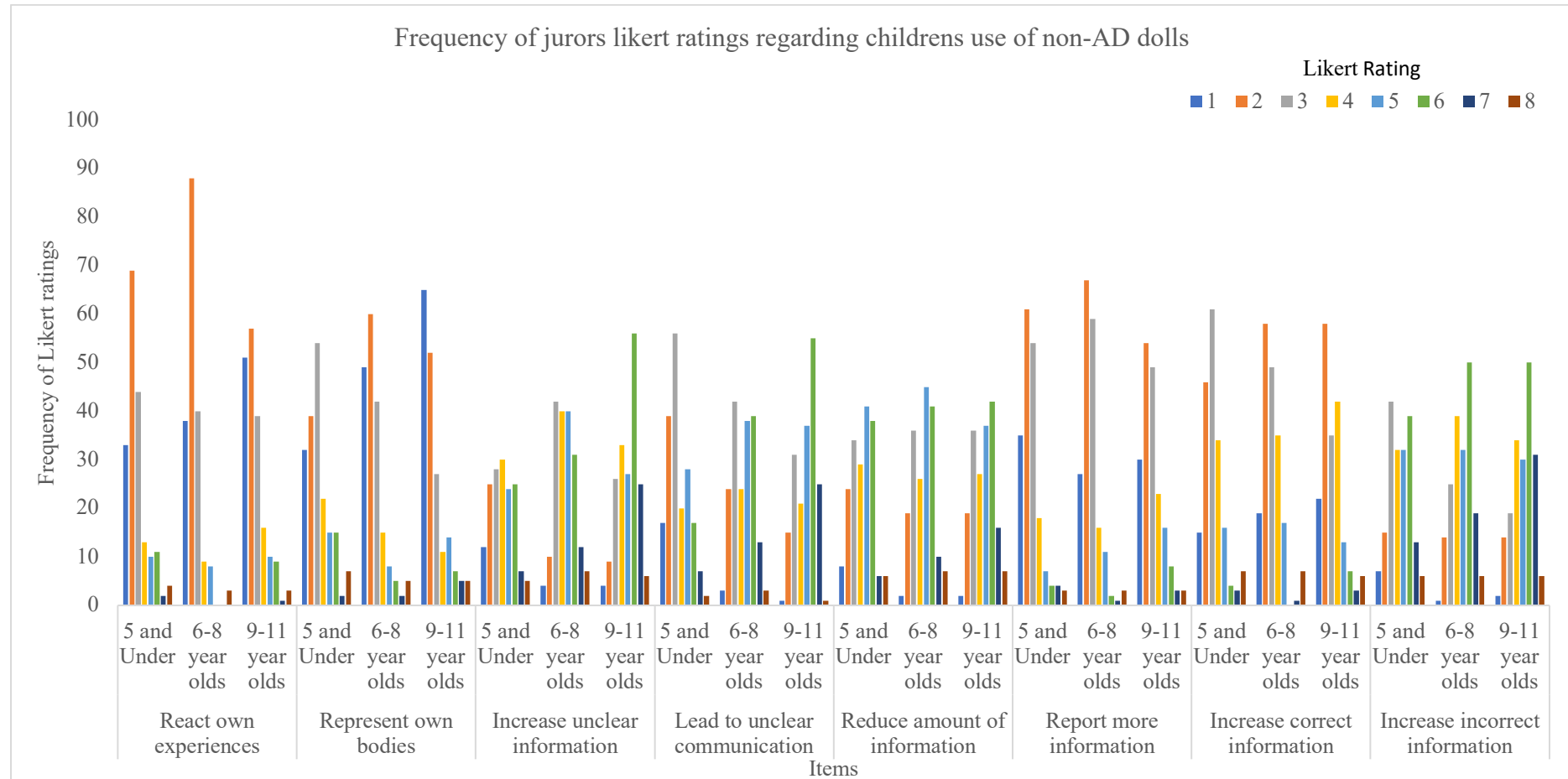
Table 5

Likert ratings of children's abilities to use non-AD dolls

Items	Age groups	*M*	*SD*
Re-enact their own experiences	5 years and under	2.78	1.58
	6-8 years	2.33	1.22
	9-11 years	2.59	1.58
Non-AD doll represent their bodies	5 years and under	3.20	1.78
	6-8 years	2.58	1.60
	9-11 years	2.59	1.82
Lead to unclear information	5 years and under	3.84	1.69
	6-8 years	4.49	1.57
	9-11 years	4.98	1.63
Lead to unclear communication	5 years and under	3.49	1.67
	6-8 years	3.37	1.64
	9-11 years	4.87	1.57
Reduce the amount of information	5 years and under	4.28	1.69
	6-8 years	4.56	1.61
	9-11 years	4.63	1.67
Increase the amount of information	5 years and under	2.70	1.48
	6-8 years	2.69	1.33
	9-11 years	2.96	1.60
Increase correct information	5 years and under	3.26	1.56
	6-8 years	3.06	1.52
	9-11 years	3.16	1.64
Increase incorrect information	5 years and under	4.43	1.70
	6-8 years	4.84	1.57
	9-11 years	5.04	1.64

M = Mean, *SD* = Standard Deviation

Table 6

Participants confidence ratings of their responses to questions about children's abilities to use dolls

Items	Age groups	M	SD
Re-enact their own experiences	5 years and under	70.54	23.78
	6-8 years	72.83	22.17
	9-11 years	73.94	23.95
Non-AD doll represent their bodies	5 years and under	68.63	25.60
	6-8 years	73.62	23.90
	9-11 years	75.35	24.03
Lead to unclear information	5 years and under	67.08	24.01
	6-8 years	67.92	23.17
	9-11 years	69.92	25.82
Lead to unclear communication	5 years and under	71.23	22.07
	6-8 years	73.27	21.19
	9-11 years	75.09	21.88
Reduce the amount of information	5 years and under	67.14	24.87
	6-8 years	68.02	24.66
	9-11 years	68.92	25.89
Increase the amount of information	5 years and under	72.63	22.69
	6-8 years	72.45	22.12
	9-11 years	73.64	23.66
Increase correct information	5 years and under	67.7	24.51
	6-8 years	69.13	23.71
	9-11 years	70.83	24.49
Increase incorrect information	5 years and under	69.41	22.61
	6-8 years	70.35	23.04
	9-11 years	71.33	24.61
The suggestibility of the child	6-8 years	51.27	26.14
The competency of the child	6-8 years	65.20	15.50

M = Mean, *SD* = Standard Deviation

A cross-tabulation analysis examining Spearman's correlation was conducted to explore what eight items loaded onto each other. Theoretically, we would expect that the eight items would be able to be collapsed into four items, since half of the items are opposites of each other (e.g. increase correct information, decrease incorrect information) or derive from the same viewpoint (dolls can be used as a representation of self). The two items (increases incorrect, and reduced information) were reverse coded as they loaded onto other items (increases correct, and increased information). All age groups had a statistically significant positive moderate to strong Spearman correlation (correlation $>.200$). This means that the majority of compared items were responded to similarly by the participants. However, the under 5 ($r_s(175) = .189$, $p<.05$) and 9-11 ($r_s(175) =.194$, $p<.05$) age groups only had a weak positive, statistically significant correlation between the correct information and reverse coded incorrect information (see Table 7). This meant that participants were responding to these items differently when thinking about under 5, and 9-11-year-olds. This means that collapsing the items into one factor for these two age groups was not appropriate.

However, due to all other item pairings having statistically significant and positive correlations (refer to Table 7), this meant that the eight items could be collapsed into four items for each age group (apart from the two previously mentioned). Items were collapsed down by calculating the average of the two items to produce the factor. The final factors were: correct information, increased information, unclear information, and children can represent themselves. The reduced factors were then compared using a One-Way Repeated Measures ANOVA using a Greenhouse-Geisser correction to compare the different ratings for each age group.

Table 7

Cross Tabulation results and Spearman's Correlations of items loadings

Items	Age Groups	r_s	p
Re-enact using dolls * Represent their bodies with the dolls	Under 5 years	.62	.000
	6-8 years	.54	.000
	9-11 years	.69	.000
Unclear communication style * lead to unclear information	Under 5 years	.69	.000
	6-8 years	.68	.000
	9-11 years	.66	.000
increase information * reverse coded reduce information	Under 5 years	.31	.000
	6-8 years	.32	.000
	9-11 years	.30	.000
help recall correct information* reverse coded increase incorrect information	Under 5 years	.19	.012
	6-8 years	.29	.000
	9-11 years	.19	.010

* Interaction

Children can Represent Themselves.

Results show that people responded differently to the idea of children using dolls to represent themselves depending on the age of the child referenced ($F(1.22) = 11.75, p < .05$). Post hoc tests using Bonferroni correction revealed that when rating under 5-year-olds, participants were between 'agree', and 'somewhat agree', and that this group could use dolls to represent themselves ($M = 2.83, SD = .10$), which was statistically significantly different from 6-8-year-olds ($M = 2.33, SD = .08, p < .05$) and 9-11-year-olds ($M = 2.47, SD = .10, p < .05$) who were rated closer to 'agree' than 'somewhat agree'. The 6-8 and 9-11-year-olds were not rated significantly differently ($p = .059$). Therefore, it appears that mock jurors think that all age groups can use non-AD dolls to represent themselves. However, children under 5 are seen as slightly less capable than older children (6 and above).

Clarity of Information

It was found that people responded differently to the idea that children's communication would be unclear if they used non-AD dolls ($F(1.44) = 88.38, p < .05$). Post hoc tests using Bonferroni correction revealed that when rating under 5-year-olds, participants responded between 'somewhat agree', and 'neither agree nor disagree', that using non-AD dolls lead children to communicate unclearly ($M = 3.6$, $SD = .11$), which again was statistically significantly different from 6-8-year-olds ($M = 4.33, SD = .10, p < .05$) and 9-11-year-olds ($M = 4.86, SD = .11, p < .05$). The 6-8, and 9-11-year-olds were also rated significantly differently ($p < .05$). It appears that mock jurors somewhat agree that non-AD dolls will lead children under 5 to produce unclear information, and there is a developmental effect with age. This means that mock jurors are more likely to believe older children will communicate clearly when using non-AD dolls. All responses were in more tentative categories of agreement or disagreement with the statements.

Amount of Information

It was determined that there was no significant effect of age for mock jurors' beliefs about the impact of non-AD dolls on the amount of information a child would report ($F(.31) = 1.71, p = .192$). All age groups were rated roughly within the 'neither agree nor disagree' rating for these questions (5 and under: $M = 3.22, SD = .09$; 6-8: $M = 3.08, SD = .08$; 9-11: $M = 3.18, SD = .09$).

Accuracy of Information

Because the items for accuracy asked about increasing correct or incorrect information, the item about incorrect information was reverse-coded to explore if collapsing the items was possible. Further analyses on the comparison of age groups for dolls influencing the amount of correct information a child provides was not conducted. The crosstabulation analysis

demonstrated that the items were not strong enough to be collapsed into one factor for two age groups (under 5's and 9-11-year-olds). However, it was appropriate to collapse for the 6-8-year-old age group, which is used in further moderation analyses.

Since the items were not responded to consistently, a descriptive explanation will be provided about each age group's differences for each correctness item. As we saw in Table 5, it appears that jurors have similar views about dolls increasing the amount of correct information for all ages. It shows that mock jurors moderately 'somewhat agree' that using non-AD dolls will increase the amount of correct information that children aged 5 and under ($M = 3.26$, $SD = 1.56$), 6-8 ($M = 3.06$, $SD = 1.52$), and 9-11-year-olds ($M = 3.16$, $SD = 1.64$), will provide. Participants 'somewhat disagreed' that non-AD dolls would increase incorrect information, for each age group (5 and under, $M = 4.43$, $SD = 1.70$; 6-8-year-olds $M = 4.84$, $SD = 1.57$; 9-11-year-olds $M = 5.04$, $SD = 1.64$). This suggests that jurors believe that dolls might increase the amount of correct, whilst decrease the amount of incorrect information that a child provides. Mock jurors were moderately confident in their ratings of children's correctness when using non-AD dolls (see table 6).

Principal Component Analysis

The ratings of 6-8-year-old children were used to see if they were impacted by watching a video of a 6-year-old child being interviewed either verbally or with dolls. They were then asked to rate the child on several items that related to being "good", or suggestible, witness qualities. The other age groups were not used since the child in the video did not represent those age ranges. We found that children were rated differently according to age, so it was not considered useful to use data from age groups younger, or older, than the target child in the video.

Participants were asked to respond to 11 items after watching a video of a child being interviewed either verbally or with a doll. A principal component analysis (PCA) was conducted to examine what items loaded into factors (Field, 2013).

The PCA was conducted on the 11 items with orthogonal rotation (varimax). The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis KMO = 0.91 ('marvelous' according to Kaiser & Rice, 1974). Bartlett's test of sphericity (test of at least one significant correlation between two of the items studied) was also significant ($\chi 2(55) = 1289.01$, $p < .05$). The communalities (proportion of item's variance explained by the extracted factors) were all above .300; this confirms that each item shared some common variance with other items (Child, 2006). Given these overall indicators, a factor analysis was regarded to be suitable with all the 11 items. An initial analysis was run to obtain eigenvalues for each factor in the data. The scree plot showed inflexions that would justify retaining two factors (Appendix F). After the items were rotated, items that cluster on the same factor implies that factor one; the child's competency, and factor two; the suggestibility of the child. Of the 11 items, 10 loaded onto the factor of the child's competence (believability, talkativeness, honest, memory, capable, accurate, confident, informative, coherent and reliable) and one item for the factor of; influenced by the interviewees' suggestions (reverse coded suggested). Meanwhile, the suggestibility factor only consisted of the one suggestibility item.

Moderator Analysis

Does Watching a Video of a Child Influence Jurors Perceptions of Children?

A moderator analysis was performed using a General Linear Univariate Model with a Sum of Squares 1, and with a Bonferroni correction to investigate if viewing a child being interviewed with or without a non-AD doll influenced jurors responding to the competency and

suggestibility of a 6-8-year-old child. A Levene's test was used to indicate the main effects and interactions of each factor, the type of interview watched, and beliefs about the child.

When examining the competency of the child, main effects were found for, ability to represent their own body ($F(1, 180) = 13.699$, p < .01, $\eta p^2 = .071$), accuracy of information ($F(1, 178) = 10.970$, p <.01, $\eta p^2 = .058$) and amount of information ($F(1, 179) = .13.90$, p <.001, $\eta p^2 = .072$). Yet, no significant main effect was found for clarity of communication nor interview types for each competency rating (see Table 7). This means that jurors who rated the child to have higher levels of competency were more likely to agree that children could use dolls to represent themselves, and that non-AD dolls will help children recall accurate and more information.

The suggestibility factor was reverse coded as higher suggestibility levels commonly indicate poorer credibility perceptions of children (Quas et al., 2005). When examining the suggestibility of the child main effects were found for, ability to represent their own bodies ($F(1, 180) = 4.26$, $p = .04$, $\eta p^2 = .023$) and correctness of information ($F(1, 178) = 4.86$, $p = .029$, $\eta p^2 = .027$). Yet, no significant main effect was found for the amount of information, clarity of communication and interview type (see Table 8). This means that jurors who rated the child to have lower suggestibility levels were more likely to agree that children could use dolls to represent themselves, and that non-AD dolls will help children report correct information.

Overall, there were no significant interactions between beliefs and interview type that influence ratings of the children's competency or suggestibility, irrespective of mock jurors' beliefs (see Table 7 and 8). However, there was a statistically significant interaction found between interview type and perception of dolls increasing correct information and their competency ($F(1, 178) = 4.351$, $p = .038$, $\eta p^2 = .024$). Yet, after examining the pairwise

comparison, there was not enough statistical power to demonstrate a significant interaction of interview type and correctness of the information ($p = .99$, M difference $= 3.667$). This indicates that the type of interview technique individuals watched did not impact their response to the child's competency.

Table 8

Moderating effects of video type on children's competency ratings

Predictor	Sum of Squares	df	f	p	η_p^2
Represent their bodies * Video type	1	180	13.70	.000	.071
	1	180	3.47	.064	.019
	1	180	1.86	.174	.010
Correct information * Video type	1	178	10.97	.000	.058
	1	178	2.75	.099	.015
	1	178	4.35	.038	.024
Amount of information * Video type	1	179	13.90	.000	.072
	1	179	2.45	.119	.014
	1	179	0.03	.861	.000
Clarity * Video type	1	180	3.19	.076	.017
	1	180	2.28	.133	.013
	1	180	0.18	.672	.000

* Indicates interaction between two predictor variables

Table 9

Moderating effects of video type on children's suggestibility ratings

Predictor	Sum of Squares	df	f	p	η_p^2
Represent their bodies * Video type	1	180	4.26	.040	.023
	1	180	0.01	.910	.000
	1	180	0.04	.540	.002
Correct information * Video type	1	178	4.86	.029	.027
	1	178	0.02	.900	.000
	1	178	3.83	.050	.021
Amount of information * Video type	1	179	0.22	.640	.000
	1	179	0.01	.910	.000
	1	179	0.20	.650	.000
Clarity * Video type	1	180	0.60	.440	.003
	1	180	0.01	.950	.000
	1	180	1.81	.180	.010

* Indicates interaction between two predictor variables

Results summary

In sum, mock jurors believe non-AD dolls to mostly be helpful tools when interviewing children. However, they do not have strong beliefs about children's ability to use non-AD dolls to represent themselves or impact on the accuracy, amount, and clarity of information children provide. No interactions between video and factors were found to be significant. This suggests

that jurors' perceptions of the child did not change whether they viewed the child being interviewed with or without the doll. Thus, the presence or absence of dolls might not influence how a juror perceives a child when giving testimony.

Discussion

This study examined mock jurors' perceptions of whether children can use non-AD dolls to describe body positioning effectively. Four key things were explored: the usefulness of dolls, the perceived impacts on the amount and accuracy of information children report when using them, and whether viewing a child using a non-AD affects mock jurors' perceptions of the child's competency and suggestibility.

Do Mock Jurors Think that Children can Effectively Communicate with a Non-AD Doll?

It was predicted that mock jurors would expect dolls to help children effectively communicate body positioning. We explored this by examining several beliefs; the helpfulness and unhelpfulness of non-AD dolls, children's ability to represent themselves, and the clarity with which children communicate with a non-AD doll. When exploring these three things, participants demonstrated positive and negative expectations. The majority of mock jurors thought that non-AD dolls are useful interview aids that help all children in many different ways (memory, shyness, clarify body parts, talking about shameful events and, limited vocabulary and preposition knowledge). However, they also viewed dolls as unhelpful because children would not use them to represent their bodies or that they would find them distracting.

Jurors also believed that older children were slightly more capable of representing their bodies and producing clear information when using non-AD dolls than younger children. Yet, mock jurors were tentative about their beliefs; they often sat on the fence by choosing 'neither

agree nor disagree', or demonstrated only slight agreement/disagreement, and were only moderately confident in their ratings. Thus mock jurors are not sure about the effects that non-AD dolls might have on children's communication of events. This uncertainty might reflect jurors' awareness that they have little knowledge about forensic interviewing tools (McAuliff & Kovera, 2007). Since jurors appear to have no clear stance on non-AD dolls' effects, this might indicate that jurors could be more susceptible to lawyer's arguments about dolls either adding to the credibility of the child's evidence or undermining it. To combat these potential inaccurate arguments, jurors might benefit from educative material about how non-AD dolls might influence children's testimony. Educating jurors might result in more accurately informed decisions about the child, leading to less ill-informed verdict decisions (McAuliff & Kovera, 2007; McCabe et al., 2010; Buck et al., 2011). Future research could expand on this study by exploring the effects of an educational tool on the perception of the child eyewitness (verbal vs non-AD doll interviews).

Do Jurors Think that Children will Provide Greater Information if they use a Non-AD Doll?

Mock jurors' beliefs about the amount of information children would produce when using a non-AD doll were also explored. It appears that mock jurors, again, were moderately confident and expected that a non-AD doll would have little impact on the amount of information children would report. These beliefs are inconsistent with literature that has found that anatomical dolls either increase the number of details with unacceptable levels of risk (by including greater false details) (Thierry et al., 2005; Bruck et al., 2000; Steward et al., 1996; Saywitz et al., 1991; Deloache & Marzolf, 1995) or that dolls decrease reporting (Santtila, Korkman & Sandnabba, 2004). Nonetheless, Salmon et al. (2012) and our preliminary results from Study 1 suggest that

the risks might not be significant. They found that non-AD dolls did not affect the amount of information in children's accounts. The current research study specifically examined non-AD dolls; jurors appear to hold a neutral position with respect to them. Yet, we do not know if they would have rated anatomical dolls differently, and, at least in New Zealand, anatomical dolls are not part of the interviewers' toolkits. Our findings suggest that jurors might not be biased about children's credibility when interviewed with non-AD dolls. This is positive, because it indicates that jurors might not bring strong biases to the courtroom that expert witnesses might have to challenge. Yet, as mentioned prior, little is known about how the suggestive nature of lawyers' arguments about non-AD dolls would influence jurors and their evaluation of a child. Therefore, not having strong opinions about the non-AD dolls might mean jurors are more likely to be influenced by others, be that in an informative (expert witness) or potentially coercive way (lawyers). This reiterates the idea that jurors should be informed of the potential impacts of non-AD dolls in some way, be that with an expert witness or educational tool.

Do Jurors Think that the Information Provided with the Non-AD Doll by the Child is Accurate?

More generally, it appears that jurors have moderate confidence in their beliefs about non-AD dolls and the accuracy of children's reporting. Conclusions drawn about jurors' perceptions of developmental changes in accuracy are tentative because only descriptive analyses could be completed when comparing age groups. The results imply that age did not matter in terms of how jurors evaluated non-AD dolls' impact on accurate reporting. Mock jurors did not seem to have strong opinions. But they expected that non-AD dolls would increase the amount of correct but not incorrect details that children provide. This finding suggests that jurors might think of children as slightly more accurate when using a non-AD doll. These beliefs are

inconsistent with anatomical doll literature which found that dolls increase inaccuracies in children's reporting (Thierry et al., 2005; Bruck et al., 2000; Steward et al., 1996; Saywitz et al., 1991; Deloache & Marzolf, 1995). But also importantly, they were inconsistent with the limited non-AD doll literature which found that using non-AD dolls did not comprise accuracy when compared to verbal interviewing (Salmon et al., (2012; and preliminary results from Study 1). Jurors appear to be unaware of these potential risks. Instead, they might over value the effects non-AD dolls have on accuracy, which could be problematic for their evaluation of children's reporting in the absence of expert testimony.

Since no statistically significant effects were found, and jurors do not appear to have strong assumptions about non-AD dolls impact on overall accuracy, this might suggest that jurors' consider other things when evaluating the child's accuracy. For instance, we saw that jurors evaluated non-AD dolls similarly across age groups, which might suggest that age might be more salient to jurors than whether a non-AD doll is used. Also, we know that age has previously been shown to impact children's accuracy ratings (Leippe et al., 1992; Goodman et al., 1984; Goodman, et al., 1987; Goodman et al., 1998, Goodman et al., 1998; Wells, Turtle, & Luus, 1989).

Does Seeing a Child use a Non-AD Doll in an Interview Affect Mock Jurors' Beliefs about the Child's Credibility?

It was hypothesised that mock jurors would perceive children as more credible when using non-AD dolls to talk about an experience. However, we found no difference in jurors' perceptions of the children's competency or suggestibility when they were interviewed with or without a doll, which informs us that jurors do not use non-AD dolls to calibrate credibility. Instead, the moderation analysis demonstrated that whilst we didn't see between-group

differences (verbal vs non-AD dolls), we did see that credibility was influenced by jurors' own beliefs about the non-AD dolls. This finding implies that mock jurors' preconceived expectations about children's abilities (to represent themselves, provide clear information, recall information accurately) are the drivers of their responding instead. Overall, this tells us that mock jurors do not seem to consider interview tools when evaluating children's competency or suggestibility as a witness. This might be contributed to by the fact that mock jurors did not appear to have strong beliefs about how non-AD dolls would affect children's communication styles. Nonetheless, this finding is consistent with Thomas (2016), who found that the use of anatomical dolls did not affect children's credibility ratings. One key reason could be due to the interviewing style used. Research suggests that mock jurors are sensitive to the interview strategies used. For instance, children are viewed less credible if they are interviewed with suggestive questioning (Castelli et al., 2005; Tubb et al., 1999). Because this current study used best practice child interview techniques, this might mean that mock jurors were less reactive to the presence of the non-AD dolls. However, if jurors' perceptions of children are due to their pre-existing beliefs and not influenced by external factors such as interview tools or style then we should be aware of this. Especially if these pre-existing beliefs are inaccurate, which could negatively impact the trial's verdict (finding guilty people not guilty and vice versa). Therefore, to mitigate these potential inaccuracies, it is in everyone's (judges, prosecution, defence, the accused, and complainants) best interest that jurors are provided with evidence-based research to help minimise jurors' potential biases before being presented with children's eyewitness testimony.

However, this research has limitations in terms of its generalizability. This study was stripped of many aspects seen in a courtroom setting. For instance, being physically in a courtroom might provide a greater emotional impact of the eyewitnesses delivery. Likewise,

listening to the descriptions of traumatic experiences might elicit different responses from jurors due to the moral values they might hold. The video would also extend the whole interview; this would allow for greater time to evaluate the child's competency and interviewer's suggestibility. Being part of a group (jury) would also require the jurors to discuss the evidence presented. This is where preconceived beliefs might influence how they react to evidence and, therefore, argue the case to fellow jurors. Thus, future research should look to include these aspects to increase generalizability. The research could be conducted by surveying jurors after a legitimate child sexual abuse trial has been completed. If this research were to suggest that non-AD dolls were harmful or helpful in those scenarios, it would be essential to know how to best influence jurors' perceptions to instead reflect expert information from evidence-based research. Future research could also shape practice protocols to ensure they do not include techniques that might undermine or over-represent children's credibility.

There is still much to learn about non-AD dolls and their impact on jurors' reactions to children's testimony. Overall, it appears that mock jurors generally hold favourable views of the contributions of non-AD dolls to children's testimony, although their beliefs are not strong. However, their beliefs are not necessarily consistent with the literature (McAuliff & Kovera, 2007; Salmon et al., 2012; Priestley & Pipe, 1997; Salmon, & Pipe, 2000; Thierry et al., 2005; Bruck et al., 2000; Steward et al., 1996; Saywitz et al., 1991; Deloache & Marzolf, 1995). Generally, non-AD dolls' use did not influence jurors' reactivity to seeing a child being interviewed; instead, their own beliefs impacted how the child was evaluated. Therefore, jurors might need to be educated on the impacts (or lack thereof) of non-AD dolls on children's testimony. Educating individuals will help to ensure there is no potential of a miscarriage of justice. Expert testimony might be beneficial in helping mock jurors to appropriately evaluate

the impacts of non-AD dolls on children's reporting of body positioning and abuse (McAuliff & Kovera, 2007; McCabe et al., 2010).

Integrated Discussion

Numerous research has highlighted risks associated with the use of dolls in child forensic interviewing, yet we know little about non-AD dolls (Thierry et al., 2005; Bruck et al., 2000; Steward et al., 1996; Saywitz et al., 1991; Deloache & Marzolf, 1995). We know from Wolfman et al., (2018) and Hill (2017) that non-AD dolls are still used often in child forensic interviewing without evidence to support their use. Now we have some preliminary evidence suggesting that non-AD dolls might not provide much value when children are interviewed in a best-practice manner and are unlikely to undermine children's accuracy, which is consistent with Salmon et al. (2012). The current study has provided a foundation for future research to further examine non-AD dolls' use in more ecologically valid contexts.

After understanding what children can do with dolls, it was equally important to understand what people *think* children can do with dolls, given those beliefs are likely to influence how testimony is evaluated in court. Hence, we also looked at the perceptions and expectations that potential jurors have about children using non-AD dolls. Mock jurors considered non-AD dolls useful aids but did not have a strong position about their effects on children's communication about events. Interviews conducted with and without a non-AD doll were evaluated similarly regarding the child's credibility. Overall, non-AD dolls appear to be neutral interview aids in terms of children's responding and credibility. Yet, mock jurors might hold slight biases about non-AD dolls, which could still impact their responses to children, which could influence the verdict of child sexual abuse cases. Since non-AD dolls do not provide any

benefits to children communicating, and the beliefs jurors hold might compromise the

perceptions of the child, using non-AD dolls in child forensic interviewing is not recommended.

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Appendices

Appendix A – Musical Statues Protocol

RA: Hi my name is (Research Assistants Name), today we are going to play a game of musical statues. The aim of the game is to get as many points as possible, at the end you can choose a prize with your points. To earn points there are two tasks, the first is when the music is playing you will each have to fill up a glass jar with marbles – but here's the catch, you can only fill them one at a time and you have to use the tongs! The second way you earn points is when the music stops I will shout out what kind of statue you and your partner need to make. In your pairs you have 5 seconds to make your statue. If you can hold your pose for 3 seconds or long enough for me to take a picture of your statues, then you earn points too. Does that make sense? So when you hear the music, fill the jar, and when the music stops make the statues I shout out. Ready?

- Children will be given a sticker to indicate what colour they are e.g., yellow/blue, this will be used to indicate what pose they hold in their pairs

- Masking tape of a rectangle approximately 50cm x 100cm will be on the ground to guide some closeness of statues

- Music plays for 20 seconds then stops, RA shouts out the poses of:

  1. Piggyback – blue give yellow a piggy back

  2. Armchair – Yellow be an armchair, Blue use the chair to read a pretend book

  3. Bear hug – Blue give yellow a bear hug

  4. Can – lie close on the ground like you are squished up in a can, within the masking tape

5. Chain – make a chain together with your arms

6. Measure Height – Measure your heights back to back

7. Measure Height the other way round – after back-to-back then shout "now the other way around".

8. Mirror – Sit face to face, mirror each other.

- After each statue is made, a photograph will be taken of each pose stated above, this is to ensure accuracy of recount in the interview. The events of: 20 seconds of music for the marble game and stopping the music for the statues, will continue until all poses are completed (with the exception of the measure height front facing, which will follow immediately after the back to back). If the child withdraws assent during the game will stop straight away. Both children will be thanked for their time and given a prize (eg. pencil/eraser) and taken back to class.

RA: Thank you so much for playing musical statues with me, now you can get a prize with all the points you have earned and head back to class. Because we want to see how other children at school make musical statues it's really important that you don't talk about this with other children at school until we have finished seeing all the children at this school.

Appendix B – Examples of Musical Statues Poses

Figure 5.

Piggyback pose

Figure 6.

Armchair pose

Figure 7.

Bear hug pose

Figure 8.

Squished in a can pose

Figure 9.

Chain pose

Figure 10.

Back to back pose

Figure 11.

Other way around pose

Figure 12.

Mirror pose

Appendix C – Interviewing Protocol

Date of interview: **Time of interview:**

Duration of interview:

I   Part of my job is to talk to children about things that have happened to them, and I meet

with lots of children so that they can tell me the truth about things that have happened

to them. So, while we are talking today there are four rules for us. The first rule is that

you should only tell me the truth. So lets practice that now. So if I say that my shoes

are yellow is that true or not true?

C

I   [**true**] that's not right, look here, by shoes are actually black/brown. So you should have

told me that it was not true that my shoes were yellow. Let's try again. If I say it is

snowing outside is that true or not true?

C

I   [**not true**] Right, because it is actually [insert weather]

I   [**SHOES NOT TRUE**] Right, because my shoes are actually black/brown. Now the

second rule is, if you have forgotten something, or don't know the answer to something,

you don't have to guess, you can just can say, "I don't know", or "I don't remember",

ok. So lets practice that now. If I ask you, "What is my dog's name?" what would you

say?

C

I   [**I don't know**] That's right because you don't know my dog do you? Now, the third

rule is if you don't understand something, you can just say "I don't understand". So lets

practice that now. Okay. So, if I ask you, "what are your hermerine morning activities?" what would you say?

C

I right, because that question has a tricky word in it that is hard to understand. And if I don't understand something you say, I'll let you know as well. Now the fourth rule, is if I say things that are wrong, you should correct me, ok. So lets practice that now. So if I said that you are a 2-year-old boy/girl what would you say?

C

I What would be the right thing to say?

C

I That's right. So now I want to get to know you a little bit better. So tell me everything that happened from the time you woke up until you got to school today.

C

I Well thanks for sharing all those things about your morning. Now before we move on remember you should only tell me the truth. It's okay for you to say things like 'I don't understand' or 'I don't know' or 'I don't remember', and you don't have to guess. And it's okay for you to tell me if I say something that is wrong, ok? So now that I know you a little bit better, let me tell you why I've come to talk to you today. So I heard that a someone came in today and played some games with you. Now I wasn't there so I don't know what happened but I would like to know all about it so tell me everything that happened from the beginning to the end.

C

I Cool, so now what I'm gonna do is I'm gonna take a quick break and have a little look at my notes and see what other questions I might need to ask you. And while I do that,

you can have a little break as well, but keep thinking about the games you played and

see if there's anything you can remember about it, and when I'm finished having a look

at my notes, I'll ask you again, ok? [(C) okay] Ok I won't be a moment.

[Break]

I   Ok, thanks for waiting, so while we were having a bit of break you might have

remembered some more things about the games you played, and since I want to know

everything you can remember about it, I have got some more questions for you. But

first, tell me any other things that you can remember about the game

C

Group 1 –Verbal

I   So I know you have already told me about these things but this time I am going to ask

you more about it. So earlier you said [insert child's words], tell me everything you can

remember about that (keep going until finished all poses mentioned earlier)

C

I   Tell me everything that happened when [insert child's words, pose] …

Group 2 - Dolls

I   Ok, so I you have already told me about the game but this time I am going to get you

to show me what happened when you were playing the game. But first lets practice.

Use these dolls to help you show and tell me everything that happened. When you use

these dolls use them only to show me what happened, they are not for playing with.

Let's practice that now. So, if this doll is you and the other doll is me (points to one

doll and then the other), use them to show me how we are sitting.

C   (child uses dolls to demonstrate how we are sitting)

I   **[does it correctly]** that's right, because we are sitting across from each other

[does it incorrectly] that's not quite right, see I am sitting across from you like this… Now show me how we are (interviewer stands up)

C

I   So earlier you said [insert child's words], use this doll for you (point) and this doll (point to other doll) for your partner and show and tell me what happened … (make a note of which doll they were and partner was)

c

I   Show and tell me what happened when you did [insert child's words, pose] … (continue until all poses have been demonstrated

C

I   Show me what happened when you did [insert child's words, pose] …

C

I   Ok, So I've got some more questions for you about when you and played some games today, you might have already told me about some of these things, but I have to ask everybody the same questions, so just tell me the answer again except this time you can just say yes or no, ok? So if they did happen, say 'Yes', if they didn't happen, say 'No'. Okay?

I   Did you lie on top of your partner?

C

I   *[If yes]* Show and tell me what happened when you lay on top of your partner/Tell me all about when you lay on top of your partner.

C

I   Did you pretend to be/read a book on an armchair?

C

I   *[If yes]* Show and tell me what happened when you pretended to be/read on an armchair /Tell me all about when you pretended to be/read on an armchair.

C

I   Did and your partner have a bear hug?

C

I   *[If yes]* Show and tell me what happened when you and your partner had a bear hug/Tell me all about when you and your partner had a bear hug.

C

I   Did you make a triangle with your partner?

C

I   *[If yes]* Show and tell me what happened when you made a triangle with your partner/Tell me all about when you made a triangle with your partner.

C

I   Did you top and tail with your partner?

C

I   *[If yes]* Show and tell me what happened when you top and tailed with your partner/Tell me all about when you top and tailed with your partner.

C

I   Did you make a circle with your partner?

C

I   *[If yes]* Show and tell me what happened made a circle with your partner/Tell me what happened made a circle with your partner.

C

I   Did you pretend to be squished up in a can with your partner?

C

I   *[If yes]* Show and tell me what happened when you pretended to be squished up in a can with your partner/Tell me all about when you pretended to be squished up in a can with your partner

C

I   Did you make a chain with your partner?

C

I   *[If yes]* Show and tell me what happened when you made a chain with your partner/Tell me all about when made a chain with your partner.

C

I   Did you measure your height standing up next to your partner?

C

I   *[If yes]* Show and tell me what happened when you measured your height standing up next to your partner/Tell me all about when you measured your height standing up next to your partner.

C

I   Did you go another way after measuring your heights?

C

I   *[If yes]* Show and tell me what happened when you went the other way after measuring your heights/Tell me all about when you went the other way after measuring your heights.

C

I   Did you make a pyramid with your partner?

C

I   *[If yes]* Show and tell me what happened when you made a pyramid with your partner/Tell me what happened when you made a pyramid with your partner.

C

I   Did you wrestle with your partner?

C

I   *[If yes]* Show and tell me what happened when you wrestled with your partner /Tell me what happened when you wrestled with your partner.

C

I   Did you give/get a piggy back ride?

C

I   *[If yes]* Show and tell me what happened when you gave/got a piggy back ride/Tell me all about when you gave/got a piggy back ride.

C

I   Did you pretend to mirror your partner?

C

I   *[If yes]* Show and tell me what happened when you pretended to mirror your partner/Tell me all about when you pretended to mirror your partner.

C

I   Did you ride on your partner like a pony?

C

I   *[If yes]* Show and tell me what happened when you rode on your partner like a pony /Tell me what happened when you rode on your partner like a pony.

C

I   Did you carry/get carried by your partner?

C

I   *[If yes]* Show and tell me what happened when you carried/were carried by your partner/Tell me all about when you carried your partner/were carried by your partner.

C

I   Thank you for that. You have done a great job thinking hard for me and telling me about

the game. We're all finished now and I have something here for you to choose, to say

thanks for helping me. When we go back to class put it straight in your bag.

Appendix D – Coding Scheme

Code	Definition	Example
G General information	General information about the event that is not verifiable	Type of prize they got Partner Location of the event Marbles, tongs Music Rules about the game Number of points they received (if they say over 200 then they are incorrect)
B Body Positioning information	General information about the body positions	We did poses/statues
B1 Piggy back pose	Information about the piggy back pose	Sequence of the pose E.g., *First we did the piggy back* *Blue gave purple a piggy back ride* Body positioning, preposition, location
B2 Armchair pose	Information about the Armchair pose	Sequence of the pose E.g., *Blue read a book on an armchair* *XX sat on me* *XX had to pretend to be an armchair* Body positioning, preposition, location How pose was structured Location of partner
B3 Bear hug	Information about the Bear hug pose	Sequence of the pose E.g., *Blue gave me a bear hug* *We just hugged* Body positioning, preposition, location How pose was structured Location of partner
B4 Squished up in a Can	Information about the Squished up in a Can pose	Sequence of the pose E.g., *We pretended to be squished up in a can*
B5 Chain	Information about the making a Chain pose	How pose was structured Location of partner E.g., *We linked arms* *We were standing up*
B6 Doing Height	Information about the Doing Height pose	How pose was structured Location of partner E.g., *We were back to back* *X was taller than me*

B7 **height the other way around"**	Information about the "height the other way around" pose	How pose was structured Location of partner E.g., *We turned around* *Tummy to tummy*
B8 **mirror**	Information about the mirror pose	How pose was structured Location of partner E.g., *Sat on the ground and stared at each other* *Crossed my legs*
XR **Repeated information**	This information was said prior as does not count as a code, more for coder to remember not to code it, not used for reliability as you could just leave blank wanted	
NC **No code**	This is information that does not require a code but can be allocated to help stop confusion. Not included in Kappa as the information is not needed to be coded at all just more for coders tracking of transcript Opinion or evaluation are included in no codes	e.g., my mum told me that I should always brush my teeth
Subcodes		
C **Correct information**	Sub-code that is used at the front of a code to indicate correct information that is verifiable	E.g. Body position *Naming any of the poses, did some statues/poses, who did what in the poses "blue did xxx"* Location *It was in the Noddy house* General information too *The marbles were clear etc …* Who *Partners name*
I **Incorrect information**	Sub-code that is used at the front of a code to indicate incorrect information that is verifiable	E.g. Body position *Naming any of the poses, did some statues/poses, who did what in the poses "blue did xxx"* Who

		Partners name Can be general information as well *We didn't have any rules*
O **Omissions**	Sub-code that is used at the front of a code to indicate correct information about a legitimate pose that is incorrectly recalled as another pose	E.g. Body position *We had to sit on the armchair like we were a bear* *For the height pose we sat on the ground and stared at each other*

EXAMPLES OF WHAT A CODE COULD LOOK LIKE:

CB1 - *me and my partner did a piggy back ride*

IB1 - *then we did the kangaroo pose*

OB1 – *for measuring our height we were sitting on the ground with our legs crossed and we had to sit still and stare at each other (actually explaining mirror pose)*

CG – *we did it in the Noddy house, DOLLS1 (verified correct) was my partner*

IG - *we got told that we got 1,000 points*

Rules
Phrases of information **Codes are assigned to the phrase of the information or 'meaningful chunks of information"** **The meaningful chunks refers to information about themselves being coded separately to information about others. For instance, if the child mentions bands they get a point, if they mention their own colour they gain a point and others colour also a point** **e.g. "She took us to the library and there were two cups with tongs next to each other, and me another 7 year old girl had to um use the tongs to put the marbles into jars we had to um put them in the jars without using our hands we could only put them in one at a time. They she played music for a while when the music stopped, she told us what to do and we did it"** **|She took us to the library |and there were two cups with tongs next to each other,| and me another 7 year old girl |had to um use the tongs to put the marbles into jars we had to um put them in the jars without using our hands |we could only put them in one at a time. |They she played music for a |while when the music stopped she told us what to do and we did it"|**
if you cannot verify the information just code it as the appropriate code without an I/C in front of it
Box and marbles are chunked together as a code **So, if the child refers to marbles and the box it is coded as one, if they refer to tongs this is a separate "chunk" of information**

Appendix E – Jury Survey

Using dolls to help children communicate their experiences

Start of Block: Informed Consent

Using dolls to help children communicate their experiences

The Research Team

• Dr Deirdre Brown and Christiana Hartley, School of Psychology, Victoria University of Wellington,   New   Zealand

What is the aim of the project?

When children are interviewed about possible maltreatment they might be given a doll and asked to use it to show what happened to them. We want to assess jury-eligible people's beliefs about whether using dolls in interviews with children is likely to be helpful or not.

If you agree to take part you will complete an online survey that will take approximately 25 minutes or less. The payment for this study is $5USD.

You will be shown statements and asked to indicate whether you agree or disagree with them. Some examples of such statements are:

1. Children are able to use dolls to represent their own bodies
2. Providing dolls will help children recall correct details about what happened

Please note. Sexual abuse is a sensitive topic. Although all of the questions in this survey ask about beliefs and not personal experiences, some respondents might find the subject matter uncomfortable and/or mildly distressing. If you think this might be upsetting for you, please do not complete the survey.

Your participation is completely voluntary. You might withdraw your participation at any time. To do this, you can just close your browser or navigate away from the page. The following agencies (see by clicking on the link below) provide support for those affected by child maltreatment: http://www.joyfulheartfoundation.org/learn/child-abuse-and-neglect/resources/hotlines-and-more-information

or

https://www.kidshealth.org.nz/listing-information-support-resources-child-abuse

Alternatively, contact your Doctor if you have any concerns. This research has been approved by the Victoria University of Wellington Human Ethics Committee (reference #0000028564)

What will happen to the information you give?
This research is anonymous. No identifying information, such as your name or email address, will be collected, or provided to the researchers. All data (which are the numbers that you choose on the survey, or the answers you type to questions) are stored in a password protected electronic format. Once you submit the survey, we will be unable to retract your responses because we will not be able to identify which survey was yours. Please do not include any personally identifiable information in your responses.

What will the project produce?
The data from this survey might contribute to publications in peer reviewed academic or professional journals, academic or professional conference presentations, student theses, professional development or training workshops, and educational materials prepared for the courts. We might share the data with other researchers, and future students in Dr Brown's laboratory might work with the data to answer related questions.

Researcher Contact Information
For any questions, now or in the future, please contact:
Christiana Hartley, christiana.hartley@vuw.ac.nz
Dr Deirdre Brown, Deirdre.Brown@vuw.ac.nz
If you would like to view a summary of the findings from the research, you can visit www.applieddevelopmentallab.com, from March 2021

Human Ethics Committee information
This research has been reviewed by the Human Ethics Committee of Victoria University of Wellington. If you would like to discuss the study with someone who is not one of the research team, you might contact the convenor of the Human Ethics Committee at Victoria University of Wellington, Associate Professor Judith Loveridge, judith.loveridge@vuw.ac.nz, +64 4 463 6028.

Consent

	Yes	No
I confirm that I have read and understand the Respondent Consent Page	○	○
I confirm that I am at least 18 years of age.	○	○

|		
I understand that this survey requires me to answer questions on a sensitive topic	○	○
I agree that data gathered in this study will be stored anonymously and securely and might be used for future research.	○	○
I understand that the data might be used for cross-country comparisons in future research.	○	○
I understand that my participation is voluntary and that I am free to withdraw at any time without giving a reason.	○	○
I agree to take part in this study	○	○

Verification

☐ I'm not a robot

reCAPTCHA
Privacy - Terms
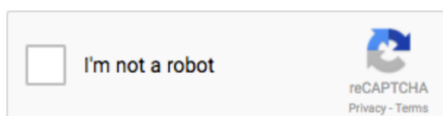
End of Block: Informed Consent

Start of Block: Screening Questions for jury eligibility.

Start of Block: Pre-screening questions

Date of birth DD/MM/YYYY

_____

Gender

◯ Male

◯ Female

◯ Transgender

◯ Prefer not to say

◯ Other (please specify)

- -

Is English your native language?

◯ Yes

◯ No (please specify your native language)

_____

- -

How fluent are you in English?

Not at all fluent   Extremely fluent

0   1   2   3   4   5   6   7

- -

Do you have children?

○ Yes

○ No

- -

How much time do you spend with children of the following ages?

	Daily	Weekly	Monthly	Yearly	Hardly ever or never at all
Babies (less than 2 years)	○	○	○	○	○
Toddlers (2-4 years)	○	○	○	○	○
5-6	○	○	○	○	○
7-8	○	○	○	○	○
9-10	○	○	○	○	○
11-12	○	○	○	○	○
13-14	○	○	○	○	○
15-16	○	○	○	○	○
17-18	○	○	○	○	○

- -

Please indicate the context(s) in which you have had contact with them (and briefly describe)

○ Home _____

○ Work _____

○ Family _____

○ Volunteer activities _____

○ Other _____

- -

Have you or a family member ever been involved in a jury-tried court case?

○ As a defendant

○ As a witness

○ As the complainant

○ As a jury member

○ None of the above

- -

Have you or a family member ever been involved in a court case involving child witnesses?

○ As a defendant

○ As a witness

○ As the complainant

○ As a jury member

○ None of the above

End of Block: Pre-screening questions

Start of Block: Children able to use dolls to re-enact their own experiences

For the following statements please rate your agreement to the following statement for each child age group

Q1   Children   able   to   use   dolls   to   re-enact   their   own   experiences.

	Strongly Agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)	I don't know (8)
Preschooler (5 years and under)	○	○	○	○	○	○	○	○
Early childhood (6-8 years)	○	○	○	○	○	○	○	○
Middle childhood (9-11 years)	○	○	○	○	○	○	○	○

How confident are you with your answers to the above statements (for each child age group)?

	Not at all confident	Extremely confident

	0 10 20 30 40 50 60 70 80 90 100
Pre-schoolers (5 years and under)	
Early childhood (6-8 years)	
Middle childhood (9-11 years)	

Q2 Children are able to use dolls to represent their own bodies

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)	I don't know (8)
Preschoolers (5 years and under)	○	○	○	○	○	○	○	○
Early Childhood (6-8 years)	○	○	○	○	○	○	○	○
Middle Childhood (9-11 years)	○	○	○	○	○	○	○	○

How confident are you with your answers to the above statements (for each child age group)?

	Not at all confident	Extremely confident

	0 10 20 30 40 50 60 70 80 90 100
Preschoolers (5 years and under)	

Early Childhood (6-8 years)	
Middle Childhood (9-11 years)	

Q3 Using dolls might lead to the child providing unclear information

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)	I don't know (8)
Preschoolers (5 years and under)	○	○	○	○	○	○		
Early Childhood (6-8 years)	○	○	○	○	○	○		
Middle Childhood (9-11 years)	○	○	○	○	○	○		

How confident are you with your answers to the above statements (for each child age group)?

Not at all confident   Extremely confident

0   10   20   30   40   50   60   70   80   90   100

Preschoolers (5 years and under)	
Early Childhood (6-8 years)	
Middle Childhood (9-11 years)	

Q4 When a child uses a doll it might be unclear what they are trying to communicate
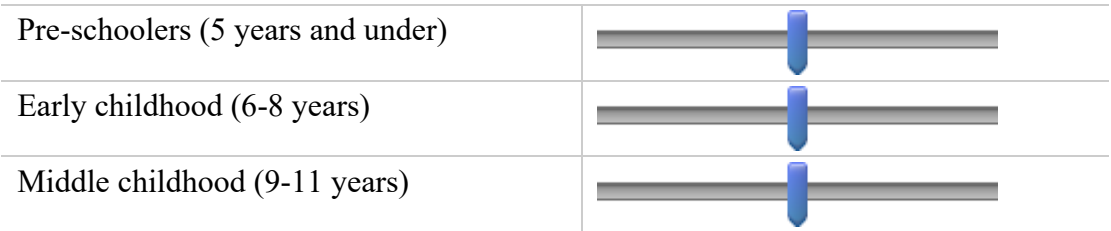
	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)	I don't know (8)
Preschoolers (5 years and under)	○	○	○	○	○	○	C	○
Early Childhood (6-8 years)	○	○	○	○	○	○	C	○
Middle Childhood (9-11 years)	○	○	○	○	○	○	C	○

How confident are you with your answers to the above statements (for each child age group)?

Not at all confident   Extremely confident

0   10 20 30 40 50 60 70 80 90 100

Preschoolers (5 years and under)	
Early Childhood (6-8 years)	
Middle Childhood (9-11 years)	

End of Block: Children able to use dolls to re-enact their own experiences

Start of Block: Influence on detail

Q5 Allowing a child to show what happened with a doll might reduce the amount of information they give about the event

	Strongly Agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)	I don't know (8)
Preschooler (5 years and under)	○	○	○	○	○	○	○	○
Early childhood (6-8 years)	○	○	○	○	○	○	○	○
Middle childhood (9-11 years)	○	○	○	○	○	○	○	○

How confident are you with your answers to the above statements (for each child age group)?

Not at all confident   Extremely confident

0   10   20   30   40   50   60   70   80   90   100

Pre-schoolers (5 years and under)	
Early childhood (6-8 years)	
Middle childhood (9-11 years)	

Q6 Giving children dolls might help them to report more information

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)	I don't know (8)
Pre-schoolers (5 years and under)	O	O	O	O	O	O	O	O
Early childhood (6-8 years)	O	O	O	O	O	O	O	O
Middle childhood (9-11 years)	O	O	O	O	O	O	O	O

How confident are you with your answers to the above statements (for each child age group)?

Not at all confident   Extremely confident

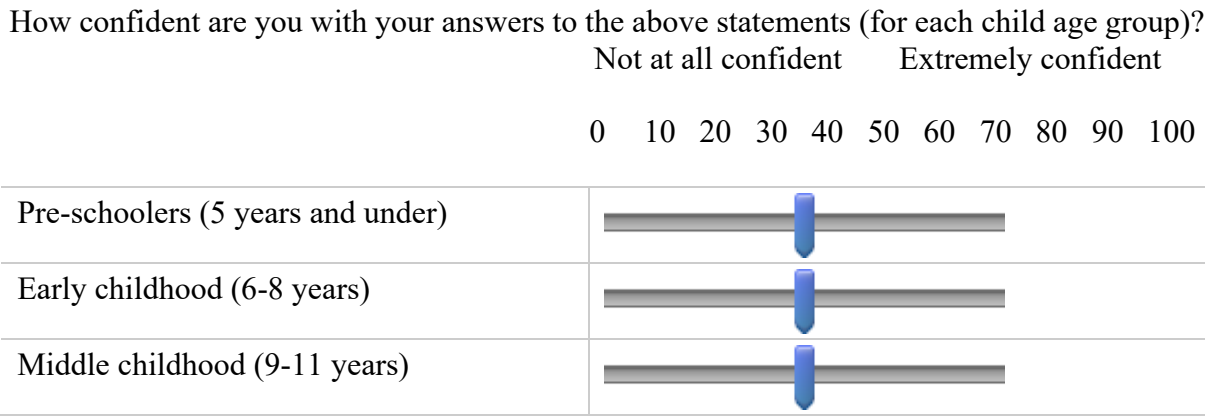0   10   20   30   40   50   60   70   80   90   100

Pre-schoolers (5 years and under)	
Early childhood (6-8 years)	
Middle childhood (9-11 years)	

End of Block: Influence on detail

Start of Block: Influence on accuracy

Q7 Providing dolls will help children recall correct details about what happened

	Strongly Agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)	I don't know (8)
Preschooler (5 years and under)	○	○	○	○	○	○	○	○
Early childhood (6-8 years)	○	○	○	○	○	○	○	○
Middle childhood (9-11 years)	○	○	○	○	○	○	○	○

How confident are you with your answers to the above statements (for each child age group)?

Not at all confident   Extremely confident

0   10 20 30 40 50 60 70 80 90 100

Pre-schoolers (5 years and under)	
Early childhood (6-8 years)	
Middle childhood (9-11 years)	

Q8 Using dolls will increase the amount of incorrect information that children report

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)	I don't know (8)
Pre-schoolers (5 years and under)	O	O	O	O	O	O	O	O
Early childhood (6-8 years)	O	O	O	O	O	O	O	O
Middle childhood (9-11 years)	O	O	O	O	O	O	O	O

How confident are you with your answers to the above statements (for each child age group)?

Not at all confident   Extremely confident

0   10   20   30   40   50   60   70   80   90   100

Pre-schoolers (5 years and under)	
Early childhood (6-8 years)	
Middle childhood (9-11 years)	

End of Block: Influence on accuracy

Start of Block: Riskiness and helpfulness of dolls

Q9 Which of the following things apply to dolls in interviews with **pre-schoolers (5 years and under)?** Please select all that apply.

☐   Pre-schoolers will play with the dolls

☐   Using the dolls will help memory recall

☐   Pre-schoolers are unable to move the dolls correctly because they do not have awareness about moving their own bodies.

☐   Dolls help if the pre-schooler is shy

☐   Preschoolers do not see the dolls as representing themselves

☐   Using dolls is a difficult activity for preschoolers

☐   Dolls help preschoolers to communicate about events that are embarrassing or shameful

☐   Dolls will be distracting for the preschooler

☐   Dolls help because preschoolers do not know the right words to describe the events

☐   Dolls help because preschoolers lack understanding of body positioning language (e.g., next to, on, below etc)

☐   Dolls provide clarity about what body parts preschoolers are communicating about

☐   Dolls are useful if the preschooler is untalkative (13)

Q10 Which of the following things apply to dolls being used in interviews with **early childhood children** (6-8 years)? Please select all that apply. Children (6-8 years) will play with the dolls

○ Using the dolls will help memory recall

○ Children (6-8 years) are unable to move the dolls correctly because they do not have awareness about moving their own bodies

○ Dolls help if the child (6-8 years) is shy

○ Children (6-8 years) do not see the dolls as representing themselves

○ Using dolls is a difficult activity for children (6-8 years)

○ Dolls help children (6-8 years) to communicate about events that are embarrassing or shameful

○ Dolls will be distracting for the child (6-8 years)

○ Dolls help because children (6-8 years) do not know the right words to describe the events

○ Dolls help because children (6-8 years) lack understanding of body positioning language (e.g., next to, on, below etc)

○ Dolls provide clarity about what body parts children (6-8 years) are communicating about

○ Dolls are useful if the child (6-8 years) is untalkative

Q11 Which of the following things apply to dolls being used in interviews with **middle** childhood children (9-11years)? Please select all that apply.

○ Children (9-11 years) will play with the dolls

○ Using the dolls will help memory recall

○ Children (9-11 years) are unable to move the dolls correctly because they do not have awareness about moving their own bodies

○ Dolls help if the child (9-11 years) is shy

○ Children (9-11 years) do not see the dolls as representing themselves

○ Using dolls is a difficult activity for children (9-11 years)

○ Dolls help children (9-11 years) to communicate about events that are embarrassing or shameful

○ Dolls will be distracting for the child (9-11 years)

○ Dolls help because children (9-11 years) do not know the right words to describe the events

○ Dolls help because children (9-11 years) lack understanding of body positioning language (e.g., next to, on, below etc)

○ Dolls provide clarity about what body parts children (9-11 years) are communicating about

○ Dolls are useful if the child (9-11years) is untalkative

End of Block: Riskiness and helpfulness of dolls
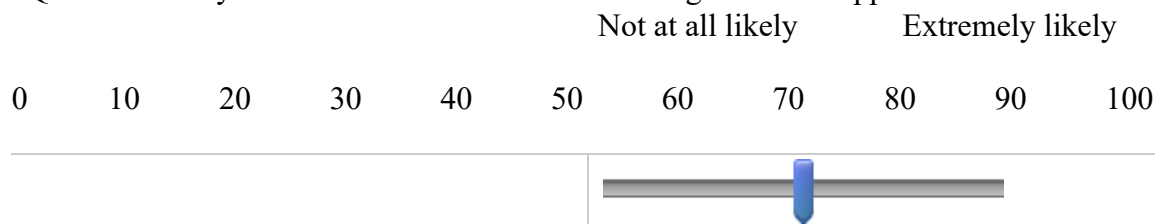
Start of Block: Video - Verbal

Please watch the video until the end, and then respond to the questions about the child. The video shows part of an interview with a child who is being asked about a recent play activity.

End of Block: Video - Verbal

Start of Block: Video - Doll

Please watch the video until the end, and then respond to the questions about the child. The video shows part of an interview with a child who is being asked about a recent play activity.

End of Block: Video - Doll

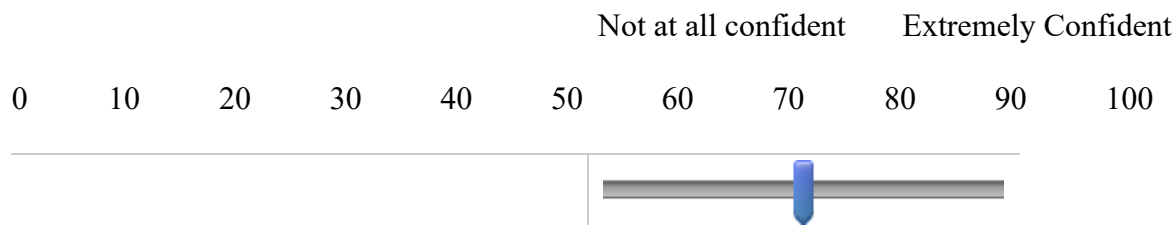**Start of Block: Video Credibility Questions - Memory**

When responding to these questions you will be asked your opinion about the child in the

video, and then will be asked to rate your confidence in your answer for each question

Q12 How likely is it that the child remembered the game as it happened?

	Not at all likely	Extremely likely

0	10	20	30	40	50	60	70	80	90	100

How confident are you with your above answer about the child's ability to remember the game?

	Not at all confident	Extremely Confident

0	10	20	30	40	50	60	70	80	90	100

End of Block: Video Credibility Questions - Memory

Start of Block: Capable

Q13 How capable is the child at describing the game that happened?

Not at all capable   Extremely capable

0   10   20   30   40   50   60   70   80   90   100

How confident are you with your above answer about the child's capability of describing the game?

Not at all confident   Extremely Confident

0   10   20   30   40   50   60   70   80   90   100

End of Block: capable

Start of Block: accuracy

Q14 How accurate do you think the child's description of the game was?

Not at all accurate   Extremely accurate

0   10   20   30   40   50   60   70   80   90   100

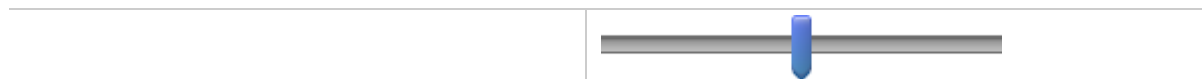How confident are you with your above answer about the child's accuracy?

Not at all confident   Extremely Confident

0   10   20   30   40   50   60   70   80   90   100

End of Block: accuracy

Start of Block: Confidence

Q15 How confident was the child when describing the game?

	Not at all confident	Extremely confident

0   10   20   30   40   50   60   70   80   90   100

How confident are you with your above answer about the child's confidence?

	Not at all confident	Extremely Confident

0   10   20   30   40   50   60   70   80   90   100

End of Block: Confidence

Start of Block: Honesty

Q16 How honest was the description that the child provided?

	Not at all honest	Extremely honest

0   10   20   30   40   50   60   70   80   90   100

How confident are you with your above answer about the child's honesty?

	Not at all confident	Extremely Confident

0   10   20   30   40   50   60   70   80   90   100

End of Block: Honesty

Start of Block: talkativeness

Q17 How talkative was the child?

Not at all talkative   Extremely talkative

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
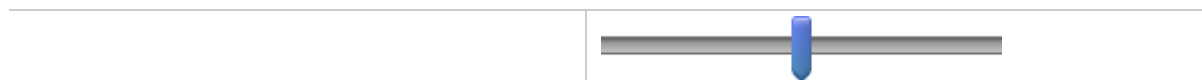
How confident are you with your above answer about the child's talkativeness?

Not at all confident   Extremely Confident

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |

End of Block: talkativeness

Start of Block: Believability

Q18 How believable was the child's description?

Not at all believable   Extremely believable

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |

How confident are you with your above answer about the child's believability?

Not at all confident   Extremely Confident

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |

End of Block: Believability

Start of Block: Suggestibility

Q19 How swayed by interviewer suggestion do you think the child was?

Not at all suggestible   Extremely suggestible

0   10   20   30   40   50   60   70   80   90   100

How confident are you with your above answer about the child's suggestibility?
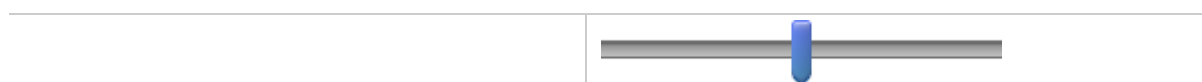
Not at all confident   Extremely Confident

0   10   20   30   40   50   60   70   80   90   100

End of Block: Suggestibility

Start of Block: Informativeness

Q20 How informative was the child's description of the game?

Not at all informative   Extremely informative

0   10   20   30   40   50   60   70   80   90   100

How confident are you with your above answer about the child's informativeness?

Not at all confident   Extremely Confident

0   10   20   30   40   50   60   70   80   90   100

End of Block: Informativeness

Start of Block: Coherent

Q21 How coherent was the child's description?

Not at all coherent   coherent

0   10   20   30   40   50   60   70   80   90   100

How confident are you with your above answer about the child's coherence?

Not at all confident   Extremely Confident

0   10   20   30   40   50   60   70   80   90   100

End of Block: Coherent

Start of Block: Reliable

Q22 How reliable do you think the information was that the child reported?

Not at all reliable   Extremely reliable

0   10   20   30   40   50   60   70   80   90   100

How confident are you with your above answer about the child's reliability?

Not at all confident   Extremely Confident

0   10   20   30   40   50   60   70   80   90   100

End of Block: Reliable

Appendix F – Debriefing Page

Thank you for taking the time to participate in this survey: Using dolls to help children communicate their experiences

The purpose of this research was to gain a better understanding of the general population's beliefs about whether using dolls influences how children communicate their experiences. Your responses will be helpful in identifying what the general population know about these issues, and any misconceptions that might need to be addressed when cases of child abuse or abuse of vulnerable adults are tried in court. They will also be useful in providing training to interviewers who talk with children, about the possible impact on children's credibility, if dolls are used.

If you have been affected by the nature of the questions asked in this survey in any way, help and support can be found at https://www.kidshealth.org.nz/child-abuse-directory-information-and-support

If you would like to stay updated with the project and the research findings, you can visit Dr Deirdre Brown's research web page www.applieddevelopmentallab.com July 2021 after to see a summary of the results.

Researcher Contact Information
If you have any questions or concerns about the survey, please contact Christiana Hartley, christiana.hartley@vuw.ac.nz or Dr Deirdre Brown, Deirdre.Brown@vuw.ac.nz

Human Ethics Committee information
This research has been reviewed by the Human Ethics Committee of Victoria University of Wellington. If you would like to discuss the study with someone who is not one of the research team, you might contact the convenor of the Human Ethics Committee at Victoria University of Wellington, Associate Professor Judith Loveridge, judith.loveridge@vuw.ac.nz, +64 4 463 6028.

Thank you for taking the time to participate in this survey: Using dolls to help children communicate their experiences
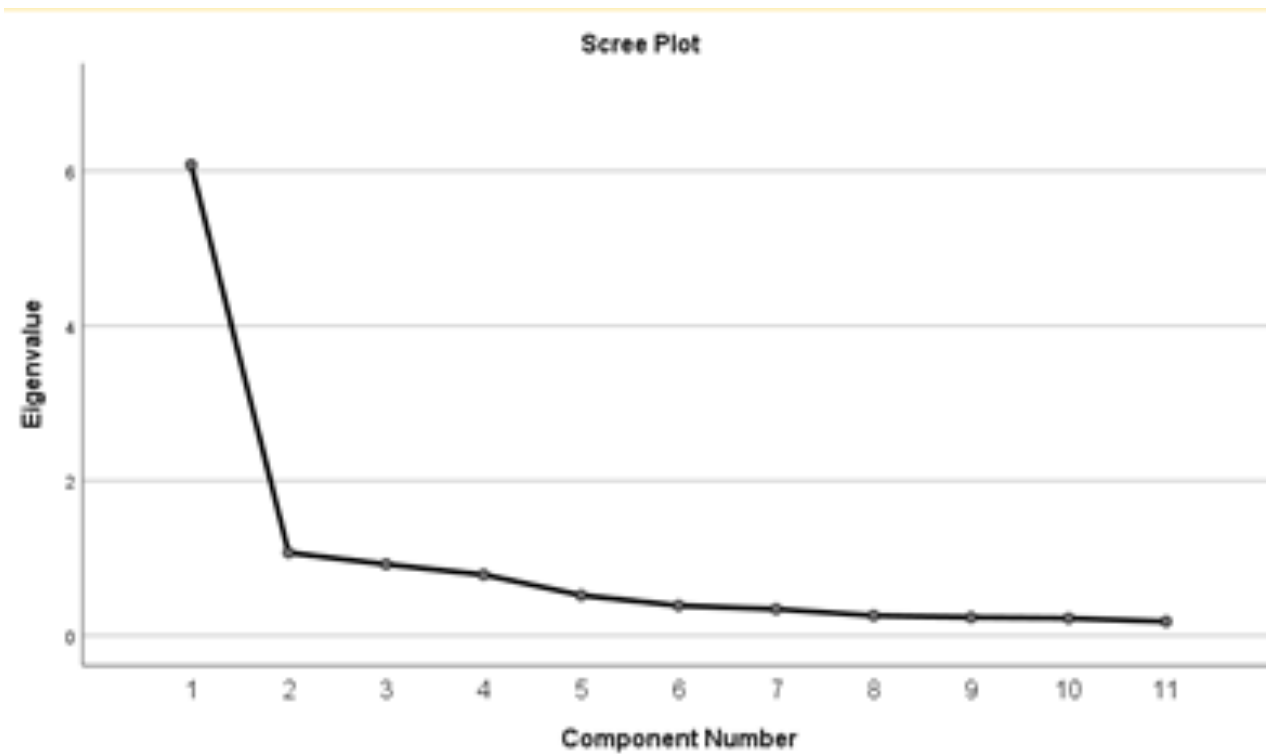
Appendix G – Scatterplots and Scree plots

Figure 13.

Screenshot of PCA Scatter plots and normal distribution
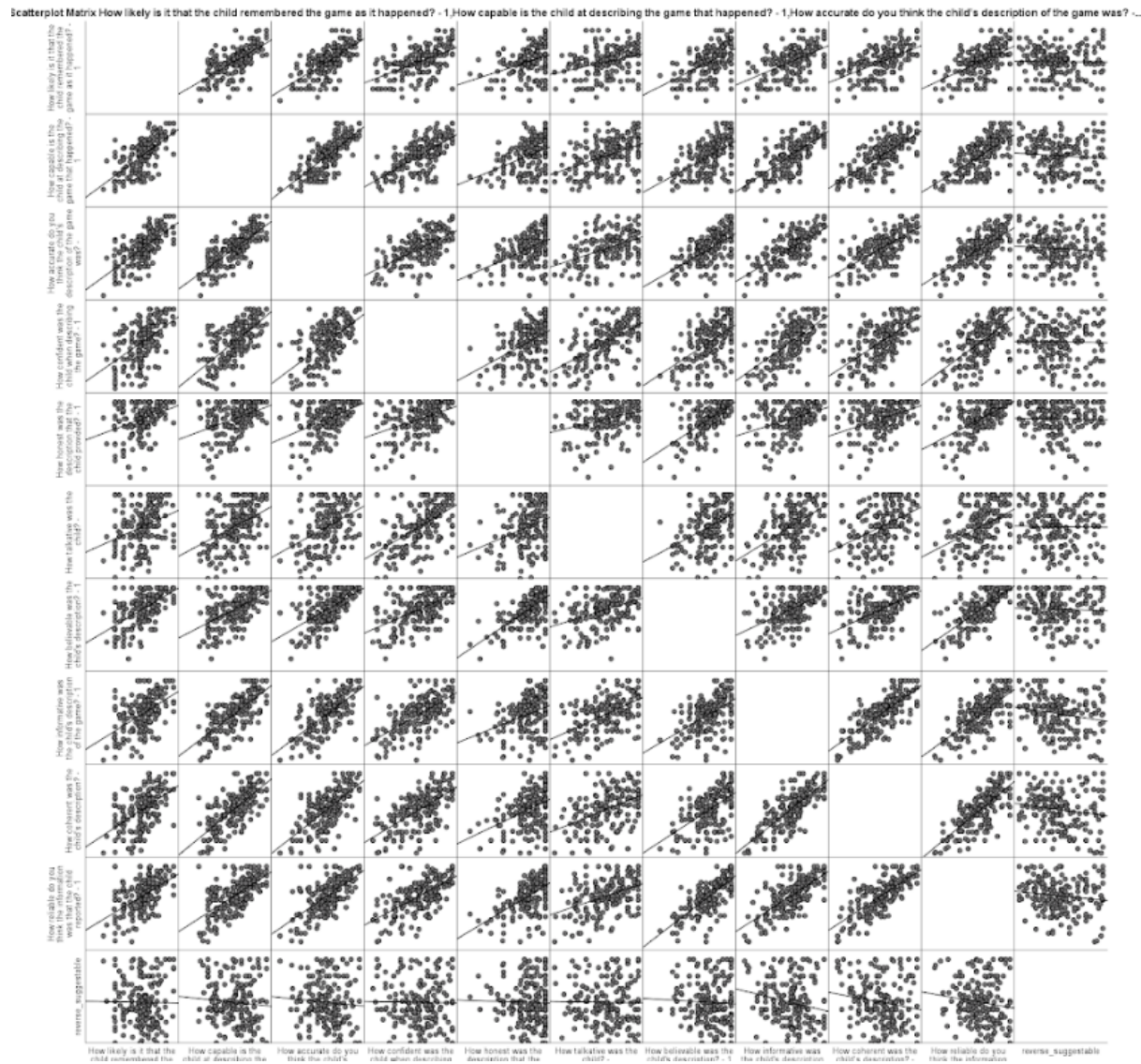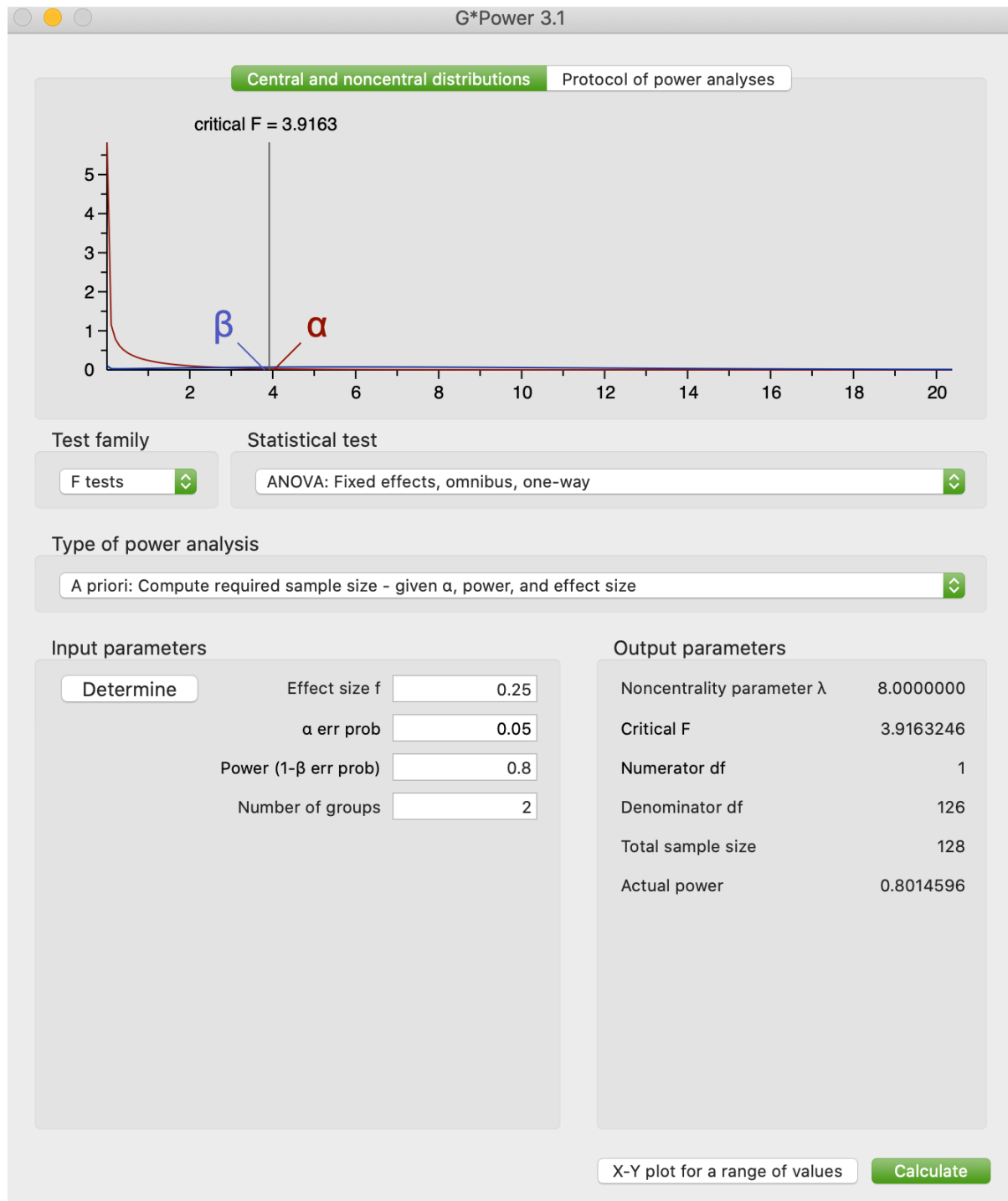
Figure 14.

Screenshot of PCA Scree Plot of all 11 items.

Appendix H – G*Power Calculations Screenshots

Figure 15.

Screenshot of G*power calculation for effect size for dolls study

Figure 16.

Screenshot of G*power calculation for effect size for jury survey study