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Relationship Between Theory-of-Mind Development and Children's Response to Pre-Interview Instructions

Rachel Van Roestel
King's University College, rvanroes@uwo.ca

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by

Rachel Van Roestel

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Department of Psychology

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Thesis Advisor: Dr. Laura Melnyk Gribble

Abstract

The relationship between Theory of Mind (ToM) development and use of pre-interview instructions in response to questions containing both true and false detail was examined. Twenty-four children aged 31- to 49- months old participated in a brief magic show. Approximately one week later each child was interviewed about the events of the magic show. Before the interview the child was given the pre-interview instruction, correct me if I make a mistake. The interview consisted of 8 questions containing details that happened during the magic show and 8 questions containing details that did not happen. It was hypothesized that those who had developed ToM would have more correct responses during the interview than those who had not. The hypothesis was not supported and there was no significant difference found in accuracy of response of questioning based on ToM development. However findings suggested that the pre-interview instruction might have decreased the total number of responses made by children to both true and false details because of reluctance to accept what the interviewer was suggesting.

Relationship Between Theory-of-Mind Development and Children's Response to Pre-Interview Instructions

It is important for individuals to give accurate reports during a forensic interview. Therefore the effects of social influence during the interview process have been heavily studied. Suggestibility is one of the social influences that are of concern. Suggestibility refers to "how easily one is influenced by both subtle suggestions and leading questions, as well as by explicit bribes, threats, and other forms of inducement" (Ceci & Bruck, 1993). Research has shown that young children are the most suggestible age group (Ceci & Bruck, 1993; Goodman & Melinder, 2007). Therefore, it is important to obtain the most complete and accurate reports when interviewing children. To achieve this non-leading questioning must be used and a number of interviewing protocols have been developed to ensure proper questioning (Goodman & Melinder, 2007). The National Institute of Child Health and Human Development (NICHD) developed one of the most commonly used protocols for interviewing children. Among the recommendations made by the NICHD protocol is the use of pre-interview instructions (Benia, Hauck-Filho, Dillenburg, & Stein, 2015; Lamb, Orback, Hershkowitz, Esplin, & Horowitz, 2007).

A forensic interview is scary and unfamiliar for young children (Gee, Gregory, & Pipe, 1999). They often feel pressure to please the adult interviewer because of the power imbalance and therefore show a tendency to agree with anything the interview says (Gee et al., 1999; Reed, 1996). Pre-interview instructions were designed to help manage the children's expectations of in a forensic interview (Dickinson, Brubacher, & Poole, 2015). Pre-interview instructions include a number of guidelines for the conversation that will take place. Some examples of pre-interview instructions are, you are allowed to say I do not know, I was not there so tell me if I make a

mistake, tell me if I say something you do not understand etc. Pre-interview instructions are also thought to help reduce the suggestibility of the child being questioned (Brubacher, Poole, & Dickinson, 2015; Dickinson et al., 2015; Krackow & Lynn, 2010; Saywitz & Moan- Hardie, 1994).

However, research on the effectiveness of using pre-interview instructions for reducing suggestibility when questioning children is inconclusive and often yields contradictory results (Brubacher et al., 2015). An explanation put forth for the mixed findings of previous studies is that there may be developmental differences between children who benefit from pre-interview instructions and those who do not (Bright-Paul, Jarrold, & Wright, 2008; Brubacher et al., 2015; Dickinson et al., 2015). To date, no study has been done specifically looking at individual pre-interview instructions and the dependability of their effectiveness on cognitive development. It is important to understand the developmental factors that play a role in the understanding and use of pre-interview instructions in interviews with children so that the potential limitations of these instructions can be recognized and with future research hopefully reconciled.

The following body of research found pre-interview instruction to be beneficial when interviewing children. Krackow and Lynn (2010) used the Event Report Training (ERT), an interviewing procedure that included the use of pre-interview instructions to study children ages 4- to 6- years- old. The children participated in two live events and two weeks later half of the children received ERT and half were in the control group. Those who received ERT training were made aware of the interviewer's naïveté by being reminded that the interviewer was not at the events and therefore does not know the answer to the questions being asked. They were then empowered to tell the interviewer if they had made a mistake. All the children were then given a memory interview in which some misinformation about the events was introduced. The results

indicated that the ERT increased the amount of open-ended responses without increasing the amount of inaccurate information. Therefore the ERT decreased the suggestibility of the children to questions containing false information and overall the responses to the memory interview were highly accurate.

Gee et al. (1999) conducted a study with older participants, aged 9- to 13- years old, with a similar design to the one done by Krackow and Lynn (2010). Half of their participants were given the instruction, its okay to say I do not know, and the other half were not. All participants then took a trip to the Science Center. Later the participants were suggestively questioned in an interview using false information. They found that pre-interview instructions coupled with a brief training session on how to properly use the instruction reduced the suggestibility of the participants. Unfortunately participants who received the instruction to say I do not know, were also less likely to give answers for questions containing true information.

A third study that supports the use of pre-interview instructions was by Dickson, Brubacher and Poole (2015). Children between the ages of 4- and 9- years- old were systematically studied using a number of pre-interview instructions. They were asked to tell the truth, and say if they do not understand a question when interviewed about a typical day at school. It was found that opportunities to practice the pre-interview instructions enhanced the children's understanding of the instructions and overall, the use of pre-interview instructions improved the accuracy of the children's testimony.

However, there have been a number of researchers who failed to find benefits of using pre-interview instructions. Geddie, Beer, Bartosik, and Wuensch (2001) exposed children ranging from ages 3- to 6- to a Circus Day event. Ten days later half of the children were given the following pre-interview instructions, try to remember as much as possible, correct me if I

make a mistake and you are allowed to say I do not know. All children were then given a memory interview in which they were exposed to some false information. Overall there were no benefits found for those who received the pre-interview instructions.

Similarly, Ellis, Powell, Thomson, and Jones (2003) found that pre-interview instructions were not effective in reducing suggestibility in their sample of 4- and 5- year- olds. In their study half of the participants were given the pre-interview instructions, tell me if you do not know the answer, tell me if I say something that is not true and do not guess. Participants were then shown three live events, followed by a biased interview containing false information. There was no difference found in the suggestibility between those who received the pre-interview instructions and those who did not**.** It was suggested that the lack of results found may be because the children did not understand the pre-interview instructions and therefore they were unable to generalize them to the conversation at hand (Ellis et al., 2003; Geddie et al., 2001).

One of the explanations proposed for the inconsistent effectiveness of pre-interview instructions is whether or not the participants were given a chance to practice the instructions before the interview. Giving children the opportunity to practice the pre-interview instructions before the forensic interview would help themdevelop a better understanding of how to use the instructions in a forensic interview (Brubacher et al., 2015; Dickinson et al., 2015; Geddie et al., 2001; Gee et al., 1999; Krackow & Lynn, 2010; Reed, 1996). Gee et al. (1999) found that when children were given a chance to practice the pre-interview instructions the children committed significantly less commission errors in response to questioning containing false information. Therefore, the opportunity for practicing the instructions could explain in part, some of the differences in the research findings on pre-interview instructions. For the study at hand it is important to give the children a chance to practice the pre-interview instructions before

continuing on to the forensic interview in order to obtain the most accurate representation of the effectiveness of pre-interview instructions.

Another possible explanation is whether the children have the cognitive abilities required to fully understand and therefore utilize the pre-interview instructions presented to them. Central to our abilities to reason and communicate is Theory-of-Mind (ToM). ToM is about being aware that all human behaviour is guided by mental states such as, beliefs, intents, desires, and knowledge. It is also about understanding that one's mental states may differ from other people's (Apperly, Samson, Chiavarino, & Humphreys, 2004; Mcalister & Peterson, 2007). Bright-Paul et al. (2008) studied children between 3- to 6- years of age on six different ToM tests. All children were given a video to watch and then false information was introduced. The study concluded that improvements in ToM predicted reductions in suggestibility, independent of verbal ability. Interestingly it was found that children were unable to attribute false beliefs to themselves or others before the age of four. This study raises two major points: 1) The specific part of ToM that is implicated in the understanding of children's use of pre-interview instructions is the FBP. 2) Children under the age of four may not have the cognitive abilities to utilize pre-interview instructions.

The FBP refers to the ability to understand that one may hold beliefs that are incorrect and that other people may also have beliefs that are incorrect. Therefore, to use the pre-interview instruction that instructs children to correct the interviewer if they make a mistake, children must first understand the False Belief Principle; which requires them to recognize that the interviewer is capable of making a mistake (Brubacher et al., 2015; Mcalister & Peterson, 2007). Children are typically not able to attribute false beliefs to themselves or others until around age of 4. By the age of 6 there is a major conceptual shift and children are highly accurate in False Belief

Tasks (Apperly et al., 2004; Bright-Paul et al., 2008; Brubacher et al., 2015; Dickinson et al., 2015; Mcalister & Peterson, 2007). Therefore it is important to take ToM development and specifically the FBP into consideration when testing the effectiveness of pre-interview instructions on young children.

There has been no clear consensus about the cognitive mechanisms that underlie the relationship between ToM and suggestibility (Bright-Paul et al., 2008). Consequently no previous research has been done specifically testing the relationship between having developed the FBP and the effectiveness of decreasing suggestibility using the pre-interview instruction, tell me if I make a mistake. Thus in the present study we hypothesized that those who had developed the FBP would tell the interviewer they had made a mistake more often and therefore produced more accurate reports when provided with false information about the event in question. The FBP was measured using two different tasks. The Sally-Anne task measured the ability to attribute false beliefs to others and was scored out of one, while the Deceptive Box task measured the ability to attribute false beliefs to one's self and was scored out of two (Bright-Paul et al., 2008). The effectiveness of warning the children being interviewed to correct the interviewer if she made a mistake was measured by the number of accurate responses made in the forensic interview in response to questions containing true and false details. Therefore for the hypothesis to be supported those who received the pre-interview instruction and had the highest scores on the false belief tasks would have to commit the fewest errors and use the instruction more often compared to those who received the instruction and performed poorly on the false belief tasks.

Methods

Participants

Thirty children between 31 and 49 months (*M* age in months = 41.43, *SD* = 4.68, Males = 46.67%) were recruited through a daycare in London, Ontario. Consent letters were sent home with the children and those with parental consent were included in the study. Six children were excluded from the data. Three did not complete the interview, two were absent on the day of the interview, and one was due to an experimenter error. There were a total of 10 children in the no ToM group between 36 and 49 months (*M* age in months = 42.10, *SD* = 4.23, Males = 60%,) and 14 children in the ToM group between 34 and 47 months (*M* age in months = 41.00, *SD* = 3.96, Males = 50%).

Materials

Magic Show. A scripted magic show that included the following 16 pre-specified details was performed for the children (the 16 pre-specified target details are in italics):

> The *magician put on a magic hat*, and a cape. She *asked each child to put on magician-helper star*. For her first trick, the magician *put a red ball in her hat*. She told the children *that "hocus-pocus ka-bam" were the magic words* that they would say them to help her with the trick; the children and the magician practiced saying the magic words. The magician *waved her magic wand* and the *ball reappeared in a box/cup*. The children *rang a small bell* and the ball reappeared in the magician's hat. For her second trick, the *magician put a saltshaker on a quarter*. The magician then closed her eyes and thought really hard to try and make the quarter disappear but the quarter did not disappear. The magician sighed and said she would try again. The *magician put a piece of paper over the salt shaker* and *the children stomped their feet*. When the magician lifted the paper, the quarter was still there but *the saltshaker disappeared*. For her final trick, the magician attempted to juggle four balls but dropped the balls. *The children each picked up a ball*

and the *magician laughed* and said she was clumsy. The *magician put her hat and the tricks away in a box. She showed the children a picture of her new goldfish* and *gave each child an award for being such a good helper*.

Interview Details. Each child was interviewed about the 16 pre-specified details of the magic show. The interviews were made up of one question for each detail. For each detail a question containing true information was created and a question containing false information was created. The pre-specified details of the magic show with their true and false questions are listed in Appendix A. Each interview had 8 questions that were created using true details of the magic show and 8 questions were created using false details of the magic show. Six version of the interview were created such that there was an even amount of times each pre-specified detail was asked about using true and false information. Children were randomly assigned to one of the six versions of the interview.

Each child was awarded a point for each question they answered correctly. One point was awarded for each question containing true information that was answered with a "yes". The score for accuracy on true questions was out of eight. Additionally, one point was awarded for each question containing false information that was answered with a "no". The score for accuracy on false questions was also out of eight.

Deceptive Box Task. This task measured the children's ability to recognize their own false beliefs about prior knowledge (Gopnik & Astington, 1988). In this task the child was shown a Smarties box and asked "What do you think is in the box?" The researcher then showed the child what was really in the box (three Crayons). She then asked the test question, "What do you think was inside the box *before* it was opened?" Then the researcher told the child that their

teacher has not seen what was inside the box. The child was then asked the second test question, "If I asked your teacher what is inside the box, what would he/she say?"

The Deceptive Box Task was scored out of two. One point was awarded when the child responded that they thought there was Smarties inside the box before it was opened, recognizing that they had a false belief about what was in the box. An additional point was awarded if the child responded that their teacher would think there is Smarties inside the box, recognizing that the teacher can also hold a false belief about what is inside.

Sally- Anne Task. This is a third person false belief task by Baron-Cohen, Leslie, and Frith (1985) which was modified for our study using recognizable characters, Barbie and Mickey Mouse. The following scenario was then acted out and commentated by the researcher using the two characters: Barbie had a box in front of her and Mickey Mouse had a basket. Barbie took a marble and placed it into her basket to keep it safe. The researcher then put Barbie to bed under the table. While Barbie was asleep Mickey Mouse took the marble out of the box and put it into the basket in front of him. Next, Barbie was woken up. The child was then asked the test question, "Where will Barbie look for the marble?" Then the child was asked two control questions, "Where is the marble really?" and "Do you remember where Barbie put the marble in the beginning?"

The Sally-Anne Task was scored out of one. If the child answered that Barbie thought the marble was still in her basket, recognizing that Barbie does not have the same knowledge the child and researcher have, then they were given a score of one. If both control questions were answered incorrectly the child would be excluded from the data because they were unable to follow the story.

Procedure

Children were sent home with letters of information about the study and consent forms for their parent or guardian to sign. Children with consent participated in two 10-15 minute sessions, which took place at a daycare in London, Ontario. The most convenient times and dates were set up with the teachers. Interviews were audiotaped so that the children's performance could be accurately scored.

During the first session a female research assistant visited the classroom and performed a magic show for children in groups of approximately 8. To make the children comfortable, she engaged the children in a brief conversation prior to the magic show. After a few minutes, she told the children that she was learning how to be a magician at magic school. She then asked the children if she could practice her tricks for them and if they would like to be her magic helpers. She then performed a scripted magic show that included 16 pre-specified target details. During the show any details that were missed were recorded and it was ensured that an appropriate version of the interview was assigned to each child based on what they saw during the magic show.

Approximately a week later (M = 6.16, SD = 2.12, range: 5-7 days) the researcher returned to the daycare for interview and ToM tests. Each child was individually interviewed about the magic show. The child was introduced to the interviewer and told that they would be asked some questions about what happened when the magician came to visit.

Children were given the pre-interview instruction: "I was not at the magic show and do not know what happened. I may make mistakes and ask you some things that are wrong and did not happen. I want you to tell me if this happens." After the instruction was given, the interviewer practiced the pre-interview instruction with the child to ensure comprehension and generalization. The interviewer asked the child if they were 100 years old. If the child corrected

the interviewer the child was praised. If the child did not correct the interviewer the child was made aware of their mistake and asked a second practice question, "Are you going to the water park today?" This pattern was repeated until the child had successfully used the pre-interview instruction to correct the interviewer.

After the pre-interview instruction was given the researcher conducted the interview. A copy of what the interview looked like is in Appendix B. During the interview the researcher carefully wrote down the answers to each of the questions. The interviews were audio recorded to ensure accuracy of recording.

Next the child was given two FBP tasks to gauge their ToM development. The Deceptive Box Task was done first, followed by the Sally-Anne Task. To end the session the child was given a verbal debrief and a chance to ask any questions. The child was thanked for their participation, given an award, and picked out a sticker.

After all the data had been collected the children were broken down into two groups. The no ToM group consisted of those who had scored a 0 on the FBP tasks and the ToM group consisted of those who scored between a 1 and 3 on the FBP tasks.

Results

A one-way between subjects ANOVA was carried out on age in months. The independent variable was ToM development (no ToM vs. ToM) as the between- group factor. There was no significant effect found F (1,22) = 0.004, *ns.* The analysis revealed that there was no meaningful difference in age, between the no ToM (M = 42.10, SD = 4.23) and the ToM (M = 42.00, SD = 3.96) groups.

A 2 x 2 between subjects ANOVA was carried out on the accuracy of responses during the interrogative interview (true vs. false) as a repeated factor. The independent variable was

ToM development (no ToM vs. ToM) as the between-group factor. The analysis revealed that there was no significant main effect of accuracy, $F(1,22) = 3.17$, *ns*. Therefore there was no meaningful difference between the accuracy on true ($M = 6.38$, $SD = 1.77$) and false ($M = 5.42$, $SD = 2.10$) questions. There was also no significant two-way interaction of Accuracy × ToM Development, $F(1,22) = 1.13$, *ns*. The data is presented in Table 1.

Table 1
Mean Scores for the Sample by Theory of Mind

	True details answered correctly	False details answered correctly
No Theory of Mind	6.80(1.87)	5.10(2.28)
Theory of Mind	6.07(1.69)	5.64(2.02)
Entire sample	6.38(1.77)	5.42(2.10)

Note: Numbers in parentheses are standard deviations

Discussion

It was expected that giving children the pre-interview instruction, correct me if I make a mistake, would help combat the suggestibility of the children being interviewed. Particularly, that the children who had developed ToM and subsequently the FBP, would use the instruction more often and therefore produce more accurate responses in the interview. However, the findings did not support the hypothesis. Those who hadto developed ToM did not perform more accurately on questions containing true and false details than those who had no ToM development.

Interestingly, when previous studies have used a similar magic show deign paired with a suggestive interview, children performed much better on the questions containing true details. A previous study by Melnyk and Bruck (2004) used a magic show design containing true and false details with children aged 5- to 6- years- old. In their first experiment children were asked questions about the magic show two weeks after the event. On the questions containing the information about events that had occurred in the magic show, the children had a mean accuracy score of 4.55 out of 5. This produced an accuracy rate of 91% on true questions, in comparison to an accuracy rate of 79.75% found in the present study. Therefore, it seems that the pre-interview instruction, correct me if I make a mistake, is resulting in an underperformance by the children on questions containing true details.

This finding is in line with previous studies that have used an interrogative design. They also found that the use of pre-interview instructions reduced the rate of agreeing with the interviewer on questions that contained both true and false details (Gee et al., 1999; Nesbitt & Markham, 2006; Saywitz & Moan- Hardie, 1994). An explanation put forth for this finding is, the pre-interview instructions are influencing the children in such a way that they become hyper

vigilant in their responses. Children will not provide an answer unless they are absolutely certain and therefore tend to disagree with statements that are true more often.

The results of this study are of practical importance in the interviewing of children. First they suggest that the efficiency of pre-interview instructions is not as straightforward as it was once thought. Pre-interview instructions still need to be put under rigorous testing in an experimental design in order to understand the true effect they have on children's reports. Second, the findings caution against relying on pre-interview instructions to solely combat against the suggestibility of children. If interviewers are told that using pre-interview instructions will buffer the effects of suggestive questioning then the interviewer may use more coercive tactics in an attempt to get more information out of a child. This could result in an increase in the number of false statements being made and in extreme causes may lead to a wrongful conviction. Therefore it is important to understand that pre-interview instructions have a number of limitations as found in the present study and previous studies (Ellis et al., 2003; Geddie et al., 2001).

Some limitations of the present study are, the way ToM was measured and the lack of a comparison group that did not receive the pre-interview instruction. To access the impact ToM development had on the children's ability to tell the interviewer they made a mistake ToM was broken down into two groups based on a score out of three on the FBP tasks. Those who were in the no ToM development group scored a zero and those who were in the ToM group scored between a 1 and 3. However, this may not have been a very reliable representation of the differences between high and low ToM development. In the future to achieve a more meaningful representation of the differences between children who have no developed ToM and those who have it may be beneficial to just compare those who scored a 0 on the ToM tests and those who

scored a 3. Another suggestion would be to score ToM development out of more than just 3. This could also help create a more accurate representation of the differences between groups.

The second limitation is that final conclusions about the impact of pre-interview instructions on the accuracy of children's response in interviews cannot be made. This is because there was no control group included in the study for children who did not receive the pre-interview instructions. Instead we can only infer about the role the instructions play on the accuracy of responses to questions containing true and false questions based on previous research.

To paint a more accurate picture the effects of pre-interview instructions have on children's suggestibility there is a need for more research testing the instructions in an interview context. Future research should test each instruction individually to tease out the differences between the instructions and avoid making broad statements in an attempt to generalize findings across all pre-interview instructions. It would also be beneficial to include a control group that does not receive the instructions to ensure that any findings were a result of the pre-interview instructions themselves and not any other confounding variables. Future research should be done to revisit the effect cognitive development may have on the use of pre-interview instructions. There are a number of other cognitive paradigms that have been implicated and are in need of studying including, source monitoring, and metacognition (Bright-Paul et al., 2008).

ToM should not be completely discounted as a potential influence on the use of pre-interview instructions. The differences in ToM development in the present study may not have been large enough to show meaningful differences between children. Therefore more research should look at the effects of ToM with a sample that has a more board age range and a meaningful break down between the ToM groups.

Although the hypothesis was not supported in the present study and ToM development did not have a significant impact on children's ability to utilize the pre-interview instruction, you have made a mistake; it did highlight the impact the pre-interview instruction had on responses to questions containing true and false details. The results revealed that the pre-interview instruction might have made the children hesitant in accepting the interviewer's suggestions in response to questions containing true and false details. This finding is in line with previous research using an interrogative design (Gee et al., 1999; Nesbitt & Markham, 2006; Saywitz & Moan- Hardie, 1994).

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Appendix A

True details	False details
The magician put on a hat.	The magician wore magic gloves.
The child wore a magician-helper star.	The child wore purple magician-helper boots.
The magician taught the children some magic words.	The magician read the children a story book.
The magician put a red ball in his hat.	The magician put a red ball in his shoe.
The magician waved the magic wand.	The magician broke the magic wand.
The magician made the red ball go back into the box/cup.	The magician turned the red ball into a bird.
The child rang a bell.	The child blew up a balloon.
The magician put a salt shaker on a quarter.	The magician put a chair on a quarter.
The magician put a piece of paper over the salt shaker.	The magician spilled some salt.
The children stomped their feet for a trick.	The children sang a magic song for a trick.
When the magician lifted up the paper, was the salt shaker gone.	The magician drank some water.
The magician laughed when he dropped the juggling balls.	The magician cried when he dropped the juggling balls.
The child picked up a juggling ball.	The magician put the juggling balls in the garbage.
The magician put his hat in a box.	The magician brushed his hair.
The magician showed the child a picture of his pet goldfish.	The magician showed the child a picture of his pet rabbit.
The magician gave the child a certificate for being a good helper.	The magician gave the child a hug for being a good helper.

Appendix B

Name:	Date:
School:	Interviewer:

1. I heard a magician came to visit your school a couple weeks ago. Did she put on (a hat/ magic gloves)? _____
2. Hmmm, and did she ask someone to put on a purple magician- helper (star/ boots)? _____
3. Did she (teach you some magic words/ read a story book)? _____
4. Where did the magician put the red ball? Was in in her (hat/ shoe)? _____
5. When the magician picked up her wand did she (wave it around/ break it)? _____
6. Did the magician make the red ball (go back into the cup/ turn into a bird)? _____
7. Next, did the magician ask someone to (ring a bell/ blow up a balloon)? _____
8. I heard the magician did a trick with a quarter. Did she put (a salt shaker/ chair) on the quarter? _____
9. Then, did the magician (put a piece of paper over the salt shaker/ spill some salt)? _____
10. Did the magician ask someone to (stomp their feet/ sing a magic song) for a trick? _____
11. What did the magician do next? Did she (lift up the paper and the salt shaker was gone/ drink some water)? _____
12. Did the magician (laugh/cry) when she dropped the juggling balls? _____
13. Did (you/ the magician) pick up the balls after she dropped them? _____
14. Next, did the magician (put her magic hat in a box/ brushed her hair)? _____
15. The magician showed you a picture before she left. Was it of her pet (goldfish/ rabbit)? _____
16. I heard you were such a good helper. Did the magician give you (an award/ hug) for all your help? _____