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Second Order Theory of Mind and Peer Popularity

Examining the relation between level of understanding of Second Order Theory of Mind and Peer Popularity in pre-adolescent children.

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Abstract

In this study, the relation between the level of understanding of Second Order Theory of Mind and Peer Popularity by pre-adolescent children (N = 78) aged 8-12 years (M = 9.93) has been explored. Second Order Theory of Mind (SO ToM) is defined as the ability to hold a belief, which is about a belief. Peer Popularity (PP) is defined as sociometric popularity. It was expected that (1) there will be a positive relation between the level of understanding of SO ToM and Peer Popularity in pre-adolescent children, (2) there will be a positive relation between performance on the Strange Stories task and Peer Popularity, (3) there will be a positive relation between performance on the Faux Pas task and Peer Popularity, (4) there will be a positive relation between performance on the False Belief questions and Peer Popularity in pre-adolescent children. The Strange Stories task and Faux Pas task were used to measure the level of understanding of SO ToM and False Belief, the Social Status rating scale was used to measure Peer Popularity. None of the hypotheses were supported. However, a significant curvilinear relation was found for performance on the SS task and PP. Separated by gender, for girls, there were significant curvilinear relations found for level of understanding of SO ToM and for performance on SS task, with PP as the dependent variable. For boys, a significant relation was found for performance on the FP task. When split into age groups, the relation for performance on the SS task was also found to be significant for both the younger and older age group. When the data was squared, significant relations for the level of understanding of SO ToM and PP, performance on the SS task, FP, FB task and PP were found. As well as a significant relation for performance on the SS task and PP. For boys, the relation between performance on the SS task, FP task and PP was found significant. For both the young and old age group, the relation between performance on the SS task and PP was found significant. Based on this study it seems that the relation between the level of understanding of SO ToM and Peer Popularity is not as straightforward and linear as it seems.

Introduction

The ability to understand the mental states of others is an important tool in communication with others. This ability is known as the Theory of Mind. The Theory of Mind (ToM) is a complex cognitive function that allows us to understand the emotional and cognitive states of others, which enables us to anticipate and interpret other people's behaviour (Duval, Piolino, Bejanin, Eustache & Desgranges, 2011). Second Order Theory of Mind (SO ToM) is a step further in the process of developing the cognitive function, such as making conclusions about a belief, which is also about a belief (Finneran, Francis & Leonard, 2009). In research, SO ToM is a barely visited field. In the past, ToM was thought to be a to be more black and white: someone either does or does not have the ability to understand other people's mental states in full extent. In more recent research it has come to light that the development of ToM is a gradual process and less black and white (Lagattuta, et al., 2015). Peer Popularity (PP) is, as the term itself states, how popular someone is perceived by their peers. In this research, the relation between SO ToM and Peer Popularity in pre-adolescent children will be explored. The study will be done with Dutch children aged 8 - 12. To get a clear definition of the aforementioned constructs and why they are related, they are discussed more extensively in the following paragraphs.

Second Order Theory of Mind

First, it is important to know what SO ToM exactly entails. SO ToM is the ability to make conclusions about a belief that's about a belief. For this, children need to be able to recognise that beliefs are mental representations of reality, which do not necessarily need to be true (Finneran, Francis & Leonard, 2009). In easier words, it is the ability of someone to consider what people think about other people's thoughts. For example, when John sees his mother put an orange in the cupboard, John knows his mom and he both know the orange to be in the cupboard. Later, John sees his dad moving the orange to another cupboard, an event that mom does not witness. John and his dad now know the new location of the orange, John's mom does not. When John is asked where his mom thinks the orange is, he can give two answers: (1) In the first cupboard (old location) or (2) In the second cupboard (new location). The first answer would show the presence of First Order ToM in John, the second answer would show the lack of ToM. The ability of John to know that his mom thinks the orange is still in the first cupboard, while himself knowing that the orange is in a

different location, and applying this knowledge shows the presence of ToM. John is able to recognise that his mom has another mental representation than he does about the location of the orange (John's mom belief (A) is that the orange is in the first location (X). This reasoning deals with a single target for belief (A) and the mental representation of reality (X), which can be explained as A believes X. John can make a judgement about his mother's belief X (the orange is in the first cupboard) while knowing a different truth, which is First Order ToM. SO ToM will take it a step further. When John is asked where his mom thinks that John thinks the orange is, he would use his SO ToM reasoning. To explain it further, mom still does not know that dad moved the orange or that John knows about it. She thinks that John also still thinks that the orange is in the first cupboard because she does not know that John witnessed his dad moving the orange. In this case, John has to be able to realise that his mom (A) believes that he (B) still believes that the orange is in the first cupboard (X). Easier said: A believes that B believes X. The ability to recognise this belief about a belief of reality that his mom has, is SO ToM (Miller, 2009).

Next to this, SO ToM is also the ability to estimate whether a comment or action is shameful or disrespectful, or to detect sarcasm, irony, bluff, (white) lies and figure of speech (Baron-Cohen, O'riordan, Stone, Jones & Plaisted, 1999). To start, an example of this would be this short story: *'Simon is a big liar. Simon's brother Jim knows this, he knows that Simon never tells the truth! Now yesterday Simon stole Jim's ping-pong bat, and Jim knows Simon has hidden it somewhere, though he can't find it. He's very cross. So he finds Simon and he says, "Where is my ping-pong bat? You must have hidden it either in the cupboard or under your bed because I've looked everywhere else. Where is it, in the cupboard or under your bed?" Simon tells him the bat is under his bed.'* (Happe, 1994). In this story, Simon always lies, which means he also lies over the whereabouts of the bat. The ability to understand what Simon tells is a lie is part of SO ToM. In this example, the reader should understand the way Simon utilises the existing beliefs to lie and decide the correct action for Jim based on the way Simon answers. The reader knows that Jim knows that Simon knows where the bat is, and the reader also knows that Simon will lie about the location. The fact that the reader can apply this knowledge to the situation and knows that Jim has to look in the location that Simon does not mention, is the ability to apply the principle of SO ToM. Secondly, an example of a figure of speech would be: *'Emma has a cough. All through lunch she coughs and coughs and coughs. Father says, "Poor Emma, you*

must have a frog in your throat!''' (Happe, 1994). Adults know that Emma does not really have a frog in her throat and that her dad uses a figure of speech. Children, however, might actually think Emma actually has a frog in her throat. The ability of the reader to know that Emma's dad used a figure of speech, which is not literally true and that Emma does not have an actual frog in her throat is what develops with SO ToM. The reader should be able to distinguish the difference between the reality X (Emma has a cough), Emma's dad that uses a figure of speech (B), and the fact that Emma does not think that her dad's remark is weird (A). Which would again translate in the sequence of Emma's belief (A) of her dad's remark (B) about the reality (X).

Another part of SO ToM is to be able to detect faux passes in day-to-day life. A faux pas is an (unintentional) shameful and/or insensitive act or remark in a social situation (Baron-Cohen, O'riordan, Stone, Jones & Plaisted, 1999). The recognition of figures of speech, white lies etc, would also show the presence of SO ToM. The faux pas, white lies and figure of speech can be comprehensively explained with the following example, using John, his mom and the orange in the cupboard again. In this example correctly recognising a white lie will be used. When person A understands that person B would be sad about the true reality, it is possible that person A tells a white lie to person B, to spare person B's feelings. Person A in this example would use FO ToM. Person B now has a certain belief about reality (X). Person A also believes that person B has this certain belief (X). It would be SO ToM when a third person C is able to recognise that person A has the belief about person B that person B believes the reality of the white lie (X).

The relation between Second Order Theory of Mind and Peer Popularity

Before the relation between SO ToM and Peer Popularity is discussed, it is needed to have a closer look at Peer Popularity itself first. Popularity among peers can be divided into two different constructs, sociometric popularity and perceived popularity. Sociometric popularity is how well-liked people are by their peers and sought out to do activities with. Perceived popularity is the amount of status that others assign to a person (Brown & Larson, 2009). In this research sociometric popularity will be used to define Peer Popularity. Sociometric popularity can be measured by constructs such as likeability or acceptance by peers (Cillessen, Schwartz & Mayeux, 2011). To increase social status and thus popularity it is

important for children to increase their likeability (Rodkin, Ryan, Jamison & Wilson, 2013). In this research, the focus will be on the likeability by peers.

It has been found that ToM is of influence on peer relations. Caputi, Lecce, Pagnin & Banerjee (2012) call ToM 'mind-reading abilities'; to be able to devise what someone else is thinking. They found this ability to be linked to individual differences in the success of peer relations. The ability to engage in affective perspective-taking (ToM) and to understand False Belief can contribute to acting out certain positive social behaviours that can improve social relations, which can lead to an increase in Peer Popularity. Caputi et al. (2012) also found a predictive relationship, ToM at age 5 predicted prosocial behaviour at age 6 as well as ToM at age 6 predicted prosocial behaviour at age 7. ToM also related to children's social-cognitive ability to solve social problems, which in turn could increase their popularity by peers (Bosacki & Wilde Astington, 1999) When a child is able to assess the mental states and emotions of another person, they are also able to act effectively in a social situation with peers. Being able to act effectively in a social situation with peers, and thus making the favourable decisions on how to act, increases the child's likeability. In another study, conducted by younger school aged children, they found ToM to be a predictor of later friendships and peer relations. Children's ability to understand the thoughts, beliefs, and desires of others can facilitate their real life behaviour in social interactions. For these skills to be correctly used in social situations it takes development and time. (Fink, Begeer, Peterson, Slaughter & de Rosnay, 2015; Kuhnert, Begeer, Fink & de Rospay, 2017). Based on the aforementioned research, it seems that that (SO) ToM and Peer Popularity are connected with each other. When children perform better on (SO) ToM tasks, they are usually more liked by their peers and some research implies that performance on (SO) ToM tasks can positively predict likeability by peers later in childhood.

Strange Stories, Faux Pas and False Belief

SO ToM can be tested in various ways, such as the Eyes test (Baron-Cohen, Wheelwright, Hill, Raste & Plumb, 2001), the Strange Stories Test (Happé, 1994) or the Faux Pas Test (Baron-Cohen, O'riordan, Stone, Jones & Plaisted, 1999). In this research, the Strange Stories and the Faux Pas test will be used to measure SO ToM. These two tests measure different cognitive mechanisms (Ahmed & Miller, 2011). The Strange Stories test (Happé, 1994) measures a person's ability to understand the

beliefs of one character, which can differ from reality. The Strange Stories task can measure difficulties in (SO) ToM reasoning (White, Happé & Frith, 2009). The Faux Pas test (Baron-Cohen, et. al., 1999) measures the ability of a person to simultaneously understand the beliefs of two characters and to detect a so-called ‘faux pas’: something a person should not have said in that situation. Both of these tests can measure the SO ToM because the participant has to answer what they think that person A believes about the belief that person B has about reality (X) in a story. In this way, the tests measure the ability of the participant to make a judgement about a belief about a belief in a story. Children who had higher social preference scores also performed better on the Faux Pas test (Banerjee & Watling, 2005). Relative scores on the Faux Pas test predicted peer acceptance and peer rejection a year later. This was only found in the older cohort studied, which indicates that a certain ongoing development of understanding of SO ToM must first happen before it can influence peer relations (Banerjee, Watling & Caputi, 2011). False Belief (FB) is also tested in the Faux Pas test. False Belief is the ability to recognise that the belief that a person may have about a situation is incongruent with reality. Successfully recognising False Beliefs, when a conflict between the False Belief and the reality is present, demonstrate an understanding of ToM (Aichhorn, Perner, Kronbichler, Staffen & Ladurner, 2006; Walker, 2005). A failure to inhibit information about reality has often been suggested as a reason for understanding False Belief less (Apperly, Back, Samson & France, 2008). To be able to fully explore the possible relations, it is important in the current research to make distinctions between the different tasks as well and not only look at performance on all the SO ToM tasks together.

Age-, gender differences and Second Order Theory of Mind

Contrary to previous beliefs, it is now thought that ToM develops over age. New research has found that the ToM in children continues to develop when they are ageing (Calero, Salles, Semelman & Sigman, 2013). Lagattuta, Elrod & Kramer (2016) found a significant increase with age in attributing the correct mental states and emotions to situations between 4 and 10-year-old children. Banerjee & Watling found that children’s detection and understanding of Faux Pas improves with age (Banerjee & Watling, 2005). In summary, multiple studies show that ToM develops even after the initial ‘age of appearance’ (Lagattuta, et al., 2015; Devine & Hughes, 2013).

Considering gender, research has found that girls perform better at various ToM tasks than boys (Bosacki & Wilde Astington, 1999; Devine & Hughes, 2013; Calero, Salles, Semelman and Sigman, 2013; Devine, White, Ensor & Hughes, 2016). Girls perform especially better on the Faux Pas test (Ahmed & Miller, 2011). Most of this research, however, is conducted with children before middle childhood. As not to skew the results in this study, considering the possible age and gender influences it is important to control for age and gender in this study.

Current research

This research explores the relation between level of understanding of Second Order Theory of Mind (SO ToM) and Peer Popularity (PP) in pre-adolescent children. Age and gender will be taken as covariates. In the research questions also a distinction is made between performance on the Strange Stories task, the Faux Pas task and the False Belief question, to explore the possible relations to the fullest. This is done because, as mentioned above, both tests measure SO ToM abilities utilising different mechanisms. To be able to test the aforementioned relations, a research question has been composed: (1) What is the relation between level of understanding of SO ToM and Peer Popularity in pre-adolescent children? To explore this relation in more detail, the following three research questions are added in this study: (2) What is the relation between performance on the SS task and Peer Popularity? (3) What is the relation between performance on the FP task and Peer Popularity? (4) What is the relation between performance on the FB task and Peer Popularity in pre-adolescent children?

The current research is relevant to conduct for the following reasons. For starters, to understand the thoughts of another person, therefore being able to deduce their wants, needs and believes, and reacting accordingly to them is very helpful in social situations. Developing a (further) ToM can help with this understanding (Hughes & Leekam, 2004). To understand that other people can understand the thoughts of yet another person, therefore being able to deduce their wants, needs, believes, and reacting accordingly to others, is very helpful in social situations. Social competence and Peer Popularity are closely related. A person who is socially competent is also more likely to be popular among peers. The person will act more attentive towards others, thus gaining their liking and rising in popularity. Gaining the liking of peers is favourable because it makes room to be able to build good

relationships with others (Cillessen, Schwartz & Mayeux, 2011). The relation between being socially competent and increased likeability by peers has been proven by pre-school children and children in their early school years (Slaughter., Imuta, Peterson & Henry, 2015), so what about the same relation with SO ToM and social competence in pre-adolescent children? This research is going to explore that. Next to that, there has not been a lot of research with SO ToM as well, which makes this research needed to contribute to the still existing gap in research. Thirdly, this knowledge can be used for creating new interventions. Being socially adapted is important in human life and it is necessary to improve and develop interventions that can help accommodate it. If there turns out to be a relation between SO ToM and social competence, new interventions can be developed that focus not only on the social part but also on improving SO ToM. As for age, this research is done by children in the pre-adolescent age group. There has been little research on ToM in this age group as well. To explore later development of ToM and thus possibly discovering later stages of development is a very interesting possibility for the general public. The outcomes of this research can be used to alter interventions more accurately to age-related developments, which can be beneficial for children struggling with grasping SO ToM.

Based on the literature discussed earlier, the following hypotheses for each research question have been set up. (1) There will be a positive relation between the level of understanding of SO ToM and Peer Popularity in pre-adolescent children, (2) there will be a positive relation between performance on the SS task and Peer Popularity, (3) there will be a positive relation between performance on the FP task and Peer Popularity, (4) there will be a positive relation between performance on the FB task and Peer Popularity in pre-adolescent children.

Methods

Participants

The tasks in this study were administered to 78 Dutch children (from which 38 were boys), aged 8 - 12 ($M = 9.93$, $SD = 1.24$), attending formal education at a primary school in the Netherlands. The parents and children themselves gave informed consent. At first, the school was approached if the testing could be conducted there and when the school agreed, letters of informed consent were obtained from the parents and children. Due to limited time and manpower, the choice was made to

conduct the tests at only one school. Because of this, the sample is not representative of the general population of the Netherlands, but more so for the specific school and the area where the school is located.

Materials

In this study, three tests have been used to test SO ToM, False Belief and Peer Popularity. The tests have been translated, where needed, in Dutch. The tests used are the Strange Stories (SS) test (Happe, 1994), the Faux Pas (FP) test (Baron-Cohen, O'riordan, Stone, Jones & Plaisted, 1999), and the Sociometric rating (SSrat) scale (Maassen, Akkermans & van der Linden, 1996), which will be discussed in the following paragraph.

Strange Stories test

The original Strange Stories test (Happe, 1994) measures SO ToM ability. Keeping the attention span of children in mind, a shortened version of the test has been used. Although this being an older test, recent research has proven that the test is still applicable nowadays: the SS test has acceptable internal consistency ($\alpha = .65$) (Hayward & Homer), as well as support for the validity of the test (Devine & Hughes, 2016), and individual differences in ToM could be measured with the SS test in 8 to 13-year-olds (Devine & Hughes, 2013). For this research, the original test has been obtained from the original author of the test. A shorter version suited for older children was used, as recommended by the original author. Therefore a total of eight stories have been selected, four containing False Belief and four control stories. The four stories with False Belief test the ability to recognise a (white) lie, a bluff, the intention to mislead or the intention to manipulate feelings. An example of a story with a white lie is: "*One day, Aunt Jane came to visit Peter. Now Peter loves his aunt very much, but today she is wearing a new hat; a new hat, which Peter thinks is very ugly indeed. Peter thinks his aunt looks silly in it and much nicer in her old hat. But when Aunt Jane asks Peter, "How do you like my new hat", Peter says, "Oh, it's very nice"*". Following every story are two questions, which ask the participants about the False Belief and to explain why they gave a certain answer. The answers were awarded 2 points when the task was fully correct (participants recognised the False Belief and correctly substantiated their answer), 1 when it was partially correct and 0 when incorrect. The four control stories are being used to control for chance and to see if the children also recognise when there is not a False Belief present. This test

was administered orally, the experimenter read the stories to the participant and asked the questions. The participant was also given the stories on paper to read along. See appendix 1234 for an example of a SS story and the questions. The scoring can be found in Appendix A.

Faux Pas test

The original Faux Pas (FP) test (Baron-Cohen, O'riordan, Stone, Jones & Plaisted, 1999) also measures SO ToM ability. Keeping the attention span of children in mind, a shortened version of this test has been used as well. This test has also been proven to be still applicable nowadays: the FP test has acceptable internal consistency (Söderstrand & Almkvist, 2012) and good reliability coefficients ($\alpha = .78$) (Hayward & Homer, 2017). A faux pas is a shameful and/or insensitive act or remark in a social situation. For this research, the child version obtained from the original authors has been used. An example of a Faux Pas story is: "*Joe and Peter are standing in front of the sinks. Joe said "You know that new boy in the class, his name is Mike. Doesn't he look really weird!" Mike then came out of the cubicles. Peter said: "Oh hello Mike, are you going to play football now?"*". In this story, Mike accidentally overheard Joe and Peter talking about him in an unkind way. The remark Joe made is a faux pas, which is insensitive towards Mike. Eight stories were also selected from the original FP test, four with a faux pas and four control stories. Following every story, there are questions asked to test the comprehension of the story and the faux pas made. When a participant did not recognise a faux pas the answer gets the score "0", when the faux pas has been recognised the answer gets the score "1". Another component of this test is the False Belief question, this tests if the participant recognises that not everyone in the story has the same belief. In the example, Joe would not know that Mike is in one of the cubicles. The False Belief question would be to test if the participant understood that Joe has a different belief about reality '*Mike cannot hear Joe*', versus the actual reality in the story '*Mike can hear Joe*'. A correct answer to this question was also rewarded with 1 point. This test was conducted the same way as the SS test, the stories and questions were read to the participant, with the stories on paper so they could read along. Appendix B is an example of a story with faux pas and the questions belonging to the story.

Sociometric Rating scale

The Sociometric Rating scale (SSrat) (Maassen, Akkermans & van der Linden, 1996) measures the sociometric status of the participants via peer nomination. The test

consists of a list of the names of the participating classmates of the participant. The data is gathered on a 7 - point Likert scale. The midpoint of the scale represents a neutral judgement, all lower scores represent a negative judgement, all scores higher positive judgement. The lowest score would be named “Dislike very much”, whereas the highest score would be named “Like very much”. For an example of the SSrat, see Appendix C.

Procedure

The tests were conducted in individual interviews, in an empty classroom during school hours. All the children received the same tests, in the same order. The interview lasted about 30 minutes. The tests were presented in the following order: 1. the Strange Stories test, 2. the Faux Pas test, 3. the Sociometric Rating scale. Participants were given the option to have a short, 5-minute break if they wanted in between the tests, to ensure that the participants maintained optimal concentration throughout. The SS and FP tests were both administered orally. The researcher read the stories out loud, which were printed for the participants to read along. This was done to be able to ensure that the participants understood the stories and to minimise errors caused by misreading or mishearing parts of the story. To exclude errors based on memory, participants were allowed to keep the text in front of them while answering the questions. This way, the participants could look back in the story when trying to remember, for example, the correct name. The questions were not presented in text, only orally. The questions were allowed to be repeated as needed and the researcher was allowed to ask one additional question, in a non-directional way, to clarify the given answer (e.g., ‘*Why exactly do you think that?*’). The instructions of the SSrat were given orally and printed on the front of the questionnaire. For the questionnaire, the participants received a list with the names of their classmates and the possible answers, which they filled out themselves.

Data analysis

For data analysis, the program IBM SPSS statistics 26.0 was used. The data has been analysed using partial correlations, per hypotheses. By analysing the data as a partial correlation age and gender can be added to the analysis as covariates. For further exploration of the data, a linear regression was done, to explore the influence of covariates. For this analysis, level of understanding of SO ToM, performance on the

SS task, performance on the FP task and False Belief were predictor variables. The variable level of understanding of SO ToM consists of the sum of the scores in the SS task en FP task. The dependent variable was the mean of the score on the Social Status rating scale and as covariates age and gender were used. After that, the tool 'curve estimation' was used. By these means, polynomial terms can be fitted to the curve using linear regression. To explore the data even further, the file was also separately split by gender and by age. For age, the data was divided at the mean age into a young group and an old group. Given the outcomes of the curvilinear exploration of the data, another linear regression was conducted. For this regression, the data was squared, to explore the possible existence of quadratic relations in the data. Missing values (six) were pairwise excluded in the analysis. One outlier was excluded as a missing value.

Results

Preliminary analyses

For starters, the measures used were reviewed. Their reliability was determined and the mutual correlations were evaluated. The reliability of the SS task was found to be acceptable ($\alpha = 0.608$). The reliability of the FP task was found to be acceptable ($\alpha = 0.689$). The reliability of the SSrat was found to be reliable ($\alpha = 0.746$). To ascertain the reliability of the results, in analysis the decision was made to continue with the sum scores for the SS test and the FP test and the mean of the score on the SSrat.

As shown in Table 1, the correlations between the SO ToM tests are high and significant. This is not a surprise, because they are meant to measure the same construct. However, the correlations are not perfect, which means the tests don't fully overlap. All the correlations between the SO ToM tests and Social Status rating scale are low and not significant, which underwrites the fact that the SO ToM tests measure a different construct than the Social Status rating scale. Given these correlations, it is possible to take the Strange Stories task and Faux Pas task together to measure SO ToM and separately to see if there is a difference between the tests, following the literature.

Table 1

Total, mean, standard deviation, and correlations of the measures used and partial correlations of the independent variables with Peer Popularity.

	<i>N</i>	<i>M</i>	<i>SD</i>	Strange Stories	Faux Pas	False Belief	Peer Popularity
SO ToM	77	24.23	5.35				.057
Strange Stories	77	11.65	2.47	-			.068
Faux Pas	77	16.66	3.85	.45**	-		-0.39
False Belief	77	5.12	1.97	.28*	.69**	-	.047
Peer Popularity	77	5.05	0.68	.11	.18	.09	-

Note: Partial correlations are presented in bold.

** $p < .01$ (2-tailed).

* $p < .05$ (2-tailed).

To start, partial correlation analyses were conducted. All assumptions for a partial correlation are met (Field, 2013). Peer Popularity was normally distributed, with skewness of -0.245 ($SE = 0.272$) and kurtosis of -0.257 ($SE = 0.538$). A Shapiro-Wilk test showed no significant departure from the normality assumption, $W(78) = 0.98$, $p = 0.234$. Gender and age were added as a covariate. All four of the partial correlations were found not significant, as displayed in Table 1. This means all four hypotheses are not supported by partial correlation.

Linear Regression

While no significant correlations were found, further exploration using linear regression analyses was conducted. Age and gender were added as covariates in this analysis as well. Two linear regression analyses have been conducted with Peer Popularity as the dependent variable. One analysis has been conducted with level of understanding of SO ToM as the independent variable, the other with performance on the SS task, FP task and FB task as independent variables. For the latter, the independent variables have been centred in SPSS.

All assumptions for linear regression were met (Field, 2013). Scatterplots show that relations between the dependent variable and the independent variables are linear, albeit some show a weak relation. Analysis of collinearity statistics shows this assumption has been met, as VIF scores were well below 10, and tolerance scores

above 0.2. The values of the residuals are independent (Durbin-Watson (SO ToM) = 2.178; Durbin-Watson (SS task, FP task and FB task) = 2.189). The scatterplot of standardised residuals shows that the assumptions of homogeneity of variance and linearity are met. The histogram of standardised residuals indicated that the data contained approximately normally distributed errors, as did the normal P-P plot of standardised residuals, which showed points that were not completely on the line, but close. Cook's Distance values were all under 1, suggesting individual cases were not unduly influencing the model.

A significant regression equation between level of understanding of SO ToM and Peer Popularity was not found ($F(3,73) = 3.13, p = .30, R^2 = .114$). When separately looked at the Beta coefficient per hypothesis, the relation between level of understanding of SO ToM and Peer Popularity is found not significant, as shown in Table 2. A significant regression equation between performance on the SS task, the FP task and the FB task, and Peer Popularity was not found ($F(5,71) = 1.98, p = .92, R^2 = 4.289$). When looked at the Beta coefficient, the relations between either performance on the SS task, the FP task or the FB task, and Peer Popularity were found not significant, as shown in Table 2.

Table 2.

Beta coefficients, standard error, 95% confidence interval and p-value of the linear regression.

	<i>B</i>	<i>SE</i>	95% CI		<i>p</i>
			LL	UL	
SO ToM	.004	0.015	-0.025	0.034	.762
Strange Stories	0.007	0.034	-0.061	0.076	.828
Faux Pas	0.020	0.030	-.040	0.079	.509
False Belief	-0.018	0.053	-0.124	0.088	.732

Note: significant relations are presented in bold.

Further exploration of the data

Because no significant linear relations were found, curvilinear relations in the data were explored. First, this was done with the data as altogether. A significant quadratic relation was found between performance on the SS task and Peer Popularity, as depicted in Figure 1. When performance on the SS task increases, Peer Popularity will also increase, but only up to a certain point. If performance on the SS

task keeps increasing after this point, Peer Popularity will decrease. This will be represented as an inverted-U in a graph. For the other hypotheses, a significant relationship was again not found. See Table 3 for all of the quadratic relations.

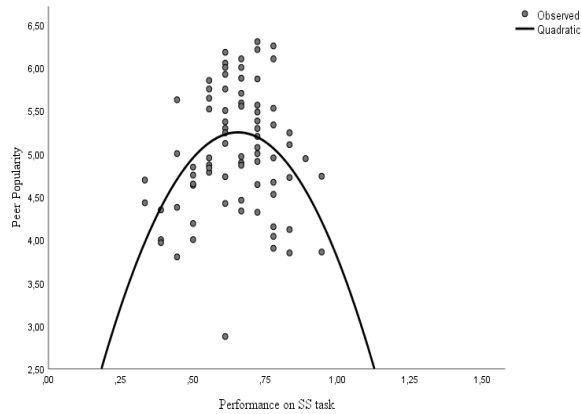


Figure 1. The curvilinear relation between performance on SS task and Peer Popularity.

When the data was split by gender, some differences were found. For girls two relations were significant; the quadratic relation between level of understanding of SO ToM and PP was significant and the quadratic relation between performance on the SS task and PP. For boys, the quadratic relation between performance on the FP task and PP was significant. The other relations were not significant for either gender. When split into the age groups young (8 - 9.93 years old) and old (9.93 - 12 years old), only the relation between performance on the SS task was significant, with quadratic relations for both the young and old age group. For the rest of the relations, no significant relations were found. See Table 3 for the quadratic relations for both gender and age.

Table 3.

Total of participants per group and the quadratic relations between the independent variables and Peer Popularity.

	Peer Popularity				
	All	Gender		Age	
		Girls	Boys	Young	Old
<i>N</i>	78	40	38	36	42
SO ToM	.033	.231**	.124	.050	.248
Strange Stories	.179**	.219**	.141	.230*	.248**
Faux Pas	.045	.97	.353**	.001	.037
False Belief	.001	.098	.052	.047	.001

** $p < .01$ (2-tailed).

* $p < .05$ (2-tailed).

Linear regression with squared data

All assumptions for linear regression are met (Field, 2013). Scatterplots show that relations between the dependent variable and the independent variables are linear, albeit some show a weak relation. Analysis of collinearity statistics shows this assumption has been met, as VIF scores were well below 10, and tolerance scores above 0.2. The values of the residuals are independent (Durbin-Watson = 2.156). The scatterplot of standardised residuals shows that the assumptions of homogeneity of variance and linearity are met. The histogram of standardised residuals indicated that the data contained approximately normally distributed errors, as did the normal P-P plot of standardised residuals, which showed points that were not completely on the line, but close. Cook's Distance values were all under 1, suggesting individual cases were not unduly influencing the model.

A significant regression equation between level of understanding of SO ToM and Peer Popularity was found ($F(3,73) = 3.10, p = .032, R^2 = .113$). When separately looked at the Beta coefficient per hypothesis, the relation between level of understanding of SO ToM and Peer Popularity was found not significant, as shown in Table 4. A significant regression equation between performance on the SS task, FP task and FB task and Peer Popularity was found ($F(5,71) = 7.45, p < .001, R^2 = 12.07$). When separately looked at the Beta scores per hypothesis, the relation between level of understanding of performance on the SS task and Peer Popularity

was found significant as well. The rest of the relations were found not significant, as shown in Table 4.

Table 4.

Beta coefficients, standard error, 95% confidence interval and p-value of the linear regression analyses with squared variables.

	B	SE	95% CI		p
			LL	UL	
SO ToM	0.00	0.001	-0.003	0.003	.977
Strange Stories	-0.42	0.008	-0.58	-0.25	< .001
Faux Pas	0.006	0.004	-0.002	0.015	.152
False Belief	0.001	0.017	-0.032	0.035	.946

Note: significant relations are presented in bold.

When split by gender, a significant quadratic regression equation between level of understanding of SO ToM and Peer Popularity for girls was not found ($F(2,37) = 1.25, p = .299, R^2 = 0.063$). A significant quadratic regression equation between level of understanding of SO ToM and Peer Popularity for boys was also not found ($F(2,34) = 3.19, p = .054, R^2 = 0.158$). A significant quadratic regression equation between performance on the SS task, FP task and FB task and Peer Popularity for girls was not found ($F(3,39) = 3.72, p = .20, R^2 = 0.261$). A significant quadratic regression equation between performance on the SS task, FP task and FB task and Peer Popularity for boys was found ($F(3,36) = 7.87, p < .001, R^2 = 0.565$). As shown in Table 5 two relations were found significant for boys; the quadratic relation between performance on the SS task and PP and the quadratic relation between performance on the FP task and PP. The rest of the relations were not significant for either gender.

Table 5.

Beta coefficients, standard error, 95% confidence interval and p-value of the linear regression analyses with squared variables, split by gender.

		B	SE	95% CI		p
				LL	UL	
SO ToM	Girls	0.002	0.002	-0.003	0.006	.448
	Boys	-0.001	0.002	-0.005	0.003	.596
Strange Stories	Girls	-0.029	0.015	-0.060	0.001	.062
	Boys	-0.037	0.011	-0.058	-0.015	.001
Faux Pas	Girls	-0.005	0.008	-0.020	0.011	.524

	Boys	0.017	0.005	0.006	0.028	.004
False Belief	Girls	-0.015	0.026	-0.67	0.037	.561
	Boys	0.011	0.021	-0.033	0.054	.616

Note: significant relations are presented in bold.

When split by age group, a significant quadratic regression equation between level of understanding of SO ToM and Peer Popularity for the young age group was not found ($F(32,2) = 2.05, p = .145, R^2 = 0.114$). A significant quadratic regression equation between level of understanding of SO ToM and Peer Popularity for the old age group was also not found ($F(2,39) = 0.58, p = .563, R^2 = 0.029$). A significant quadratic regression equation between performance on the SS task, FP task and FB task and Peer Popularity for the young age group was not found ($F(2,32) = 2.05, p = .145, R^2 = 0.085$). A significant quadratic regression equation between performance on the SS task, FP task and FB task and Peer Popularity for boys was also not found ($F(2,39) = 0.58, p = .563, R^2 = 0.014$). As seen in Table 6, the relation between performance on the SS task and PP was significant, for both the young and old age group. The rest of the relations were found not significant for either age group.

Table 6.

Beta coefficients, standard error, 95% confidence interval and p-value of the linear regression analyses with squared variables, split by age

		B	SE	95% CI		p
				LL	UL	
SO ToM	Young	0.002	0.002	-0.001	0.006	.229
	Old	-0.002	0.002	-0.006	0.002	.442
Strange Stories	Young	-0.034	0.011	-0.58	-0.014	.002
	Old	-0.053	0.014	-0.082	-0.024	.001
Faux Pas	Young	0.006	0.006	-0.006	0.017	.304
	Old	0.008	0.007	-0.007	0.022	.276
False Belief	Young	-0.006	0.024	-0.056	0.043	.795
	Old	-0.007	0.025	-0.057	0.042	.768

Note: significant relations are presented in bold.

Discussion

The purpose of this research was to explore the relation between the level of understanding of Second Order Theory of Mind and Peer Popularity in pre-adolescent children. Based on the literature, it was expected that there would be a positive

relation between the level of understanding of SO ToM and PP in pre-adolescent children. It was also expected that there would be a positive relation between performance on the SS task and PP, between performance on the FP task and PP, and between performance on the False Belief questions and PP in pre-adolescent children. None of the expected relations were found in this research. However, a few unexpected curvilinear relations have been found, which do not support the hypotheses. These unexpected findings shed new light on the researched relations.

Firstly, the relation between performance on the SS task and PP is shaped as an inverted 'U', meaning when performance on the SS task increases, PP will also increase up to a certain point, after which PP will decrease. When split by gender, similar curvilinear relations were also found for girls for the relation between the level of understanding of SO ToM and PP, and performance on the SS task and PP. For boys, a similar curvilinear relation was found between performance on the FP task and PP. When split into two age groups, a relation between performance on the SS task and PP was found for both the young and the old age group. For both the young and old age group, the relation was also quadratic, which means when the performance on the SS task increased, PP increased only up to a certain point. The fact that both the relations for the young and old age group are significant can point to there being a not yet known difference between the different age groups. This means that there could be even more distinction than currently thought between older children reaching pre-adolescent age and children of school age. The current sample size is not enough to give conclusive statements on all of the relations above, but they give a direction for future research to look into. When squared, the data showed significant relations for level of understanding of SO ToM and PP. The relations between performance on the SS task, FP task, and FB task and PP was also significant, as well as the relation between performance on the SS task and PP. Split by gender, there was a significant relation for boys on both performance on the SS task and performance on the FP task. Split by age group, there was a significant relation for performance on the SS task for both age groups.

Comparing the results from the curvilinear relations with the results of the regression with the squared data, it mostly corresponds with each other. The differences are that with exploring the data through the curvilinear relations, the SO ToM and PP relation and the SS task and PP relation were significant for girls, and with the squared data both relations were significant for boys. Also, the significant

relation found for FP task and PP for boys was not found with the squared data. Newly found relations in the squared data were the relations between level of understanding of SO ToM and PP, and performance on the SS task, FP task, FB task, and PP. The manipulation of the data by squaring can be the cause of the differences in results.

Interpretation

The newly found results are not in line with earlier research. Given the limitations discussed later on, caution should be exercised when interpreting current results. Previous research stated that SO ToM has a positive relation with Peer Popularity. This would also be the case for the relation between Peer Popularity and either performance on the SS task, performance on the FP task, or performance on the FB task. After further exploration of the data, a gender difference was found. Overall, the relations for the level of understanding of SO ToM and for the SS task with PP were significant for girls. For boys, only the relation between the FP task and PP was significant, when looking at curvilinear relations. The differences in gender are endorsed when looked at the regression with the squared data. This can point to a difference in which mechanism of SO ToM plays a part in being popular by peers per gender. As discussed in the introduction, the SS task and FP task measure different cognitive mechanisms in relation to SO ToM. The current outcome is an interesting difference because this would mean that at a later age, underlying mechanisms of SO ToM might be of importance. This could be something for future research to explore. The results found when exploring the data by age group were also unexpected. Solely the relation between performance on the SS task and PP were significant. This can point at the possibility that the mechanism measured in the SS task is still developing in later childhood. A closer look at this mechanism might be of interest for future research. For example, there could be more research into which task is better at examining SO ToM and also which mechanism of SO ToM is developing at which age.

Contrary to previous research there was no relation found between SO ToM, performance on the SS task, performance on the FP task, performance on the False Belief questions and PP. An explanation for the absence of the relations for all four research questions could be that previous literature is incorrect. However, this would be an unlikely possibility, as the discussed literature is of decent quality in terms of

methodology, reliability and validity and multiple studies conclude similar results. More likely, methodological shortcomings from the current study could be the cause. It could be that the expected relation is simply not present in the sample, since the sample is small and taken from a single primary school. Another explanation could be that other factors, not included in this research, are at work. Since the research is conducted at an older age than most ToM research, these could be other unknown factors, yet to be discovered by future research. Lastly, it could be that the expected results are present, but they are too small in this sample to be visible. This would explain as well why there are some significant relations when the data was explored in more detail because by zooming in on the data smaller effects are made visible. Increasing sample size in future research would help with this.

Also contrary to previous research the relation found between SO ToM and PP is not linear. An explanation for the results being curvilinear instead of linear could be the age group in which the research was conducted. Since the participants were older than in most ToM research, the relation could present itself differently. This means that this research sheds new light on what is known about SO ToM and PP. Another possibility is that there are other, unknown factors at play at an older age than there are at a younger age, which were not taken into consideration for this research. The third explanation could be that, when someone is too good at perspective taking or uses it a lot as a tactic, they can use it to take advantage of another person in a manipulative way. People do not like to be taken advantage of, so when they notice someone else doing this, they will start to dislike the other. This can explain the quadratic relations found in this study. As for the difference between the relations found for the younger and older age group, an explanation could be a yet unknown factor that switches the relation from cubic to linear by older age. This is definitely something to look into for future research.

Limitations, recommendations and strengths

This research is limited by the small and select sample. The sample was taken from one primary school in the Netherlands, consisting of 78 children. This means the external validity of this research is not very high. While this research does represent the children attending the concerned primary school, it is not possible to conclude the same with certainty for the rest of the pre-adolescent children in the Netherlands. The choice for this sample has been made with the limited time and manpower available

for this research in mind. For future research, it is necessary to realise a bigger, more representative sample, which covers multiple primary schools in the Netherlands. This would increase the external validity of the research. Next to this, it is also important for future research that SO ToM research in the pre-adolescent age group is expanded, hence an even better understanding of the development of SO ToM can be given.

Another limitation is that the social norms of the participants were not taken into consideration. By the FP test, where the participants were asked if someone said something that they should not have, judgement can differ about what is appropriate to say in a certain situation and what is inappropriate. These social norms were not measured through a questionnaire, neither was it defined beforehand. This was done to avoid priming the participants to give a more socially acceptable answer. This means that some of the participants could answer according to their social norms and judge something that is regarded as a 'faux pas' in this test, as something appropriate to say. In this case, the wrong answer would not be given because of a lower level of understanding of SO ToM, but because the social norm applied was different. This could not be detected in the current setup of the study, which could lead to a common method bias. However, this would only be the case by the FP test, not by the SS test or the FB task. So, this problem was partially intercepted by the design of the study. Another suggestion for which other factors play a role in the relation between SO ToM and Peer Popularity are having siblings or using mentalisation based speech by parents. In future research, it would be good to include another measure which can be used to control for the social norms of the participants, or other factors that can possibly influence the relation between SO ToM and PP.

An additional limitation of this research could be the measures used to measure level of understanding of SO ToM and Peer Popularity. Although the tasks used for SO ToM and PP are still applicable despite being older, a lot of different tests and tasks exist for testing SO ToM and PP. For Peer Popularity this could be the case as well. In this research, a self-report measure was used but it could be interesting to see if a different measure such as a teacher report or peer nomination based measure would result in different popularity ratings. For future research, it would be interesting to see if different measures would get the same results as in this research

A strength of this research is that two measures were used for SO ToM, this improves the internal validity of the results. Because two different measures were

used a more complete image of SO ToM was studied. Another strength of this research is the age group in which the research was conducted. The age group is, as mentioned earlier, not yet researched as much. This makes the research a valuable addition to science. It will contribute to more knowledge of SO ToM in pre-adolescence. A third strength of this research is that memory and misinterpretation errors were avoided by methodological measures. Two encountered challenges with the used tests were memory error and interpretation error. The former was countered through the fact that the text was kept available to the participants throughout the testing. The latter is addressed by making the participants read along with the story on paper, while the researcher orally read the stories to them. As a result, it is more likely that the given answers on the SO ToM tasks are representative of SO ToM.

Conclusion

In conclusion, it can be said that the relation between level of understanding of SO ToM and Peer Popularity is not as straightforward and linear as it seems. While previous research points to a linear relation between the level of understanding of SO ToM and Peer Popularity, this study suggests that the relation is more curvilinear. The fact that a positive relation between the level of understanding of SO ToM and Peer Popularity was not found, but instead it was found that certain aspects of SO ToM were related to Peer Popularity in a more complex way, points to this. When certain SO ToM abilities increased, the Peer Popularity only increased up to a certain point as well. When split by gender and age these relations were present. These results shed new light on earlier known information of SO ToM and Peer Popularity. They could form a starting point for further research on SO ToM in the pre-adolescent age group. A bigger sample size taken across the Netherlands could be favourable for further research. This would give the opportunity to present more conclusive results. Current research is an addition to the small amount of research done on this topic, which is an interesting topic for research, to possibly aid in developing interventions for children in this age group.

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Appendix A - Strange Stories Test

TOM: 1. Simon is een grote leugenaar. De broer van Simon, Mark, weet dit. Hij weet dat Simon nooit de waarheid vertelt. Gisteren stal Simon het ping-pongballetje van Mark. Mark weet dat Simon het ergens heeft verstopt, maar hij kan het niet vinden. Zhij vraagt: 'Waar is mijn ping-pongballetje?' 'Je moet het of in de kast of onder jouw bed verstopt hebben, want ik heb overal al gezocht. Waar is het?' Simon zegt hem dat het batje onder zijn bed ligt.

- 1.1 Was het waar wat Simon tegen Mark zei?
- 1.2 Waar zal Mark zijn ping-pongbatje gaan zoeken?
- 1.3 Waarom zal Mark daar naar zijn batje gaan zoeken?

C: 2. Esther en Nick gaan picknicken. Het is een idee van Nick. Hij zegt dat het een prachtige dag voor een picknick wordt. Precies op het moment, dat zij aan het eten zijn, begint de zon te schijnen. Esther zegt: 'Oh ja, inderdaad, een prachtige dag voor een picknick!'

- 2.1 Is het waar wat Esther zegt?
- 2.2 Waarom zegt zij dat?

TOM: 3. Bart heeft altijd honger. Vandaag op school is het zijn lievelingsgerecht: worstjes met bonen. Hij zou graag méér worstjes willen hebben dan alle anderen, ook al weet hij, dat zijn moeder iets lekkers voor hem klaarmaakt wanneer hij thuiskomt van school. Iedereen mag maar twee worstjes hebben en niet meer. Als Bart aan de beurt is, zegt hij: 'Oh, mag ik alstublieft vier worstjes hebben, want ik krijg geen eten als ik thuis kom'.

- 3.1 Is het waar wat Bart zegt?
- 3.2 Waarom zegt hij dat?

C: 4. Tante Wilma komt op bezoek bij Sarah. Sarah houdt heel veel van haar tante, en vandaag draagt ze een nieuwe jurk; waarvan Sarah denkt dat die erg mooi is. Sarah vindt dat haar tante er goed uitziet. Als tante Wilma aan Sarah vraagt: "Hoe vind je mijn nieuwe jurk?", Zegt Sarah: "Oh, het is een leuke jurk".

- 4.1 Was het waar wat Sarah zei?
- 4.2 Waarom zegt ze dat?

TOM: 5. Anne en Tom gaan picknicken. Het is een idee van Tom. Hij zegt dat het een prachtige dag voor een picknick wordt. Maar precies op het moment, dat zij aan het eten zijn, begint het te regenen en al gauw zijn zij kletsnat. Anne is uit haar humeur. Zij zegt: 'Oh ja, inderdaad, een prachtige dag voor een picknick!'

- 5.1 Is het waar wat Anne zegt?
- 5.2 Waarom zegt zij dat?

C: 6. Eva heeft altijd honger. Vandaag op school is het haar lievelingsgerecht: worstjes met bonen. Eva's moeder maakt altijd iets lekker voor haar klaar, wanneer zij thuiskomt van school. Iedereen mag maar twee worstjes hebben en niet meer. Als

Eva aan de beurt is om opgeschept te worden, zegt ze: 'Ik hoef maar twee worstjes, want mijn moeder maakt ook altijd iets lekkers te eten voor me als thuis kom.

6.1 Is het waar wat Eva zegt?

6.2 Waarom zegt ze dat?

TOM: 7. Tante Janne komt op bezoek bij Peter. Nu houdt Peter heel veel van zijn tante, maar vandaag draagt ze een nieuwe hoed; waarvan Peter denkt dat die erg lelijk is. Peter vindt dat zijn tante er dom uitziet, en veel leuker in haar oude hoed. Maar als tante Janne aan Peter vraagt: "Hoe vind je mijn nieuwe hoed?", Zegt Peter: "Oh, het is een leuke hoed".

7.1 Was het waar wat Peter zei?

7.2 Waarom zegt hij dat?

C: 8. Evert vertelt altijd de waarheid. De zus van Evert, Marieke, weet dit. Ze weet dat Evert altijd de waarheid vertelt. Gisteren leende Evert Marieke's kleurpotloden. Vandaag kan Marieke haar kleurpotloden nergens vinden. Ze vraagt aan Evert waar haar kleurpotloden zijn. Evert zegt dat ze in de kast in zijn kamer liggen.

8.1 Was het waar wat Evert tegen Marieke zei?

8.2 Waar zal Marieke haar kleurpotloden gaan zoeken?

8.3 Waarom zal Marieke daar naar haar kleurpotloden gaan zoeken?

Appendix B - Faux Pas Test

FP: 9. Jos en Peter staan bij de ingang van school. Jos zegt: "Je kent die nieuwe jongen in de klas, hij heet Mike. Hij ziet er raar uit!". Mike zit op het bankje voor de ingang van school. Peter zegt: "Oh hallo Mike, ga je voetballen nu?".

FP-detectie:

9.1 Heeft iemand iets gezegd wat hij of zij beter niet had kunnen zeggen?

Zo ja:

9.2 Wie heeft iets gezegd wat hij of zij niet had moeten zeggen?

9.3 Wat heeft die persoon gezegd wat hij of zij niet had moeten zeggen?

False Beliefvraag:

9.4 Wist Jos dat Mike op het bankje zat?

Begripvraag:

9.5 Waar waren Jos en Peter toen ze aan het praten waren?

C: 10. David was net begonnen op een nieuwe school. Hij zei tegen zijn nieuwe vriend, Mike: "Mijn moeder is een leraar op deze school." Toen kwam Jeff langs. "Ik haat de aula", vertelde hij hun, "Het is zo klein". "Wil je graag tikkertje spelen?" Vroeg Mike aan Jeff. "Nee", antwoordde hij "ik voel me niet erg goed."

FP-detectie:

10.1 Heeft iemand iets gezegd wat hij of zij beter niet had kunnen zeggen?

Zo ja:

10.2 Wie heeft iets gezegd wat hij of zij niet had moeten zeggen?

10.3 Wat heeft die persoon gezegd wat hij of zij niet had moeten zeggen?

False Beliefvraag:

10.4 Wist Jeff dat Davids moeder een leraar was?

Begripvraag:

10.5 Welke taak doet Davids moeder?

FP: 11. Kim's neef, Stefan, zou op bezoek komen en Kim had speciaal voor hem een appeltaart gemaakt. Na het avondeten zei ze: 'Ik heb speciaal voor jou een taart gemaakt. Hij is in de keuken'. 'Hmmm', antwoordde Stefan. 'Hij ruikt heerlijk! Ik hou heel erg van taart, behalve van appeltaart natuurlijk.'

FP-detectie:

11.1 Heeft iemand iets gezegd wat hij of zij beter niet had kunnen zeggen?

Zo ja:

11.2 Wie heeft iets gezegd wat hij of zij niet had moeten zeggen?

11.3 Wat heeft die persoon gezegd wat hij of zij niet had moeten zeggen?

False Beliefvraag:

11.4 Wist Stefan dat de taart een appeltaart was?

Begripvraag:

11.5 Wat voor soort taart had Kim gemaakt?

C: 12. Iedereen uit de klas nam deel aan een gedichten wedstrijd. Jane wilde echt winnen. Toen de resultaten bekend werden gemaakt had Jane's gedicht niks gewonnen, Merel was de winnaar. De volgende dag kwam Jane Merel tegen. Merel zei: "Hoe voel je je?". "Goed, dankjewel" zei Jane, "Oh goed", zei Merel.

FP-detectie:

12.1 Heeft iemand iets gezegd wat hij of zij beter niet had kunnen zeggen?

Zo ja:

12.2 Wie heeft iets gezegd wat hij of zij niet had moeten zeggen?

12.3 Wat heeft die persoon gezegd wat hij of zij niet had moeten zeggen?

False Beliefvraag:

12.4 Wist Jane dat Merel heel graag wilde winnen?

Begripvraag:

12.5 Wie won de gedichten wedstrijd op school?

FP: 13. Op school was er een verhalenwedstrijd. Job, uit groep 5, en Kristien, uit groep 6 deden mee. Kristien was erg trots op haar verhaal. Een paar dagen later werd de uitslag van de wedstrijd bekend gemaakt: Kristiens verhaal had niks gewonnen en Job, had de eerste prijs gewonnen. De volgende dag zat Kristien op een bankje met Job. Ze keken naar zijn beker die hij als eerste prijs gewonnen had. Job zei: 'het was zo makkelijk om die wedstrijd te winnen. Alle andere verhalen in de wedstrijd waren vreselijk slecht'. 'Waar ga je je beker neerzetten?' vroeg Kristien.

FP-detectie:

13.1 Heeft iemand iets gezegd wat hij of zij beter niet had kunnen zeggen?

Zo ja:

13.2 Wie heeft iets gezegd wat hij of zij niet had moeten zeggen?

13.3 Wat heeft die persoon gezegd wat hij of zij niet had moeten zeggen?

False Beliefvraag:

13.4 Wist Job dat Kristien heel erg trots was op haar verhaal?

Begripvraag:

13.5 Wie won de verhalenwrestrijd op school?

C: 14. Kate hielp haar moeder om een slagroomtaart te maken voor haar buurman toen hij op bezoek kwam. Ze nam het mee de keuken uit. "Ik heb het speciaal voor jou gemaakt", zei Kate. "Mmm", antwoordde haar buurman: "Dat ziet er prachtig uit - ik hou van taarten, vooral van slagroomtaart!"

FP-detectie:

14.1 Heeft iemand iets gezegd wat hij of zij beter niet had kunnen zeggen?

Zo ja:

14.2 Wie heeft iets gezegd wat hij of zij niet had moeten zeggen?

14.3 Wat heeft die persoon gezegd wat hij of zij niet had moeten zeggen?

False Beliefvraag:

14.4 Wist de buurman dat de taart een slagroomtaart was?

Begripvraag:

14.5 Wat voor soort taart had Kate gemaakt?

FP: 15. Robert is net begonnen op een nieuwe school. Hij zei tegen zijn nieuwe vriend, Andre: "Mijn moeder is een overblijfmoeder op deze school ". Toen kwam Claire naar hen toe en zei: "Ik haat overblijfmoeders. Zij zijn verschrikkelijk". Andre vroeg "Wil je graag tikkertje spelen?" aan Claire. "Nee" antwoordde ze "Ik voel me niet lekker."

FP-detectie:

15.1 Heeft iemand iets gezegd wat hij of zij beter niet had kunnen zeggen?

Zo ja:

15.2 Wie heeft iets gezegd wat hij of zij niet had moeten zeggen?

15.3 Wat heeft die persoon gezegd wat hij of zij niet had moeten zeggen?

False Beliefvraag:

15.4 Wist Claire dat Roberts moeder een overblijfmoeder is?

Begripvraag:

15.5 Welke taak doet Roberts moeder?

C: 16. John was op school in een van de wc hokjes in de toiletten. Sam en Eddie stonden bij de gootsteen in de buurt. Sam zei: "Je weet die nieuwe jongen in de klas - je weet wel, zijn naam is John. Hij ziet er cool uit! ". John kwam toen uit de hokjes. Peter zei: "Oh, hallo John. Ga je nu voetballen? "

FP-detectie:

16.1 Heeft iemand iets gezegd wat hij of zij beter niet had kunnen zeggen?

Zo ja:

16.2 Wie heeft iets gezegd wat hij of zij niet had moeten zeggen?

16.3 Wat heeft die persoon gezegd wat hij of zij niet had moeten zeggen?

False Beliefvraag:

16.4 Wist Sam dat John in een wc-hokje was?

Begripvraag:

16.5 Waar waren Sam en Eddie over aan het praten bij de gootsteen?

Appendix C – Social Status rating scale

Hier zie je een lijst met een aantal namen van jouw klasgenoten. Wil je alsjeblieft aangeven per klasgenoot hoe je over hen denkt? De antwoorden luiden als volgt:

- 1 = heel erg onaardig
- 2 = erg onaardig
- 3 = een beetje onaardig
- 4 = niet onaardig of aardig (neutraal)
- 5 = een beetje aardig
- 6 = erg aardig
- 7 = heel erg aardig

Wanneer je iemand heel erg aardig vindt, dan omcirkel je 7. Wanneer je iemand heel erg onaardig vindt, omcirkel je 1. Zo gaat het ook met de rest van de antwoorden.

Hieronder staat een voorbeeld hoe je het moet invullen.

- Ik vind Susan heel erg aardig.
- Ik vind Geert een beetje aardig.
- Ik vind Merel heel erg onaardig.

	Naam	
1.	Susan	1 2 3 4 5 6 7
2.	Geert	1 2 3 4 5 6 7
3.	Merel	1 2 3 4 5 6 7

Er zijn geen goede of foute antwoorden, ik wil alleen weten wat jij denkt. Jouw klasgenootjes en juf of meester krijgen jouw antwoorden niet te weten.

Nu mag jij!

1 = heel erg onaardig

- 2 = erg onaardig
 3 = een beetje onaardig
 4 = niet onaardig of aardig (neutraal)
 5 = een beetje aardig
 6 = erg aardig
 7 = heel erg aardig

	Naam							
1.	[name classmate]	1	2	3	4	5	6	7
2.	[name classmate]	1	2	3	4	5	6	7
3.	[name classmate]	1	2	3	4	5	6	7
4.	[name classmate]	1	2	3	4	5	6	7
5.	[name classmate]	1	2	3	4	5	6	7
6.	[name classmate]	1	2	3	4	5	6	7

.....

And so on, until all the names of the classmates have been filled in.