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TRUST ME, I AM LYING TO YOU*: CHILDREN'S ABILITY TO GIVE FALSE STATEMENTS AND ITS CORRELATES

Lying emerges early during preschool age. The focus of previous research has been mainly related to the ability to lie in preschool children. In this research, which uses a new procedure to lie, the aim was to examine the ability to make a false statement in school-age children, as well as the cognitive and social correlates of children's success in making a fabricated narrative. A total of 48 children, 16 children in each studied grade of elementary school (first, fifth and eighth), had the task to construct false autobiographic narratives and report them as convincingly as possible in order to convince others that it really happened to them. The persuasiveness of their video-recorded narratives was assessed by 15 independent observers. Using a specially constructed inventory, assessments of the intelligence, verbal ability, peer group popularity, and antisocial behavior of each child were collected from the class teachers. The results show that children aged 10 to 11 years and children aged 13 to 14 years were assessed as more convincing compared to younger children aged 6 to 7 years. However, there was no difference in the ability to make a fabricated narrative between children aged 10 to 11 and children aged 13 to 14, nor a difference in this ability between girls and boys. Children with higher school achievement and those who were assessed by the class teacher as more intelligent, verbally capable, and more popular among peers were also assessed as more convincing by the group of independent assessors while reporting false autobiographic narratives.

Keywords: cognitive development, deception, intelligence, fabricated narrative, peer group popularity

* Words addressed to the researcher during participation in the research (girl, 7 years old)

Introduction

The importance of lying for human functioning is best illustrated by the fact that it occurs very early, in children as young as around the age of three (Evans & Lee, 2013; Wilson et al., 2003). Most research on the topic of lying in children studied the children's concept of lying and their moral evaluations of acts of lying (Talwar et al., 2002; Talwar et al., 2004; Talwar & Lee, 2008a). Less attention has been dedicated to children's ability to lie, that is, examining their success in deceiving others (Talwar & Lee, 2002). The ability to lie represents the ability to successfully verbally deceive another person that is to convince the other person that a false statement is true. For a child to be successful at lying and to avoid getting "caught" in a lie, they first need to learn to construct a false statement, and then to also (a) monitor their verbal production in order to ensure the consistency between the initial false statement and the subsequent statements – any type of inconsistency in reporting can lead to getting "caught" lying, and (b) control their nonverbal behavior (Talwar & Lee, 2002). It has been shown that younger children have more difficulty in maintaining consistency when reporting false statements and that they are more likely to "reveal" themselves by "slipping out" a piece of information that contradicts their lie (Lee & Talwar, 2002; Talwar et al., 2007). The ability to elaborate when lying and to maintain consistency when giving false statements increases in children with age, especially after the age of six (Talwar & Lee, 2008b).

In the examination of lying in children, the most frequently used approach is the so-called temptation resistance paradigm – children are instructed not to turn towards a toy placed behind them or not to play with it while the researcher is not in the room. Research findings show that most children of different ages do not follow the instructions and later give a false statement about what they did (e.g., Evans & Lee, 2013; Talwar et al., 2007; Talwar & Lee, 2011; Williams et al., 2013). Within the given paradigm, the ability to maintain consistency of reporting is examined through additional questions, such as stating the identity of the toy when the researcher clearly emphasizes that the child must not see the toy. Children who lie successfully are able to avoid this question or to provide false information about the identity in order to conceal their transgression. Children who are unable to maintain consistency reveal the identity of the toy even though they previously denied seeing the toy. The advantage of this paradigm is that it represents a realistic situation in which children are essentially motivated to lie in order to conceal that they did something wrong, similar to everyday situations in the children's family environment. The problem is that this procedure asks children to provide only short, simple answers (Talwar & Lee, 2002), which do not require further elaborating the lie, and also that the procedure is not applicable to older children for testing the ability to maintain consistency while giving false statements. Due to the stated shortcomings of this paradigm, in this study, the ability to give false statements is operationalized through the child's degree of persuasiveness when reporting

stories about false autobiographic events that is things that never happened to the child (Milosavljević et al., 2016). Fulfilling this task requires two types of ability in the child, both necessary for successful lying: (a) the ability to devise rich, coherent, and plausible contents of the story in a short period of time, and (b) the ability to present that content as convincingly as possible in order to deceive others that the given event actually happened. The procedure consists of the following steps: the children are instructed to give only false statements, that is to devise and present as convincingly as possible a predetermined event that did not happen to them as if it did, after which a group of independent assessors uses several assessment states to evaluate the persuasiveness of their reports. The assessors are told that some of the stories are authentic, and some are not, which ensures greater dispersion of evaluations and a higher validity of the assessment, because in everyday situations we assess the credibility of the statements of others without knowing whether they are telling the truth or not.

Although lying in children has been recognized as one of the problems in their communication with parents and teachers, the leading authors in this field, Talwar and Lee (2008a), state that the cognitive and social correlates of children's ability to lie successfully are underresearched.

Correlates of children's ability to lie

Cognitive development and the ability to lie

The success of lying is connected with the age of the child. It has been shown that although younger children lie more often, older children lie more successfully (Feldman et al., 1999; Talwar et al., 2006; Evans & Lee, 2011). Based on the reports of teachers and parents, it can be seen that lying is typical for ages 6 to 8 and that around the age of seven it becomes a persistent form of behavior (Gervais et al., 2000). It has been shown that as the children's cognitive abilities mature, the probability that they will use lies increases, and also that sophistication and persuasiveness of their lying increases with age (Evans & Lee, 2013; Lee, 2013). Contrary to only a few three-year-olds, as many as half of four-year-olds and most five-year-olds have used some kind of strategy to avoid getting caught in a lie. With age comes the development of cognitive functions in children, and thus the ability to lie is also developed, which is expressed through the sophistication of lying (Lee, 2013; Talwar et al., 2006). The ability to deceive is considered one of the significant indicators of cognitive maturity (Talwar & Crossman, 2011). The ability to mentalize is also another cognitive component important for the ability to lie (Frith, 2012). Research findings also show a connection between executive functions and success in lying (Talwar & Lee, 2008a). Children who are more successful in lying achieve better results in verbal tests of working memory, which suggests that verbal working memory is important for processing and manipulating in-

formation during lying (Alloway et al., 2015). Considering the stated findings, that children with more developed executive functions and a higher working memory capacity, which are abilities that can be considered indicators of general intelligence, are more successful in processing and manipulating information when lying, it can be expected that there is a positive correlation between the ability to give false statements and the assessments of general intelligence and the verbal ability of children by teachers.

Gender and the ability to lie

When it comes to the differences between girls and boys, parents, as well as teachers, report that boys lie more often than girls, which some authors associate with behavior problems which are more frequent in boys (Gervais et al., 2000). However, findings on the differences in the ability to lie between boys and girls are inconsistent. In research by Feldman and colleagues (1999), observers assessed whether a child is lying or telling the truth based only on nonverbal behavior, and differences in the successfulness of lying were registered in favor of the girls, but only at younger ages. Talwar and colleagues (2006) simulated children's testimony in court. Parents taught the children what to say and practices with them three times a day. Recordings of the testimonies were used to assess the persuasiveness, and it was shown that the false testimonies of girls were assessed as more convincing when compared to the false testimonies of boys. In line with the given findings, it is assumed that on average the false statements of girls will be assessed as more convincing when lying, compared to the statements of boys, and that this difference will be greater at younger ages.

Peer popularity and the ability to lie

Social factors are also presented as significant correlates of the ability to lie. Feldman and colleagues (1999) divided adolescents into groups of those with more or less developed social skills based on the assessments of their parents and then instructed them to give false and true statements about their enjoyment of certain drinks. It was shown, especially in younger ages (11 to 13, in comparison to 14 to 16 years), that adolescents with more developed social skills are on average more successful in lying when compared to those who are less socially competent. The authors explain these results with the fact that socially competent people are more expressive, better at controlling emotions, and more successful in nonverbal communication, which is very important when the goal is to report false content as convincingly as possible in order to deceive others that it is true. Since people with more developed social skills are more popular and dominant in their social interactions (Ambady & Rosenthal, 1998), a positive correlation between a child's popularity (likability) in their peer group and their successfulness in giving false statements can be expected.

Antisocial behavior and the ability to lie

Lying is considered one of the early indicators of later behavioral problems. Research findings show that preschool and older children who lie frequently are more likely to manifest behavioral problems (Stouthamer-Loeber, 1986; Stouthamer-Loeber & Loeber, 1986; Wilson & Carroll, 1991). In a study examining boys of different ages (fourth, seventh and tenth grade), it was shown that lying is related to delinquency, aggressiveness, and behavioral disorders, and also that the correlations between lying and antisocial behavior are more intense in older children (Stouthamer-Loeber & Loeber, 1986). Children who have been punished more in school are more likely to resort to lying in order to cover up their wrongdoings, and they are more successful in lying (Talwar & Lee, 2011). It can be assumed that antisocial behavior will have a positive correlation to the children's ability to give false statements, i.e., children with more pronounced antisocial behavior will be more successful in giving false statements.

The present study

Children's giving of false statements is a very important topic, especially for the field of forensics and children's testimony in court (Talwar & Crossman, 2011). This study aimed to examine the ability to give false statements in children of different ages, as well as the social and cognitive factors based on which children may be distinguished in terms of their ability to make and present false autobiographical narratives. Applying a new procedure for measuring this ability among both younger and older children, in the same way, enables comparing this ability at different ages. To the best of our knowledge, this ability has not been examined on a sample of children within the Serbian-speaking area. Based on the results of previous research on the correlates of the ability to lie or give a false statement, it was expected that children's intelligence, verbal ability, popularity among peers, and antisocial behavior, as assessed by their teachers, would be positively correlated with their ability to make and present false autobiographical narratives.

Method

Pilot Study

The pilot research was conducted in order to adjust the procedure for examining the ability to give false testimony in children and to select the most appropriate events for the main study. The convenience sample consisted of six children (two boys and four girls) 7 to 12 years old. Researchers initially constructed ten events based on which children should make up their narratives.

The events are designed to be (a) poorly structured, without too many details, in order to provide the children enough opportunity to make up a unique story, (b) descriptions of something that could have happened to both younger and older children, and (c) describable using terminology comprehensive to both younger and older children. The children were instructed to devise and present a story about the given event as convincingly as possible in order to deceive others that it really happened to them. The children's false statements were recorded using a video camera. Based on the researchers' observations and data collected through a semi-structured interview with the children, it was determined that some events had been experienced by most children and those events were not included in the main study. Out of remaining seven events, three were selected to be used in the main study, and four events were selected as replacements – if the child reports that they experienced any of the three initially selected events, a replacement should be given. The list of the selected events is presented in Appendix A. In addition, conducting the pilot study showed that, when this procedure is applied to children, it is necessary to explain the task more than once and in more detail, to emphasize that children do not have to speak until the time is up, but only until they finish the story they started, and to not maintain direct eye contact with them while they are speaking. The instructions for children, modified after the pilot study, are presented in Appendix B.

Main study

Participants

Children as narrators. The sample of children consisted of 48 pupils in the first, fifth and eighth grades (16 each), balanced by gender. The children were recruited from two elementary schools in the Republic of Serbia (elementary school „Kralj Petar II Karadorđević” in Belgrade and elementary school „Sveti Sava” in Velika Plana). Before the start of the research, the school principal's consent, classroom teacher's consent, parent's consent, and the children's own verbal consent were collected. The children who did not voluntarily apply to participate did not participate at all, regardless of whether their parents signed informed consent. The children's identities were protected by data obfuscation. The researchers were very careful while working with the children, especially the younger ones. The term *lying* was not used in order to avoid the possibility of encouraging lying or other possible negative consequences of participating in the research. The children were told that the researchers were examining who could come up with and tell a better, more convincing story so as to convince others that it had actually happened.

Teachers as assessors of children's characteristics. Teachers also took part in the study by assessing the degree to which specific characteristics of

the child are expressed. The selection criteria for the teachers were a minimum of five years of experience working with children and teaching at least three classes a week to the child whose characteristics they assessed. It was important that the teachers have frequent interaction with the child in order to avoid having them assess the characteristics of children they do not know well enough, which would reduce the validity of their assessments. The sample of teachers consisted of three female teachers, one for each grade. All the teachers volunteered to participate in the study.

Students as assessors of the ability to give a false statement. The persuasiveness of the children's false narratives was assessed by 15 students, both male and female, who volunteered to participate in the research. All the students were currently pursuing an undergraduate or a master's degree in psychology at the Faculty of Philosophy, University of Belgrade. All the students denied having previous experience in lying assessment or attending any deception detection training.

Variables and instruments

Variables. *Children's age* with three categories: 6 to 7 years old, 10 to 11 years old, and 13 to 14 years old. *Children's gender* with two categories: male and female. There were 8 boys and 8 girls in each age category included in the research. Data on *school achievement* (average grade for the semester) was also collected for each student. School achievement is assessed qualitatively for the first-graders, so teachers were instructed to assess their school achievement numerically, assigning them the average grade that they would have if their achievement were numerically assessed.

Assessment inventory for teachers. In addition to the aforementioned measures, the teachers' assessments of the intelligence, verbal ability, popularity, and antisocial behavior of the children were also collected. An assessment inventory for teachers was created for the purposes of this study. In the first phase of inventory construction, definitions of the assessed characteristics were created based on a review of the literature about general intelligence (e.g., Legg & Hutter, 2007; Trebješanin & Lalović, 2007), verbal ability (e.g., Hunt et al., 1975), peer popularity (e.g., Ledingham et al., 1982) and antisocial behavior (e.g., Shinn et al., 1987). We have defined intelligence as the ability to quickly and successfully cope with new situations, i.e., solving problems by recognizing important relationships in the problem situation (ability to learn, remember and think). We have defined verbal ability as the ability to understand and shape verbal content, as well as to discover the relations between concepts given in the verbal form. We defined popularity as the level of likability among peers, as well as the ability to successfully establish and maintain positive and friendly peer relationships. We defined antisocial behavior as the level of the tendency to violate certain rules of behavior as well as to physically, verbally or emotionally hurt another person. In the second phase, each construct was,

based on the definition, operationalized using three indicators: intelligence – the ability to reason, academic efficiency and the ability to acquire information in teaching; verbal ability – clarity of expression, vocabulary and verbal fluency; popularity – likability among peers, a peer group role model, and social domination; antisocial behavior – physical aggression, verbal aggression, and lack of discipline. In the third phase, each of the twelve indicators was formulated in the form of an item. In the fourth phase, researchers asked two teachers employed in primary schools, who did not participate in the study, to read the items and highlight possible ambiguities. Finally, an assessment inventory was constructed for teachers to assess the level of expression of each of the four assessed characteristics. Teachers assessed the children's characteristics across 12 scales in total, using 7-point Likert-type scales (1 – *does not apply to this child at all* to 7 – *fully applies to this child*) (Appendix C). The score was calculated by summing the scores to three items that describe the specific characteristic.

Scales for assessing the ability to make false statements in children.

Research shows that lies and truth can be discerned better if they are assessed using indirect measures such as persuasiveness, coherence, number of details in statements, etc. (Granhag et al., 2015; Vrij et al., 2000). Therefore, the ability to give false statements is operationalized through the child's persuasiveness in giving false statements – psychology students assessed the extent to which they were convinced that the given event really happened to the child. In addition to the general scale of the child's persuasiveness, the assessors also assessed the richness of the story details (to what extent is the story rich in details), the persuasiveness of the story content (to what extent is the story content persuasive), the persuasiveness of nonverbal behavior (to what extent is nonverbal behavior such as facial expression and body language consistent with the content of the story) and level of anxiety (how upset is the child). These criteria were chosen because it was shown that, in relation to false statements, true statements contain more details, and the content itself is more realistic, coherent and more plausible (Vrij, 2008). On the other hand, when a person gives a false statement, the nonverbal behavior is less consistent with the content of the statement and a greater level of anxiety may be observed because of the fear that the person will fail to convince others that what they are saying is true (Ekman, 1992). In this research, it can be expected that children who are less successful in giving false statements will show more signs of anxiety because the task itself will be cognitively more difficult, and there will be a greater fear that they will not be able to convince others that the event really happened. Assessors rated aforementioned indicators of children's persuasiveness in giving false statements using 7-point Likert-type scales (1 – *not at all* to 7 – *very much*).

Procedure

Giving false statements. The process of giving false statements was video recorded. Children were seen individually in a quiet room in their school. The video camera was placed in front of the children in order to record the whole figure of the child, both facial expressions and body movements. Three cards describing events that had never happened to them were given to the children to read on their own or to be read to them by the researcher. If the child reported that any given event had happened to them, they were given one of the replacement events. The child was required to construct and tell a story about the given event as convincingly as possible. They had one minute to devise the content of the story and a maximum of two minutes to tell their stories as convincingly as possible. It is important to emphasize that the children were told to tell the event convincingly "as if it had really happened to them, as convincingly as possible, so as to convince the researcher that it had really happened to them." Also, the children were told that students would evaluate the credibility of their storytelling. The instruction was composed so as to additionally motivate the children to try to devise a false autobiographical narrative in the best possible way and to tell it as convincingly as possible so that the measured individual differences in making and giving false narratives would be a consequence of differences in the children's abilities, but not the differences in the children's motivation (Appendix B). The order in which the stories were given to the children was balanced in accordance with the rule of the Latin square to avoid the effect of the order. The names of all videos were obfuscated to ensure the anonymity of the data.

Assessment of children's characteristics. After the phase in which the video recordings were made, the teachers' assessments of the intelligence, verbal ability, popularity, and antisocial behavior of the children were collected, as well as their average grade of school achievement in the last semester. The assessment inventories of the teachers were also obfuscated so that no one could link the assessed characteristics of the children with their identities.

Assessment of children's ability to give false statements. In order to obtain greater objectivity in assessing the persuasiveness of the children in giving false statements, 15 students independently evaluated the children's false narratives by watching the recorded videos. Each student evaluated a total of 144 videos (three stories for each of the 48 children). In order to ensure greater dispersion and validity of assessments, the students were told that some of the stories were authentic and some were not because in everyday situations we assess the credibility of the statements of others without knowing whether they are telling the truth or not. The order of the recordings was randomized for each student to avoid the effect of order and to ensure that each video was independently assessed. After watching the recording, the students assessed each false statement story on five 7-point Likert-type scales.

This study has been reviewed and approved by the Institutional Review Board of the Department of Psychology, Faculty of Philosophy, University of Belgrade, Serbia (Protocol #2021-10).

Results

The ability to give false statements

A total of 15 independent assessors used five different scales to assess 144 video recordings, thus generating 10,800 assessments. Not all events were equally challenging to construct for all the participating children. Some children may have been more familiar with particular events, which would make it easier for them to construct a more convincing narrative, while some other events could have been entirely unknown and, therefore, more difficult to construct. For that reason, the assessments of the stories reported by the same child were averaged out to cancel out the effect of the specific event and to get more valid measures. The interclass correlation coefficient was calculated to determine the inter-rater agreement of the 15 independent assessors and the objectivity of the children's assessed persuasiveness. The results show a high agreement of the assessors in assessing the indicators of the ability to give false statements. The range of interclass correlation coefficients was from .87 (Persuasiveness of the story content) to .98 (Richness of the story details). However, the assessments of the child's persuasiveness in giving false statements were highly correlated with the assessments of the persuasiveness of the story content ($r = .92, p < .01$) and with the assessments of the persuasiveness of nonverbal behavior ($r = .88, p < .01$). Based on these results, it can be concluded that the assessors did not adequately differentiate these measures, which is why assessments of the story content persuasiveness and persuasiveness of nonverbal behavior were excluded from further analysis.

Table 1

Descriptive measures of indicators of the ability to give false statements

	<i>M</i>	<i>SD</i>	Empirical range	Theoretical range	<i>K-S</i> test	<i>p</i>
Persuasiveness in giving false statements	2.93	0.68	1.58-4.07	1-7	0.09	.20
Richness of the story details	3.79	1.16	1.51-5.67	1-7	0.12	.09
Child's level of anxiety	2.82	0.66	1.51-4.37	1-7	0.07	.20

We registered acceptable individual differences in the indicators of the ability to give false statements, while the arithmetic mean of the assessments is somewhat lower than the theoretical one (4), which is to be expected. Distri-

butions of the indicators of the ability to give false statements did not significantly deviate from the normal distribution.

The relationship between age and the ability to give false statements

We expected that older children would, on average, be assessed as more convincing when giving false statements compared to younger children. As can be seen in Table 3, significant differences were obtained between children of different ages in their persuasiveness when giving false statements ($F(2, 45) = 4.98, p < .01$), as well as in the number of details ($F(2, 45) = 23.45, p < .01$). The overall one-way ANOVA results are significant, so we performed post hoc LSD tests and found that there were differences in the general persuasiveness and richness of detail between children aged 6 to 7 years and two older age groups – children aged 10 to 11 ($Md_{pers} = -0.61, p < .01; Md_{rich} = -1.94, p < .01$;) and children aged 13 to 14 ($Md_{pers} = -0.61, p < .01; Md_{rich} = -1.44, p < .01$). No differences were found between children aged 10 to 11 years and children aged 13 to 14 years ($Md_{pers} = -0.001, p = .99; Md_{rich} = -0.49, p = .09$). Older children were more convincing in giving false statements, and their story content was richer in detail than that in children aged 6 to 7 years.

Table 2

Indicators of the ability to give false statements of children of different ages

	6-7 years		10-11 years		13-14 years		<i>F</i> statistic
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Persuasiveness in giving false statements	2.53	0.51	3.14	0.59	3.14	0.77	4.98**
Richness of the story details	2.66	0.86	4.60	0.60	4.10	0.99	23.45**
Child's level of anxiety	3.04	0.58	2.79	0.61	2.64	0.75	1.59

Note. ** $p < .01$.

Differences in the ability to give false statements between girls and boys

The results show that there are no differences in persuasiveness between girls and boys when giving false statements ($t(46) = -0.82, p = .42$), neither in the richness of details in the story ($t(46) = -0.92, p = .36$) nor in the level of anxiety ($t(43) = 0.32, p = .75$). Differences between boys and girls at different age groups were not analyzed due to the insufficient number of participants (only eight girls and eight boys in each age group).

Cognitive and social correlates of the ability to give false statements

As described, teachers assessed the intelligence, verbal ability, popularity, and antisocial behavior of each child. The descriptive measures and the reliability of the assessed characteristics can be seen in Table 3.

Table 3

Descriptive measures and reliability of assessments of intelligence, verbal ability, popularity, and antisocial behavior

	<i>M</i>	<i>SD</i>	Empirical range	Theoretical range	α
Assessment of intelligence	4.89	1.96	1-7	1-7	.98
Assessment of verbal ability	5.57	1.53	1.33-7	1-7	.94
Assessment of popularity	4.98	1.57	1.67-7	1-7	.93
Assessment of antisocial behavior	2.43	1.75	1-7	1-7	.95

The results show (Table 4) that children with higher school achievement and those who are assessed by a teacher as more intelligent, verbally capable, and popular among peers are also assessed by a group of independent assessors as more persuasive when presenting false statements. Greater richness of details when giving false statements was produced by children who were assessed as more intelligent and children with higher school success. Children who were assessed to be more intelligent, verbally capable, and more popular among peers were also assessed as less upset when giving false statements.

Table 4
Descriptive measures and reliability of assessments of intelligence, verbal ability, popularity, and antisocial behavior

	Richness of the story details	Child's level of anxiety	School achievement	Assessment of intelligence	Assessment of verbal ability	Assessment of popularity	Assessment of antisocial behavior
Persuasiveness in giving false statements	.62**	-.68**	.41**	.49**	.45**	.37**	-.20
Richness of the story details		-.40**	.40**	.38**	.28	.25	-.21
Child's level of anxiety			-.23	-.34*	-.40**	-.29*	.25
School achievement				.53**	.41**	.34*	-.18
Assessment of intelligence					.71**	.63**	-.52**
Assessment of verbal ability						.61**	-.59**
Assessment of popularity							-.64**

Note. * $p < .05$. ** $p < .01$.

Discussion

In this research, a new procedure for examining lying, i.e., giving false statements, in children was applied. As opposed to the commonly used temptation resistance paradigm, this new procedure is also applicable to older children, so it was possible to use it to directly compare the success of giving false statements between children in lower and upper grades of elementary school. The given results show that older children give false statements in a more convincing and sophisticated way when compared to younger children, which is in line with the findings of previous research in which the ability to lie was assessed in a different way (DePaulo et al., 1982; Evans & Lee, 2013; Lee, 2013; Talwar et al., 2006). The results of this research show that older children, aged 10 to 14 years, are more convincing when giving false statements in comparison to younger children, aged 6 to 7. The absence of difference between ten-

year-olds and thirteen-year-olds can indicate that the period between the ages of eight and ten is very significant for further development of the ability to lie more convincingly and in a more sophisticated way, which is in line with the finding of Talwar and Lee (2002) that children younger than 8 years old cannot fully control their verbal and nonverbal behavior when lying. Since the ability to mentalize has an important role in successful lying (Frith, 2012), it is possible that the development of certain metacognitive abilities that are believed to develop later, between the ages of eight and ten (Veenman et al., 2006), is responsible for the greater persuasiveness of lying in children aged 10 to 14, in comparison with younger children aged 6 to 7 years.

Children aged 6 to 7 years produce fewer details about false events; find it harder to move away from simply repeating the given structure of the event, and devise additional new information to a lesser extent. Even the very content of their stories seems less plausible (e.g., *“Me and my sister were playing with a ball... and I once kicked the ball hard and broke the neighbor’s window. And then after the neighbor again bought a new window... and I broke it again, but after that, I went inside and my sister and...she again broke his window. After, I went outside without my sister... she was inside the house, and I was playing outside again. And after that, I didn’t break the neighbor’s window, but I played with the bicycle”*).

The findings of previous research about the question of the existence and direction of differences in gender when it comes to the ability to lie are inconsistent, and there are vast differences in the ways in which the successfulness of lying was measured. Based solely on the assessment of nonverbal behavior, higher success in lying was registered in girls, but only in younger ages (Feldman et al., 1999). In the research by Talwar and colleagues (2006), parents were trained to help their children devise the best possible fabricated narrative about an event that had never happened to them, and then they practiced with them how to present certain events in the most convincing way. The simulated false testimonies of girls were shown to be more convincing than the false testimonies of boys. As possible explanations for this finding, the authors state the bias of adult assessors who might find girls more credible or perhaps the greater motivation and effort of girls when practicing and preparing the false narratives. In this research, where children were asked to independently devise the most convincing narrative about a false autobiographical event and to then present it in the most convincing way possible in order to deceive others that it actually had happened to them, without any help from others and previous practice, no differences were found the persuasiveness of lying between girls and boys.

Children who were judged by the class teacher or other teacher as being able to acquire knowledge and solve tasks faster and more efficiently, and to better understand relationships and cope better in new situations, and who also have higher school success are more successful in lying – they seem more convincing, provide more details and are less anxious when giving false state-

ments. Although they share the methodological variance, high correlations of the order of 0.4 were obtained. The obtained findings suggest that intelligence is a significant determinant of the ability to give false statements, i.e., that success in giving false statements represents a cognitive challenge to which children with higher cognitive capacity respond more adequately.

In addition, the children who were assessed as more popular among their peers and more verbally capable were more convincing when giving false statements, while no significant differences were found in the persuasiveness of children with more or less pronounced antisocial behavior. Popularity among peers is one of the indicators of developed social skills. As in previous research (Feldman et al., 1999), it was shown that this kind of popularity among peers is positively correlated with the ability to lie in children. Children who are more popular have more developed social skills, which probably increases their persuasiveness when producing false statements. False statements can be given with the goal of facilitating social interaction, making an impression, or forming friendships (Kashy & DePaulo, 1996, according to Feldman et al., 1999). People with more developed social skills are able to better control their behavior, which can lead to more successful lying.

Despite the authors' expectations, a correlation between the ability to give false statements and antisocial behavior was not registered, and there can be different reasons for that. The observed distribution of assessments of antisocial behaviors significantly deviates from the normal distribution, as most students were assessed with the lowest grades on the scale of antisocial behavior. Consequently, individual differences in the manifestation of antisocial behavior of students were not registered to a sufficient extent. This type of distribution of data indicates several potential limitations. Extreme manifestations of antisocial behavior should not be expected in the non-clinical population, so accordingly, the items should have been formulated differently (e.g., instead of "*This child often starts physical confrontations with other children,*" the item can be formulated in the following way – "*Sometimes this child participates in physical confrontations with other children*"). Also, due to the voluntary registration of students for participation in the research, the question of sample bias may be raised. It is assumed that students who independently applied to participate in the research are more cooperative, which could have led to the curvature of the distribution of assessments of students' antisocial behavior. Given all of the above, in future research, it would be important to ensure a more representative sample of students in order to avoid the stated limitations. Finally, the lack of correlation between the ability to give false statements and antisocial behavior can also be explained by limitations related to the validity of the applied procedure for measuring the ability to give false statements.

Limitations of the research

It is necessary to consider the validity of the applied procedure for measuring children's individual differences in the ability to give false statements. The possibility that the registered individual differences in the ability to lie are a consequence of differences in the motivation of students to demonstrate their abilities cannot be ruled out. It is possible that more successful students, who are more aware of socially desirable behavior, approached the task with more motivation in the desire to demonstrate their high abilities. If the more successful students had put more effort into devising and presenting false autobiographical events, this could explain why the observers assessed them as more convincing and less anxious and why they produced more details. Accordingly, in future research where a similar procedure would be used to measure the ability to give false statements, it would be necessary to control the degree of the participants' motivation to respond to the requirements of the task.

In addition, one of the shortcomings of this study is the somewhat artificial situation (the presence of a camera), and also the fact that the participant is instructed to deceive someone who will later watch the recording, which could have decreased the motivation to lie due to the lack of stake. Although the researchers' explanation that they want to assess who can tell the best story somewhat ensured the children's motivation to participate in the procedure, this situation differs from everyday situations in which children most often resort to lying.

Additionally, even though the researchers did not detect negative reactions in the children, the presence of a camera and researchers whom the children did not know before, could have induced anxiety to a certain extent, so it is suggested that in future research, it would be useful to take into account the anxiety of the participants as a disposition that could be a significant covariate.

The subjectivity of class teachers' and other teachers' assessments also represents a limitation. The assessments were collected from only one person, and it was not possible to control the teachers' ability to assess specific characteristics, which can be affected by many factors such as work experience. High intercorrelations were registered between the assessed characteristics, which are most likely due to the "halo effect" or other biases of the teachers. In order to overcome this shortcoming, in future research, it would be desirable to use validated instruments for assessing specific characteristics and traits in children, which includes individual testing by psychologists (intelligence tests, standardized scales for assessing behavioral problems, interviews, etc.).

Conclusion

This research was conducted with the goal of examining children's ability to lie and its correlates. The findings show that older children are more successful in giving false statements than younger children. However, no differences were found in the ability to give false statements between boys and girls. It was shown that certain characteristics could be important when devising and producing persuasive false content. Intelligence, verbal ability, and popularity among peers are positively correlated with the ability to give false statements.

Keeping in mind the stated limitation of this study, such as the nonrepresentative sample, the potentially subjective assessments of class teachers and other teachers, and the inadequate formulation of specific indicators of the children's characteristics, the findings of this research are significant for further development of this area of study and can have implications in different contexts of children's social functioning. Research on children's ability to fabricate false narratives and to present them convincingly is very important in the area of forensic psychology and forensic medicine (Talwar & Crossman, 2012). The results of this research highlight the importance of children's age and some of their cognitive and social characteristics, which could all be taken into account in situations where children testify in court proceedings and when assessing the credibility of their testimony.

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Conflict of interest

We have no conflicts of interest to disclose.

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Appendices

Appendix A: List of Events

Main events

1. Imagine you ate something bitter when you were at the seaside and that you felt nauseous afterward. Be as convincing as possible and describe the event in order to convince others that it really happened to you.

2. Imagine you went to the park with someone and a storm started. Be as convincing as possible and describe the event in order to convince others that it really happened to you.
3. Imagine that you kicked a ball so hard that you broke the window of your neighbor's house. Be as convincing as possible and describe the event in order to convince others that it really happened to you.

Replacement events

1. Imagine that you went for a walk with someone and got lost. Be as convincing as possible and describe the event in order to convince others that it really happened to you.
2. Imagine that you went on a school vacation with your friend and that at one point you realized that your friend got lost. Be as convincing as possible and describe the event in order to convince others that it really happened to you.
3. Imagine that while walking with someone, you came across a lost wallet. Be as convincing as possible and describe the event in order to convince others that it really happened to you.
4. Imagine you went to the store with someone and came across a starving kitten on the way there. Be as convincing as possible and describe the event in order to convince others that it really happened to you.

Appendix B: Instruction for children

"I would like to see how well you can tell stories and who can better tell a story that I start. I'll read you a total of three short sentences describing events. You should imagine that each event happened to you. So, it has not happened to you, but you imagine that it has. Try to come up with and tell the story of that event, as if it happened to you, but as convincingly as possible, so that you convince me that it really happened to you. When I read out the event, you have about 1 minute to come up with a story and about two minutes to tell your story. After you come up with the story, you can start telling it. I also have a task. My task will be to film you while you are telling each of these three stories. When the time is nearly up, I will give you a hand signal (show the child a hand signal) so that you know that the time will be up soon and you can slowly start finishing. The video recordings will be sent to some students who will try to assess how well you told these stories. The success of our research depends on you, so please do your best to tell the stories as convincingly as possible so that those who watch videos believe that it really happened to you. Now I am going to read you a sentence based on which you will make up your story, okay? You have a minute to come up with your version of this event."

Appendix C: Assessment Inventory for Teachers

This is a questionnaire for the assessment of the abilities and characteristics of a particular child. Please rate each child's abilities on a scale from 1 (*does not apply to this child at all*) to 7 (*fully applies to this child*) as accurately as you can. The data will be used exclusively for research purposes, and all personal information will remain confidential. Thank you for your cooperation!

Name and surname of the child: _____

Class: _____

POPULARITY (LIKABILITY)

1. Other children in the class like to spend time with this child.
2. This child is often a role model for other children.
3. This child likes to be and often is the center of attention when they are in the company of other children.

ANTISOCIAL BEHAVIOR

1. This child often starts physical confrontations with other children.
2. This child often verbally attacks (insults) other children.
3. This child often violates school rules.

INTELLIGENCE

1. This child successfully recognizes relationships and copes well in new situations.
2. This child is able to solve tasks of different difficulties quickly and efficiently on their own, without the teacher's additional help.
3. Compared to other children, this child acquires knowledge faster and more efficiently.

VERBAL ABILITY

1. This child speaks fluently and clearly.
 2. Compared to other children, this child has a more extensive vocabulary.
 3. This child has no difficulty in verbally expressing what they think.
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VERUJ MI DA TE LAŽEM*: SPOSOBNOST LAGANJA KOD DECE I NJENI KORELATI

Laganje se kod dece javlja veoma rano. Fokus prethodnih istraživanja uglavnom se odnosio na sposobnost laganja kod dece predškolskog uzrasta. U ovom istraživanju korišćenjem nove procedure, cilj je bio ispitati sposobnost davanja lažnih iskaza kod dece školskog uzrasta, kao i kognitivne i socijalne korelate uspešnosti dece u davanju lažnih iskaza. Ukupno 48 dece, po 16 učenika prvog, petog i osmog razreda osnovne škole imali su zadatak da osmisle lažni autobiografski narativ i da ga što uverljivije izlože kako bi ubedili druge da im se to stvarno dogodilo. Uverljivost njihovih snimljenih izlaganja procenjivalo je 15 nezavisnih procenjivača. Od učitelja i razrednog starešine na osnovu posebno konstruisanog inventara prikupljene su procene inteligencije, verbalne sposobnosti, omiljenosti među vršnjacima i antisocijalnog ponašanja svakog učenika. Rezultati pokazuju da su deca uzrasta od 10 do 11 godina i deca uzrasta od 13 do 14 godina procenjena kao uverljivija prilikom davanja lažnih iskaza u odnosu na mlađu decu, uzrasta od 6 do 7 godina. Međutim, nije dobijena razlika u uspešnosti davanja lažnih iskaza između dece uzrasta od 10-11 godina i dece uzrasta od 13 do 14 godina, kao ni razlika u sposobnosti davanja lažnih iskaza između devojčica i dečaka. Deca sa višim školskim postignućem i ona koja su procenjena od strane razrednog starešine ili učitelja kao inteligentnija, verbalno sposobnija i omiljenija među vršnjacima su takođe od strane grupe nezavisnih procenjivača procenjena kao uverljivija pri izlaganju lažnih autobiografskih događaja.

Ključne reči: inteligencija, kognitivni razvoj, laganje, lažni iskazi, popularnost među vršnjacima

* Reči upućene ispitivaču tokom učešća u istraživanju (ispitanica, 7 godina).