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Abstract

This study examined whether emotional understanding and empathy were predictors of prosocial lying in children aged 4 to 11 years. A total of 144 children participated in the study. To assess children's prosocial lying, we used the Helping Scenario, a classical experimental paradigm that allows children to lie to help others at their own expense. Children's emotional understanding was assessed using the Test of Emotion Comprehension, a test that measures the nine components of emotional understanding. Children's empathy was assessed using the Griffith Empathy Measure, a questionnaire completed by parents, measuring affective and cognitive empathy. Results indicated that emotional understanding plays a crucial role in the development of children's ability to produce prosocial lies from 4 to 11. However, we found no significant relationship between empathy and prosocial lying. Finally, our results confirm that as children grew up, they lied more and more effectively. Overall, the results allow us to better understand the factors that contribute to the emergence and development of children's ability to produce prosocial lies.

Keywords: children, lie-telling, prosocial lies, emotional understanding, empathy

Children tell lies (i.e., false statements made in order to deceive others). These lies are classified into two broad categories: antisocial (i.e., selfish lies) and prosocial (i.e., white lies). Antisocial lies, told only for personal purposes, can be stated to avoid punishment or to obtain an undeserved reward (Talwar, Gordon, & Lee, 2007; Talwar & Lee, 2011). Prosocial lies, produced primarily for the benefice of others, are usually uttered to be polite or to avoid hurting the interlocutor (Talwar & Crossman, 2011). They may also be stated to protect or help others at the child's own expense (Bottoms et al., 2002; Talwar et al., 2004; 2017). Contrary to antisocial lies, prosocial lies are socially encouraged because they allow for the establishment and/or maintenance of harmonious social relationships (e.g., DePaulo et al., 1996). Yet, in the judicial context, for example, lying to protect or help others escape a possible conviction can have serious repercussions. Despite this, little is known about the factors that contribute to the emergence and development of children's ability to produce prosocial lies.

For most children, prosocial lies appear from the age of 4 (see Demedardi & Monnier, 2019, for a review of the literature on prosocial lies). Indeed, at this age, most children are able to lie about their appeal to an undesirable gift (Lavoie et al., 2016; Talwar, Murphy & Lee, 2007), their opinion about a bad artwork (Fu & Lee, 2007) or the physical appearance of others (Talwar & Lee, 2002). To a lesser extent, children aged 4 are also able to lie to let others win in their place (Talwar et al., 2017, 2019) or to hide others' transgressions at the risk of being accused (Talwar et al., 2004). Therefore, when there is a cost to themselves, children are less likely to lie for others (Popliger, et al., 2011; Talwar et al., 2017, 2019).

Although prosocial lies appear very early, they become more frequent with age - with or without cost- (Popliger et al., 2011). Indeed, the majority of research has shown that school-aged children were more likely to produce prosocial lies than preschoolers (Popliger et al., 2011; Talwar, Murphy & Lee, 2007; Warneken & Orlins, 2015; but see Talwar et al.,

2004). Moreover, with age, prosocial lies become more sophisticated and credible enough to deceive adults (Popliger et al., 2011; Talwar, Murphy & Lee, 2007; Williams et al., 2016; but see Lavoie et al. 2016). Researchers have shown that executive functions (i.e., working memory, inhibition and cognitive flexibility; Talwar et al., 2017; Williams et al., 2016) and theory of mind (Lavoie et al., 2016; Williams et al., 2016) were involved in the development of prosocial lies. Indeed, lying requires the child to intentionally instill false beliefs in others, inhibit information about the truth and temporarily keep a lot of information in mind (Talwar & Crossman, 2011).

Very recently, studies have shown that empathy is also involved in prosocial lying in children (Nagar et al., 2020) and in adults (Xu et al., 2019). Empathy is defined as an affective response that stems from the apprehension or comprehension of another's emotional state or condition (Eisenberg, 2000; see Shamay-Tsoory, 2011, for a review). It is often considered essential to respond appropriately to the emotional state of others (Eisenberg et al., 1989). Empathy is composed of an affective dimension (i.e., feeling and sharing an emotion similar to that felt by others, unconsciously and automatically) and a cognitive dimension (i.e., understanding what others feel by putting oneself in their place without losing one's identity). Nagar et al. (2020) have shown that only the cognitive dimension of empathy was involved in the production of prosocial lies in children aged 7-11 years. According to Nagar et al. (2020), prosocial lying is a cognitively complex behavior that requires more complex cognitive processes than simple automatic emotion sharing. Thus, children who are able to understand what a person is feeling would be more likely to engage in prosocial lying in order to help that person. Although it has been established that empathy plays an important role in the production of prosocial lies from the age of 7 (Nagar et al., 2020; Xu et al., 2019), little is known about its role in the production of prosocial lies during the preschool period. Accordingly, this study examines the relationship between empathy and prosocial lying from

the age of 4, the age at which lying emerges and begins to develop (Lavoie et al., 2016; Popliger et al., 2011; Talwar et al., 2017, 2019).

Studies exploring the factors involved in prosocial behavior have also reported the important role of emotional understanding (Conte et al., 2018; Eggum et al., 2011; Ensor et al., 2010), which covers a wide range of sociocognitive skills, some of which are related to empathy (Denham, 1998). Emotional understanding can be defined as a set of skills that enable the child to understand the nature, causes, and consequences of emotions, whether these emotions are specific to the child or relative to another person (Theurel et al., 2016). From a developmental perspective, emotional understanding evolves in several stages of increasing complexity between early childhood and pre-adolescence. Pons et al. (2004) developed an empirically-derived model, in which they identified nine components of emotional understanding hierarchically organized into three developmental stages (each comprising three components). In the external stage (around the age of 4), children acquire an understanding of the external aspects of emotions and the impact of external events on emotions. In the mental stage (around the age of 7), children are able to understand the impact of mental phenomena on emotions: they understand that beliefs, desires and intentions can produce emotional reactions, and they distinguish between felt and expressed emotions. Finally, in the reflexive stage (around the age of 10), children are able to understand how an individual can reflect upon a given situation from various perspectives: they understand that emotions can be morally ambivalent, that emotions can be regulated in different ways and that two different emotions can be felt at the same time. Studies have shown that emotional understanding allows children to adapt their behavior in response to the emotions experienced by others during social interactions (Denham, 1998; Denham et al., 2016) and that emotional understanding is a predictor of prosocial behaviors (i.e., behaviors that promote the well-being of others; Conte et al., 2018; Eggum et al., 2011; Ensor et al., 2010). Because prosocial

lies aim to promote the well-being of others, a relationship between prosocial lying and emotional understanding can also be hypothesized. Indeed, telling a prosocial lie requires the ability to recognize a person's emotions, to understand the cause of that emotion, and to understand that a lie can change that emotion.

The idea that emotional understanding might play a role in prosocial lying is consistent with the findings of Warneken and Orlins (2015). Warneken and Orlins (2015) encouraged children aged 5 to 11 to lie about their opinion about the quality of an artist's artwork. They compared a "sad" condition in which the artist expressed sadness for the quality of his artwork to a "neutral" condition in which the artist was indifferent to the quality of his artwork. The results showed that 7-8 and 10-11 years-old children were more likely to lie than to tell the truth in the sad condition over the neutral one. According to the authors, these results suggest that children from the age of 7 understand the effect of prosocial lying on the emotions of others and use this knowledge appropriately. In the same vein, research in which children were asked to explain the reason for their lying showed that children progressively report lying to avoid hurting the feelings of others (Heyman et al., 2009; Popliger et al., 2011; Xu et al., 2010). Thus, children understand as they grow up that other people's emotions can be influenced by their lying behavior. However, these studies have not directly examined the relationship between emotional understanding and prosocial lying in children. The present study is intended to fill this gap.

The purpose of this study was to examine the relationship between emotional understanding, empathy and prosocial lying in children aged 4 to 11. We used the Helping Scenario experimental paradigm (Talwar et al., 2017, 2019), in which the experimenter creates a real situation where the child can lie at his/her own expense to help an adult confederate win a gift, by reporting wrongly having lost the last round of a game. The Helping Scenario was chosen because it elicits lies intended solely to serve the interests of

others without expecting rewards but at the expense of oneself (Talwar et al., 2017, 2019). We also assessed children's empathy (affective and cognitive) through the Griffith Empathy Measure, a questionnaire completed by the parents (GEM; Dadds et al., 2008) and their level of emotional understanding using the Test of Emotion Comprehension (TEC; Pons & Harris, 2000). Based on previous research, we expected that children with a higher emotional understanding would be more likely to lie for the benefit of others (H1). Furthermore, we expected that prosocial lying would appear more often in children with high cognitive empathy scores (H2) (Nagar et al., 2020; Xu et al., 2019). Finally, we expected that as children grow up, they would lie more frequently (H3a) and more effectively (H3b) for the benefit of others (Popliger et al., 2011; Talwar, Murphy & Lee, 2007; Warneken & Orlins, 2015).

Method

Participants

A total of 144 children aged 4 to 11 (66 boys, *M* = 7.7 years, *SD* = 1.98) participated in the study. Children were recruited from four elementary schools in the South of France. This study was approved by the French INSERM Ethics Committee (IRB00003888, IORG0003254, FWA00005831). Criteria for inclusion were informed consent from parents and no developmental delay.

Materials and procedure

Participants were observed individually in a quiet room in their school. Experience lasted on average 25 minutes for each child.

Lie-telling to help another

The Helping Scenario, based on Talwar et al. (2017), was used to create a real play situation where the child could choose to lie, at his/her own expense, to help an adult confederate win a gift. This game consisted of a die with different images on each side

(rabbit, four-leaf clover, moon, heart, fish and bird), and a game board with several copies of the same images (i.e., 36 images, 6 copies of each image of the die). For attractiveness and credibility reasons, the game board was made more complex for older children. Thus, for children aged 7 to 9, the game board contained 64 images (i.e., 8 copies of each image of the die and 16 distractors). For children aged 10 to 11, the game board was identical to that of children aged 7 to 9, but the images were replaced by words. The goal of the game was to throw the die in turn and to get rid of all the tokens as quickly as possible by covering the images corresponding to the one on the die. For example, if the die landed on the heart's image, each player had to place one token on each image of the heart on the game board as quickly as possible. Each player had 10 tokens (except for players aged 7 to 11, who had 15 tokens). The first player to place all his tokens won the game and therefore a gift.

The experimenter (E) invited the child and the confederate (C) to play this game, which is played in four rounds. At the end of each round, the winner received a gift. Previously, C had been asked to pretend to lose each round and to look sad after each defeat. In the fourth and final round, E excused himself and asked C and the child to continue playing. Although the child won the fourth round, C asked the child to tell that C won so that C could win the last gift. After the child has accepted or not, E came back into the room and C found an excuse to leave the room (i.e., four standardized excuses were created and used randomly). Then, E asked the child: "Who won the last round?". This question was used to determine if the child would lie to help the adult. Based on their response to this question, children were categorized as "truth-tellers" (coded 0) or "helping liars" (coded 1). Immediately after, E asked: "How many tokens did you have left?" and "How many tokens did he have left?". These questions were used to assess the liar's ability to maintain his/her lie. The liars' responses were classified into two categories: "does not maintain the lie" (e.g., "I had no tokens left" or "C had 2 tokens"; coded 0) or "maintains the lie" (e.g., "I had 4 tokens

left and C had no tokens left"; coded 1). At the end of the experiment, children all received four gifts and a debriefing of the study was done.

Emotional understanding

The Test of Emotion Comprehension (TEC; Pons & Harris, 2000, French version) was used to measure the nine components of emotional understanding: (1) recognition, (2) external cause, (3) reminder, (4) desire, (5) belief, (6) hiding, (7) regulation, (8) mixed, and (9) morality. The experimenter presented several short stories to the child, accompanied by illustrations. For each story, the main character was represented with four possible emotions ("happy", "sad", "angry", "scared", and "just alright"). At the end of each story, the child was asked to point to the image corresponding to the emotion felt by the main character. For each successful component, the child scored 1 point (ranging from 0 to 9, $\alpha = .60$).

Empathy

Parents completed the Griffith Empathy Measure (GEM [23 items]; Dadds et al., 2008, French version) to measure the affective and cognitive components of empathy. For each item (i.e., statement describing ways to act), parents rated their agreement on a 9-point Likert scale (-4 = *strongly disagree* to +4 = *strongly agree*). A high score indicated a high level of empathy (GEMaffective ranging from –36 to +36, $\alpha = .65$; GEMcognitive ranging from –24 to +24, $\alpha = .47$).

Results

Preliminary analyses revealed that gender did not significantly affect the results. Thus, gender was not included as a factor in the reported analyses. In addition, preliminary analyses revealed that there was no significant correlation between emotional understanding and affective ($r = -.121$) or cognitive ($r = .154$) empathy, even when controlling for age ($r = -.039$ and $r = .141$ respectively). However, although very low, there was a significant negative correlation between affective, and cognitive empathy ($r = -.186$, $p < .05$). Then, hierarchical

logistic regressions were conducted to examine whether (1) children's age, empathy and emotional understanding were predictors of prosocial lies, and (2) children's age was a predictor of prosocial lie maintenance.

Among the 144 children who participated, 50 (35%) lied to help the confederate win the last gift. A hierarchical logistic regression was conducted to determine which factors might predict children's prosocial lie-telling. For this hierarchical logistic regression analysis, children's age (continuous predictor variable) was entered on the first step, empathy scores (i.e., GEMaffective and GEMcognitive) on the second step and emotional understanding scores (i.e., TEC) on the third step. The results are presented in Table 1. According to H3a, with age, children were more likely to lie to help others at their own expense (p = .001). In addition, in line with H1, emotional understanding significantly predicted prosocial lie-telling (p = .003), with children with higher scores of emotional understanding lying more than those with lower scores (see Table 2). However, contrary to H2, cognitive empathy did not predict children's prosocial lying (p = .283). Affective empathy was not a significant predictor either (p = .106).

Among the 50 children who lied to help the confederate, 21 (42%) maintained their lie in response to the follow-up questions. A logistic regression was conducted to determine whether children's age predicted the maintenance of their lie. Thus, for this logistic regression analysis, children's age (continuous predictor variable) was entered as the only predictor. The model was significant, $\chi 2$ (1, 50) = 8.865, p = .003, Nagelkerke R^2 = .219. According to H3b, with age, children were more likely to maintain their lies, B = .522, SE = .195, Wald = 7.157, p = .007, odds ratio = 1.686; 95%CI = [1.150, 2.471].

Discussion

This study examined the role of emotional understanding and empathy in prosocial lying in children aged 4 to 11. We used the Helping Scenario to assess children's willingness

to lie for others. Children also completed an emotional understanding measure (i.e., TEC) and the parents completed a questionnaire (i.e., GEM) measuring the affective and cognitive empathy. Three main results were observed.

Consistent with our hypothesis, the first main result showed for the first time that improved ability in emotional understanding strongly predicted prosocial lies. Specifically, children who decided to tell a lie scored higher on the TEC than non-liars. Thus, our results suggest that in order to decide to tell a prosocial lie to help a person in distress, the child must be able to recognize the emotion of the person to whom the lie benefits and understand the cause of this emotion. In addition, the child must be able to understand that by deciding to lie, he/she can change that person's emotional state. In this study, for example, children had to recognize that the confederate was sad, to understand that this emotional state was due to not winning any gifts, and to understand that lying to the experimenter (by falsely claiming to have lost the last round) could change the confederate's emotional state. As a result, children with a high emotional understanding could have been more inclined to lie to improve the emotional state of the confederate at their own expense. Our findings are consistent with previous research highlighting the role of emotional understanding in children's prosocial behaviors (Conte et al., 2018; Eggum et al., 2011; Ensor et al., 2010), suggesting that emotional understanding may play an important role in children's overall prosocial orientation.

The second main result was that children's level of cognitive empathy did not significantly predict their prosocial lying, which did not confirm our hypothesis as well as the results of studies that have shown a significant relation between these two variables (Nagar et al., 2020; Xu et al., 2019). Several reasons may explain this result. First, the contradictory results could be due to differences in the age range studied (i.e., 4-11 years in the present study, compared to 7-11 years for Nagar et al., 2020; and 18-36 years for Xu et al., 2019).

Indeed, compared to Nagar et al. (2020), our age range also included preschool children and it might be that the relationship between cognitive empathy and prosocial lying becomes more robust from the school period onwards. Second, it is possible that the tool we used to assess children's empathy (i.e., GEM) have limited the relationship between this ability and prosocial lying. Indeed, in our sample the internal consistency of the items measuring cognitive empathy was very low (α = .47) compared to that of Nagar et al. (2020; α = .62), which may limit its explanatory power. Third, the paradigm used in the study by Nagar et al. (2020) was somewhat different from that used in the current study. The main difference was that in Nagar et al. (2020), the child and the confederate had to get to know each other better before playing. During the conversation, the confederate informed the child that he/she enjoyed collecting stickers as a hobby (a sticker book was one of the prizes to be won). Thus, having this information could have made it easier for the child to imagine how the confederate felt about the loss of the sticker book and to act accordingly, thereby increasing the relationship between empathy and prosocial lying.

Although our results are different from those of Nagar et al. (2020) and Xu et al. (2019), they are consistent with other studies that have shown that cognitive empathy did not always predict altruistic behavior (e.g., Edele et al., 2013). These mixed findings as well as the limited internal consistency of the tool used to measure cognitive empathy highlight the need for further research to improve our knowledge of the exact relationship between empathy and prosocial lying, especially over a large age range. Future studies may need to use more direct and reliable measures to assess children's cognitive empathy.

Finally, consistent with previous studies (Popliger et al., 2011; Talwar, Murphy & Lee., 2007; Warneken & Orlins, 2015), our results confirmed that the frequency and effectiveness of prosocial lying were significantly related to children’s age. Thus, as children

grow older, they become more engaged in effective lying behavior aimed at helping a person in distress at their own expense.

In everyday life, prosocial lies are necessary to establish and/or to maintain harmonious social relationships. Thus, from an early age, children are encouraged to produce prosocial lies. However, the production of prosocial lies in the judicial context, to protect or help others to escape conviction, can have serious repercussions. It is therefore important to better understand the factors that contribute to the emergence and development of children's ability to produce prosocial lies. Our results contribute to the literature on children's prosocial lying, by showing the crucial role of emotional understanding in the development of prosocial lying and by confirming that as children grow older, they become more engaged in effective prosocial lying behavior. Nevertheless, this study is not without limitations. First, although we have shown that improved emotional understanding promotes the production of prosocial lying in children, it is not clear whether children lied with the intention of alleviating the confederate's emotional distress or out of fear of being reprimanded if they did not. For this, children should have been asked to explain the reason for their lies (Popliger et al., 2011; Talwar & Lee, 2002; Xu et al., 2010) with the caveat that it is difficult for young children to make their motive explicit (Talwar & Lee, 2002). In addition, their compassion for the confederate could have been examined. Compassion is a related construct in the empathy domain that refers to being emotionally motivated to relieve a person's suffering or emotional distress and involves an action tendency to help that person (Lupoli et al., 2017). Lupoli et al. (2017) showed that compassion increased prosocial lying behaviors in adults. Thus, in future research, it would be interesting to examine the role of emotional understanding, empathy, and compassion in the production of children's prosocial lying while asking them to justify their lying in order to increase our knowledge about the sociocognitive mechanisms underlying the development of prosocial lying in children.

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Table 1

Hierarchical logistic regression model for children's prosocial lie-telling

Predictors	*B*	*SE*	*Wald*	*OR* [95% *CI*]	$\chi 2$	*p*
Step 1					18.856	.001
Age	.410	.101	16.539	1.507 [1.237-1.837]		.001
Step 2					3.351	.187
Cognitive empathy	.024	.022	1.155	1.024 [.981-1.069]		.283
Affective empathy	.029	.018	2.616	1.029 [.994-1.066]		.106
Step 3					8.753	.003
Emotional understanding	.430	.156	7.586	1.537 [1.132-2.087]		.006

Note. Step 1: Nagelkerke R^2= .169; Step 2: Nagelkerke R^2 = .197; Step 3: Nagelkerke R^2 = .267

Table 2

*Means (*SDs*) scores on emotional understanding and empathy as a function of children's lying behavior*

Predictors	Children's lying behavior		
	Truth-teller *n* = 94	Lie-teller *n* = 50	Total *n* = 144
Emotional understanding	4.97 (1.97)	6.52 (1.18)	5.51 (1.88)
Cognitive empathy	3.68 (7.87)	5.38 (10.21)	4.27 (8.75)
Affective empathy	5.48 (11.29)	6.98 (11.29)	6 (11.28)

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