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Cognitive empathy boosts honesty in children and young adolescents

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ABSTRACT

Children and young adolescents often tend to behave dishonestly in order to serve their self-interests. This study focused on how empathic abilities affect children's tendency to deceive others. Deception is the act of causing others to form a false belief to get them to act in a way that serves the deceiver's interests. As such, it requires the ability to predict how others might use the provided information. In two experiments, 274 participants (aged 10–16 years) played a game in which they could send a deceptive message to another participant to boost their own payoff at the other player's expense. We measured participants' cognitive and emotional empathy using different measures. We found that a measure of cognitive empathy, namely the fantasy scale, was associated with less deception of another player when that other player was not identified and was presented only as "Player B." However, when Player B was identified by name, empathy did not predict deception. In such cases, the only factors affecting deception rates were the gain for the participant (higher possible gains lead to more deception) and loss to the other player (higher possible losses lead to less deception). Overall, the findings suggest that even by 11 years of age, children can understand the impact of their unethical behavior on another child and adjust their actions accordingly. However, when the other child is not identified, children need to possess high levels of cognitive empathy toward imagined individuals to resist the temptation to deceive the other child.

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Introduction

Interaction among children, adolescents, and adults often involves statements and claims intentionally aimed at deceiving the counterpart of the interaction. Although relatively common, these behaviors are unwarranted because they undermine trustful communication. Hence, it is essential to understand their precursors and drivers and, even more important, what might lead children and young adolescents to refrain from them. Here, we studied what affects children and young adolescents' deceptive behaviors. We focused mainly on empathy—the ability to understand and share the other person's thoughts and feelings—as an important ability linked to deception. We studied whether the development of empathy affects deception and whether this effect is moderated by the outcomes of the deception both for the deceiver and for the one being deceived.

The development of deception

Honesty is a crucial moral behavior that children develop over time (Talwar & Crossman, 2011). However, children, as well as adults, do not always act honestly because in some situations they may increase their benefit through deception. Although younger children may do this more often, as children mature they become more aware of others paying attention and the potential risks of being caught (Stouthamer-Loeber, 1986; Talwar & Crossman, 2011). Only during adolescence do children fully internalize the importance of honesty and overcome their urge to make false claims for their own benefit. Although dishonesty might not always have a direct impact on others, deception, a specific type of dishonest behavior, can cause harm by leading someone to form false beliefs that benefit the deceiver. Deception requires the ability to predict how others might use the provided information. Such an ability can be used to deceive others but can also result in understanding the harm caused by deception and thus minimize such behavior. Here, we examined whether adolescents' empathy, which refers to their capacity to understand and share others' emotions and mental states, is related to their likelihood of engaging in deceptive behavior.

Deception is the act of causing others to form (or to continue to hold) a false belief to get them to act in a way that serves the deceiver's interests. Most often, deceiving involves lying.[1] Standard economic models predict that an agent would deceive if the agent's expected benefits from the dishonest behavior would outweigh the costs of the dishonest act (Becker, 1968). However, research has found that dishonest behavior entails a psychological cost (Mazar et al., 2008). Therefore, people try to reduce this psychological cost by seeking justifications for cheating (Bassarak et al., 2017; Pittarello et al., 2015; Shalvi et al., 2011; for a review, see Shalvi et al., 2015), trying to form justifications themselves (Maggian & Villeval, 2016), or relying on other people's dishonesty (Leib et al., 2021; Gross et al., 2018; Weisel & Shalvi, 2015). By having a justification to lie, people can maintain and protect their moral self-image even when dishonestly serving their interests.

Lying and deceiving are common behaviors also in children (for a review, see Heyman et al., 2019). Developing the ability to lie reflects normative cognitive maturation (Carlson et al., 1998; Talwar & Crossman, 2011), and children as young as 2.5 years lie for personal gain or to circumvent punishment (Evans & Lee, 2013). Around 6 years of age, children are capable of not only telling lies but also deceiving others using their false beliefs (Shaw et al., 2014). For children to be able to deceive others, they must understand that their mental state is not known to others. Indeed, the cognitive ability to lie is related to the development of theory of mind and executive functions such as inhibitory control and working memory (Williams et al., 2016). During early childhood (ages 2–7 years), when children's theory of mind becomes more developed (Osterhaus & Koerber, 2021; Wellman et al., 2001), the propensity of lying increases with age (Talwar & Lee, 2002; Wilson et al., 2003). However, from 7 to 16 years

[1] Note that lying and deception are not mere synonyms. As defined by Sobel (2020; p. 907), "Lying depends on the existence of accepted meanings for messages but does not require a model of how the audience responds to messages. Deception does require a model of how the audience interprets messages but does not directly refer to consequences." Most often, however, deception involves lying in an attempt to modify the target person's beliefs.

of age, the likelihood of lying decreases (Maggian & Villeval, 2016) while the sophistication in lie-telling increases (Talwar et al., 2007). During this period, children gradually internalize moral foundations (Christner et al., 2020; Sengsavang et al., 2015) and become more aware of the way in which they are being perceived by others (Russell et al., 1991; Shaw et al., 2014). Concurrently, during late childhood and early adolescence, children also become more aware of the consequences of their unethical behavior for others and are less willing to engage in dishonest behavior when these negative effects are emphasized (Galil et al., 2019). As a result, just like adults, children also exhibit some degree of lie aversion and are not lying to the full extent possible even when detection of their lying is unlikely (Maggian & Villeval, 2016; for meta-analyses, see Abeler et al., 2019; Gerlach et al., 2019; Leib et al., 2021), and even by 3 years of age increasing children's self-awareness increases their likelihood of behaving honestly (Bender et al., 2018). Older children are also less likely to behave dishonestly when the person being deceived suffers more severe consequences (Glätzle-Rützler & Lergetporer, 2015). Nevertheless, just like adults (e.g., Gneezy, 2005; Kajackaite & Gneezy, 2017), children and young adolescents' ethical behavior is incentive dependent given that they are more likely to deceive others when they can benefit more from doing so (Glätzle-Rützler & Lergetporer, 2015; Markiewicz & Gawryluk, 2020).

The development of empathy

Importantly, the ages when unethical behavior develops correspond with the time of maturation and development of empathic abilities (Knafo & Uzefovsky, 2013). Empathy is broadly defined as the ability to recognize the emotions of others and to share those emotions while maintaining a self–other distinction (Davis, 1983; Shamay-Tsoory, 2011). Empathy had been studied in the literature both as a trait and as a state (for a review, see Cuff et al., 2016). Here, we focused not on how different situations affect empathic responses but rather on the effects of interpersonal differences in empathic abilities on unethical behavior. Hence, we focused our review on findings regarding empathy as a trait rather than on situational influences on empathy.

A number of aspects of adolescents' lives have been shown to benefit from the development of empathy such as peer relationships (Gleason et al., 2009), prosocial behaviors (Batson, 2010; Decety et al., 2016; Eckland et al., 2020), and well-being (Vinayak & Judge, 2018; Yu et al., 2022). Hoffman (1982) proposed that empathy develops from a purely emotional skill to a cognitively controlled one and from an intuitive and automatic response to stimuli into a complex, top-down, controlled, and regulated process. Accordingly, when fully developed, empathy is a relatively governed response to others that involves both emotional and cognitive components (Davis, 1983; Preston & De Waal, 2002). Cognitive empathy involves understanding of others' internal states (e.g., "putting yourself in their shoes"). When one takes the perspective of another person, one usually builds on one's own past experiences and tries to imagine how the other person might feel (Epley et al., 2004; Eyal et al., 2018). Emotional empathy involves sharing the feelings and emotions of another person by taking on that person's mental states (Hess & Blairy, 2001; Oliver et al., 2018). Even 3-month-old babies are able to demonstrate some levels of both cognitive and emotional empathy (Davidov et al., 2021), yet although cognitive empathy increases from infancy to adolescence, no association was found between age and emotional empathy (Knafo & Uzefovsky, 2013). Previous research has consistently shown that there are gender differences in empathic abilities. Specifically, females tend to have higher levels of emotional empathy but not necessarily cognitive empathy (for a review, see Christov-Moore et al., 2014). These differences can be observed early in development, sometimes as early as 18 months (for a review, see Rochat, 2023), and are reflected in both neural and behavioral responses (Kamas & Preston, 2021; Schulte-Rüther et al., 2008; Van der Graaff et al., 2018).

The relation between empathy and dishonesty

When it comes to lying and deception, adults typically consider the impact of their actions on others and are less likely to deceive if it harms someone (Gerlach et al., 2019; Gneezy, 2005; Leib et al., 2021). Contrarily, when their unethical behavior benefits others, they become more likely to engage in such prosocial lying (Levine & Lupoli, 2022; Lupoli et al., 2017). This concern for others

may suggest that empathy plays a crucial role in shaping deception. For instance, people with high levels of empathy are less likely to condone deceitful bargaining tactics and other unethical behaviors (Brown et al., 2010; Cohen, 2010). In addition, individuals are more inclined to lie to groups than to individual persons because they more easily empathize with single persons, making it harder to deceive them (Amir et al., 2016). Similarly, people tend to tell more lies to strangers than to close friends or romantic partners because they can empathize less with them and do not feel the same level of emotional connection (Ennis et al., 2008). In the context of prosocial lying, the relation between empathy and unethical behavior is reversed, and people tend to tell more prosocial lies when they feel greater compassion (Lupoli et al., 2017) or empathy (Xu et al., 2019).

The relationship between empathy and lying among children had been studied primarily in the context of prosocial lying. Although children's prosocial lying begins at a relatively early age (Demedardi & Monnier, 2019; Talwar et al., 2019), it is only until 7 years that empathy (and specifically cognitive empathy) predicts prosocial lying among children (Nagar et al., 2020). At earlier ages, although children do tell prosocial lies, they are not predicted by empathy but rather are predicted by emotional understanding (Demedardi et al., 2021). Indeed, when the relation between empathy and prosocial lies is fully matured, children are more likely to tell prosocial lies in favor of those with whom they can more easily empathize, such as their group members (Sierksma et al., 2019), or those who express negative emotions (Warneken & Orlins, 2015). High cognitive empathy is also associated with greater acceptance of prosocial lies (compared with self-serving lies) among children aged 6 to 12 years irrespective of age (Lim et al., 2020). Among adults, cognitive empathy—but not affective empathy—is positively associated with sensitivity to justice for others (Decety & Yoder, 2016). Here, we focused on the relatively understudied effects of empathy on children's self-serving deceptive behaviors.

Overview of the current study

Here, we studied the relationship between empathy and deceptive behavior in children and adolescents. We hypothesized that the development of empathy can account, at least in part, for variations in deceptive behavior throughout late childhood and adolescence. Importantly, whereas the cognitive processes underlying children's and adolescents' lying have been systematically explored (Lavoie et al., 2017; Nagar et al., 2020; Williams et al., 2016), much less is known about when and why children choose to *refrain* from deceiving others.

One could expect empathy, and particularly cognitive empathy (i.e., the ability to understand how other people think and feel), to increase deception. To effectively deceive individuals, it is necessary to have an understanding of how they perceive the world and form their beliefs and impressions because deception involves leading them to form false beliefs. Indeed, studies have found that theory of mind—the understanding that other people's thoughts, feelings, and perceptions might be different than one's own—is a necessary ability for unethical behavior (Frye & Moore, 2014). However, whereas a basic theory of mind—which is achieved around 18 months of age (Moll & Tomasello, 2007)—is required for unethical behavior, research has shown that as theory of mind continues to develop it actually reduces, rather than increases, lie-telling (O'Connor & Evans, 2019). Hence, we built on findings that among children sympathy, a form of emotional empathy, predicts prosocial behavior (Malti et al., 2009) and hypothesized that because deception involves causing harm to another individual, increased empathy should be associated with lower levels of deception. As reviewed earlier, empathy encompasses two components, cognitive and emotional, and the developmental trajectories of unethical behavior correspond to those of cognitive—but not emotional—empathy. Therefore, we predicted that cognitive—but not emotional—empathy would reduce deception rates in children and young adolescents as they become more aware of the effect their deception has on others.

In two experiments, children and young adolescents (aged 11–16 years) participated in a sender–receiver task (adapted from Gneezy, 2005) in which they could send another child a deceptive message in order to boost their own payoff. We measured children's cognitive and emotional empathy and tested whether it correlated with their willingness to send the deceptive message. In addition, we manipulated the consequences of the deception, specifically the gains for the deceiver and losses to the one being deceived, and examined whether they moderated the hypothesized effect of empathy

on deception. In Experiment 1, the other player was not identified and was referred to as "Player B." In Experiment 2, we further manipulated whether the other player was identified or not. Because identified others are more likely to evoke empathic reactions (Dickert et al., 2016; Kogut & Ritov, 2005a, 2011; Small et al., 2007), we tested whether the identifiability of the other player moderates the expected effect of empathy on deception.

Experiment 1

Method

Participants

We recruited 90 Israeli participants aged 11 to 16 years (M_{age} = 13.61 years, *SD* = 1.73; 51% girls) via online advertisements on Facebook. For each participant, we obtained the consent of a parent and the assent of the child (in accordance with the institutional review board's protocol). Participants were paid 70 ILS (∼$19 U.S.) for their participation and received additional payment based on their decision in one randomly selected trial (additional 5–15 ILS).

Procedure

Participants arrived in the lab and were seated in front of a computer. If a child was accompanied by a parent, the experimenter asked the parent to wait in a different room. Participants first played the role of the sender in a sender–receiver task (adapted from Gneezy, 2005). In this task, Player A (the participant) observed two boxes of different colors containing monetary rewards for herself (given a female participant) and for another child (Player B). The rewards were arranged in boxes such that one box was always better for Player A and worse for Player B, whereas the alternative box was worse for Player A and better for Player B. Therefore, given the design of the task, the player could increase her payoff only by reducing the payoff of the other player. Participants further learned that although they observed the contents of the two boxes, they could not decide which box was chosen. The only thing they could do was send Player B, who did not know the contents of the boxes, one of two messages—"the blue box is better for you" or "the red box is better for you." Player B then needed to choose one of the two boxes. Both players received the payoff in the chosen box. Therefore, Player A could send a deceptive message suggesting that Player B choose the box that would maximize Player A's payoff at the expense of Player B. An illustration of the task is depicted in Fig. 1.

Participants played 16 trials of the task, each with a different Player B. Between trials, we manipulated the amount of points Player A gained from sending a deceptive message (2 vs. 4 vs. 6 vs. 8) and the amount of points Player B lost from following a deceptive message (2 vs. 4 vs. 6 vs. 8). The complete list of trials appears in Table 1. The order of the boxes (whether Box 1 or Box 2 was better for the participant) was counterbalanced, and the order of the trials was randomized. The task was programmed using E-Prime 2.0 (Psychology Software Tools, Sharpsburg, PA, USA). To make sure that participants' responses in each trial were not influenced by previous trials, we did not inform the participants about the responses of Player B after each round and only informed them about Player B's response to the randomly selected trial that was selected to determine pay after all experimental trials were concluded.

Following the task, participants were asked to complete several measures of their empathic abilities. These tasks were programmed on the Qualtrics platform. Specifically, they completed the Reading the Mind in the Eyes Test (RMET; Baron-Cohen et al., 2001), a test designed to measure participants' cognitive empathy abilities. In the test, participants were presented with 36 pictures of human eyes and were instructed to choose, out of four possible answers, the emotion expressed in the presented eyes. The score was calculated as the number of correct responses (0–36). Participants further completed the Interpersonal Reactivity Index (IRI; Davis, 1983), which measured both cognitive and emotional empathy. It consisted of 28 items to which participants responded using a 5-point Likert scale. Those 28 items were then averaged to create four subscales—two for components of cognitive empathy (perspective taking and fantasy scale) and two for emotional empathy (empathic concern and personal distress). Finally, participants were debriefed and paid their participation fee plus a bonus

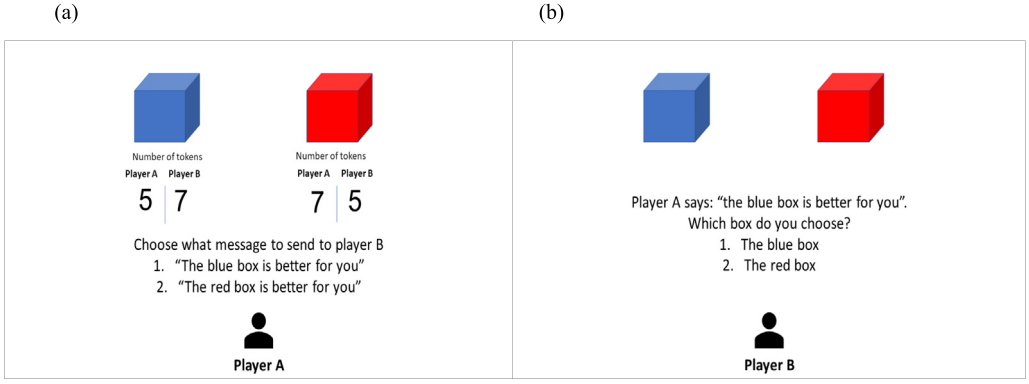

Fig. 1. An illustration of the sender–receiver task. (A) Player A observes the contents of both boxes and decides which message to send to Player B. (B) Player B observes the message sent by Player A and chooses one of the two boxes.

Table 1
List of experimental trials in Experiments 1 and 2.

	Box 1		Box 2	
	Player A	Player B	Player A	Player B
	5	7	7	5
#	5	9	7	5
#	5	11	7	5
#	5	13	7	5
	5	7	9	5
	5	9	9	5
#	5	11	9	5
#	5	13	9	5
	5	7	11	5
	5	9	11	5
	5	11	11	5
#	5	13	11	5
	5	7	13	5
	5	9	13	5
	5	11	13	5
	5	13	13	5

Note. Due to a coding error, data from trials marked with a hash mark (#) were not obtained in Experiment 2.

payment according to one randomly chosen trial from the sender–receiver task. Each session lasted approximately 30 min.

Statistical analysis

We begin our analysis by describing correlations between the empathy measures, age, and gender of the participants. Due to the within-participant design of our procedure, to test the effect of empathy on deception, we ran a generalized linear mixed-model logistic regression with participants' age, sex, gain for Player A, loss for Player B, and the empathy measures as predictors of the propensity to send the deceptive message. The analysis takes into account that the between-participants results were nested within the participants' repeated decisions. Finally, to test whether the within-trial variations (i.e., possible gain for Player A and possible loss for Player B) moderated the effect of empathy, we entered into the regression model the two-way interactions of each empathy measure with (a) gain for Player A and (b) loss for Player B.

Table 2
Descriptive statistics and correlations between measures of empathic abilities and age: Experiment 1.

	M (*SD*)	Cronbach's α.	IRI FS	IRI PT	IRI EC	IRI PD	Age
RMET	20.80 (4.15)		.10	.07	.05	.11	.34**
IRI FS	3.20 (0.76)	.60		.19	.04	−.09	.25*
IRI PT	3.45 (0.68)	.59			.39***	−.05	.24*
IRI EC	3.67 (0.63)	.42				.25*	.01
IRI PD	2.74 (0.70)	.61					−.17

Note. IRI, Interpersonal Reactivity Index; FS, fantasy scale; PT, perspective taking; EC, empathic concern; PD, personal distress; RMET, "Reading the Mind in the Eyes" Test.
*$p < .05$.
**$p < .01$.
***$p < .001$.

Results

The correlations between all measures of empathic abilities, as well as participants' age, are presented in Table 2. As expected, and in accordance with previous findings, age was positively associated with measures of cognitive—but not emotional—empathy. In addition, female participants had higher scores on perspective taking (M_{boys} = 3.28, SD = 0.71 vs. M_{girls} = 3.70, SD = 0.65), $t(88) = 2.42$, p =.017, d = 0.51, and fantasy (M_{boys} = 3.01, SD = 0.70 vs. M_{girls} = 3.39, SD = 0.78), $t(88) = 2.40$, p =.018, d = 0.51. No gender differences were observed for the other measures (ts < 1).

On average, participants sent the deceptive message in 61.4% of the trials. We ran a generalized linear mixed-model logistic regression with participants' age, sex, gain for Player A, loss for Player B, and the empathy measures as predictors of the propensity to send the deceptive message. The regression's odds ratios (*OR*s) are presented in Table 3. The analysis revealed a main effect for the possible gain for Player A; greater possible gains led participants to send more deceptive messages, $F(1, 1430) = 6.74$, p =.010, OR = 1.07, 95% confidence interval (CI) = [1.02, 1.13]. The analysis further revealed a main effect for the fantasy scale; participants higher on fantasy scale were less likely to deceive compared with those low on fantasy scale, $F(1, 1430) = 8.48$, p =.004, OR = 0.54, 95% CI = [0.35, 0.82] (Fig. 2). All other main effects and interactions were not significant (Fs < 2.77, ps >.096).

Discussion

Experiment 1 corroborated previous findings and revealed that children's cognitive empathy develops with age (Knafo & Uzefovsky, 2013) and that children's ethical behavior is affected by temptation (i.e., the amount they gain from the deception; Glätzle-Rützler & Lergetporer, 2015; Markiewicz & Gawryluk, 2020). More important, Experiment 1 further revealed that the fantasy scale, one measure of cognitive empathy, was associated with decreased rates of deception among children and young adolescents, yielding partial support for our hypothesis. As children mature, they develop the ability to understand what the other person thinks and experiences (Schwenck et al., 2014). Although one may assume that children would use this comprehension to manipulate the other child's thoughts for their benefit, our results propose that this might not be common. Instead, children who understand how a deceived person might feel tend to engage in less deceptive behavior, probably to refrain from making the deceived child feel this way.

We note that some of the measures of cognitive empathy in our study were not significantly correlated. However, note that our sample was relatively small (N = 90), and although it was enough for our within-participant analysis, it limited our ability to detect significant correlations between the empathy measures. Indeed, although not statistically significant, the magnitude of the correlation between the fantasy scale and the perspective-taking scale was similar to the magnitude reported in other studies in this age group (e.g., Hawk et al., 2013; Trentini et al., 2022).

In Experiment 1, only one cognitive empathy measure predicted deception, namely the fantasy scale. Whereas the RMET measures accurate emotion recognition and the perspective-taking scale refers to the ability to adopt the psychological point of view of others, the fantasy scale refers to

Table 3
A generalized linear mixed-model logistic regression predicting the propensity to send the deceptive message: Experiment 1.

	Model 1		Model 2	
	OR.	95% CI	*OR.*	95% CI
Gender (1 = male)	0.58	[0.31, 1.10]	0.58	[0.30, 1.10]
Age	0.89	[0.73, 1.09]	0.89	[0.73, 1.09]
IRI fantasy scale	0.54**	[0.35, 0.82]	0.59	[0.31, 1.15]
IRI perspective taking	1.19	[0.72, 1.99]	0.75	[0.34, 1.66]
IRI empathic concern	1.12	[0.66, 1.90]	0.73	[0.31, 1.73]
IRI personal distress	0.91	[0.57, 1.44]	1.05	[0.50, 2.19]
RMET	1.04	[0.96, 1.13]	0.96	[0.85, 1.08]
Red gain	1.07*	[1.02, 1.13]	0.87	[0.54, 1.42]
Yellow lose	0.98	[0.93, 1.04]	0.52*	[0.32, 0.85]
Red Gain × IRI Fantasy Scale			0.95	[0.89, 1.02]
Yellow Lose × IRI Fantasy Scale			1.03	[0.95, 1.10]
Red Gain × IRI Perspective Taking			1.04	[0.95, 1.13]
Yellow Lose × IRI Perspective Taking			1.06	[0.97, 1.16]
Red Gain × IRI Empathic Concern			1.02	[0.93, 1.12]
Yellow Lose × IRI Empathic Concern			1.07	[0.97, 1.17]
Red Gain × IRI Personal Distress			1.00	[0.92, 1.09]
Yellow Lose × IRI Personal Distress			0.97	[0.89, 1.05]
Red Gain × RMET			1.01	[0.99, 1.02]
Yellow Lose × RMET			1.01	[1.00, 1.02]

Note. OR, odds ratio; CI, confidence interval; IRI, Interpersonal Reactivity Index; RMET, "Reading the Mind in the Eyes" Test.
*$p < .05$.
**$p < .01$.

the ability to imagine oneself into the feelings and actions of fictitious characters (Davis, 1983). It should be noted that in Experiment 1 Player B had no identifying information and was only referred to as "Player B." Hence, it is plausible that participants responded to Player B in the same way that they would respond to a fictitious character, that is, by needing to imagine the other's feelings without much information regarding who the other person is. Thus, the ability to put oneself in the shoes of an unidentified person might be similar to putting oneself in the shoes of a fictitious other, requiring and relying on abstract thinking and imagination to a greater degree than what is needed to understand the emotions of another who we can more clearly imagine. This proposed similarity may explain the relationship between the fantasy scale and the inclination to deceive.

Experiment 2

In Experiment 2, we sought to replicate the findings of Experiment 1, and test whether the identifiability of Player B affects the relationship between empathy and the likelihood of being deceived by Player A.

Identifiability plays a crucial role in evoking empathic responses (Kogut & Ritov, 2005a, 2005b; Small et al., 2007). People are less likely to engage in unethical behavior if their behavior affects an identified person and not an anonymous victim (Yam & Reynolds, 2016). This effect seems to stem from higher care toward identified people given that it is more pronounced among prosocial participants, who take the welfare of others into account in their utility function (Soraperra et al., 2019). Children show a sensitivity to whether others are identifiable or not and are more inclined to share what they have with individuals who are identified compared with those who are unidentified (Beeler-Duden et al., 2022). The identity of the one being deceived also plays a crucial role in the likelihood to deceive given that children are more likely to lie to unfamiliar others than to familiar ones (Williams et al., 2013). In Experiment 2, we tested whether the identifiability of Player B would moderate the effect of empathy on deception. Because in Experiment 1 we found that only the fantasy scale predicted deception, we hypothesized that having an identified, yet unfamiliar, Player B would attenuate this effect because the other would be more easily imaginable, making the ability to connect

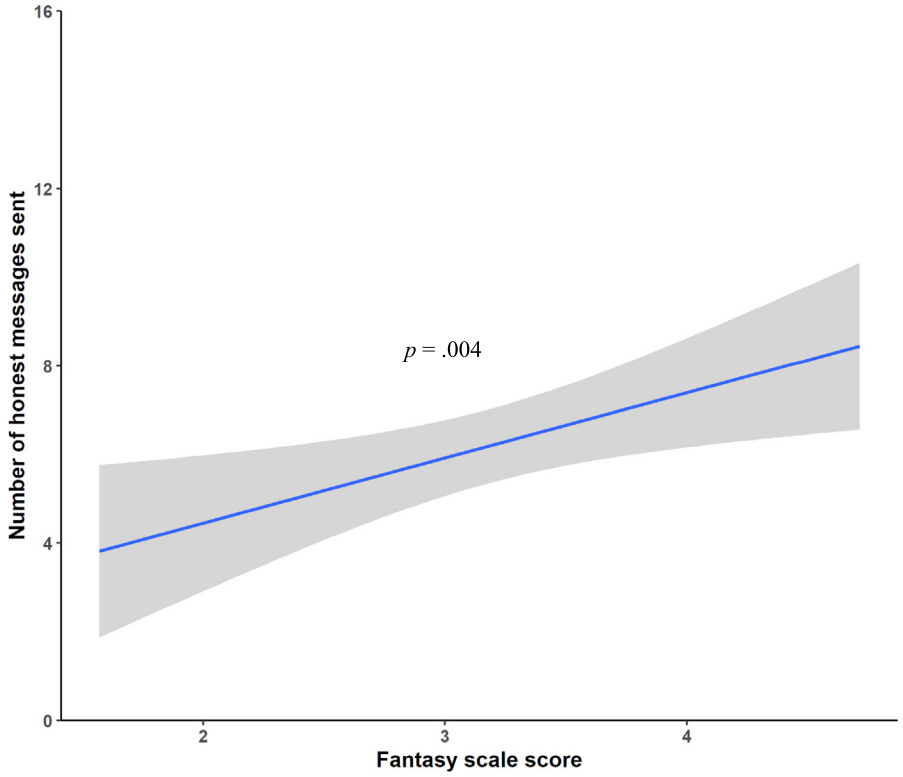

Fig. 2. The relation between the fantasy scale of the Interpersonal Reactivity Index and the number of honest messages sent by Player A in Experiment 1.

with a fictional other irrelevant. In addition, we hypothesized that participants across ages would tend to deceive identified victims less than unidentified victims.

In addition, in Experiment 2 we included a measure of a trait closely related to empathy, namely callous–unemotional traits. A callous–unemotional trait, measured with the Inventory of Callous–Unemotional Traits (ICU; Frick, 2004), assesses participants' traits such as lack of empathy, lack of guilt, and poverty in emotional expression. The ICU was shown to be stable across age (Pihet et al., 2015) and has been repeatedly shown to be negatively associated with empathy (for a review, see Waller et al., 2020). Callous–unemotional traits had been linked to antisocial behaviors such as aggression and violence (Pardini et al., 2007), delinquency (McMahon et al., 2010), and approval of dishonest behavior (Butean et al., 2020). Hence, we explored whether callous–unemotional traits could also predict deception.

Method

Participants

We recruited 192 Israeli participants in the age range of 11 to 16 years to participate in an online experiment via online advertisement on Facebook and other social media. Participants either encountered the advertisement themselves or were referred to the study by a parent/sibling who came across the advertisement. For each participant, we obtained the consent of a parent and the assent of the child (in accordance with the institutional review board's protocol). Eight participants were not in the predefined age range and thus were excluded from the analysis. Hence, the final sample consisted

of 184 participants (M_{age} = 14.64 years, *SD* = 1.73; 45% girls). Participants were paid 35 ILS (~$10 U.S.) for their participation and received additional payment based on their decision in one randomly selected trial (additional 5–15 ILS).

Procedure

Participants completed the experiment on their own personal computers through the Qualtrics platform. They played the same sender–receiver task (adapted from Gneezy, 2005) as in Experiment 1. However, due to a coding error, we obtained data for only 10 of the 16 trials in the task. The trials for which data were obtained appear in Table 1.

Participants were randomly assigned into one of two between-participants conditions (Player B identified or unidentified). Participants in the unidentified Player B condition (n = 92) played the task with another child identified only as "Player B." For participants in the identified Player B condition (n = 92), the other children were identified by their first name (a different name in each round of the task). The name of Player B was always unisex (e.g., "Tal," "Gil"), so participants could not tell whether they were playing with a boy or a girl. As in Experiment 1, we only informed participants about Player B's response to the randomly selected trial that was selected to determine pay after all experimental trials were concluded.

Following the task, participants completed several measures of empathic abilities. Specifically, participants completed the IRI (Davis, 1983) as in Experiment 1. In addition, for exploratory purposes we included the ICU (Frick, 2004). The ICU consisted of 24 items to which participants responded using a 4-point Likert scale. Those 24 items were then averaged to create three subscales—callousness, uncaring, and unemotional. Finally, participants were debriefed and paid their participation fee plus a bonus payment according to one randomly chosen trial from the sender–receiver task. Completion of the study took approximately 20 min.

Statistical analysis

As in Experiment 1, we begin with description of the correlations between our empathy measures, ICU subscales, gender, and age. Next, to test the effect of empathy on deception, we ran a generalized linear mixed-model logistic regression with participants' age, sex, gain for Player A, loss for Player B, and the empathy measures as predictors of the propensity to send the deceptive message. The analysis takes into account that the between-participants results were nested within the participants' repeated decisions. Then, to test whether the condition moderated the effects of empathy, we entered into the regression model the two-way interactions of each empathy measure with the condition. Finally, we followed up on significant interactions by running a separate generalized linear mixed model within each condition,

Results

The correlations between all measures of empathic abilities, as well as participants' age, are presented in Table 4. As expected, and in accordance with previous findings, age was positively associated with measures of cognitive—but not emotional—empathy. In addition, callous–unemotional traits were negatively associated with empathy but not with age. Furthermore, female participants had higher scores on perspective taking (M_{boys} = 3.18, *SD* = 0.73 vs. M_{girls} = 3.42, *SD* = 0.80), t(182) = 2.08, p =.039, d = 0.31, fantasy (M_{boys} = 3.14, *SD* = 0.71 vs. M_{girls} = 3.42, *SD* = 0.87), t(182) = 2.47, p =.014, d = 0.37, and empathic concern (M_{boys} = 3.32, *SD* = 0.63 vs. M_{girls} = 3.56, *SD* = 0.77), t(182) = 2.28, p =.024, d = 0.34. No gender differences were observed for the other measures (ts < 1.13, ps >.261).

On average, participants sent the deceptive message on 55.1% of the trials in the identified condition and on 60.0% of the trials in the unidentified condition. We ran a generalized linear mixed-model logistic regression with participants' age, sex, gain for Player A, loss for Player B, the empathy measures, and the ICU subscales as within-participant predictors and with condition (Player B identified or unidentified) as a between-participants predictor of the propensity to send the deceptive message.

Table 4
Correlations between measures of empathic abilities and age: Experiment 2.

	M (*SD*)	Cronbach's α.	ICU uncaring	ICU callousness	IRI FS	IRI PT	IRI EC	IRI PD	Age
ICU unemotional	1.38 (0.71)	.64	.30***	.38***	−.11	−.33***	−.39***	−.14	.09
ICU uncaring	0.77 (0.52)	.74		.45***	−.23**	−.40***	−.46***	−.11	−.13
ICU callousness	0.52 (0.46)	.76			−.14*	−.37***	−.54***	−.11	−.02
IRI FS	3.27 (0.80)	.70				.17*	.26***	.24***	−.03
IRI PT	3.30 (0.75)	.73					.48***	.18*	.17*
IRI EC	3.43 (0.70)	.65						.29***	−.01
IRI PD	2.88 (0.70)	.63							−.09

Note. ICU, Inventory of Callous–Unemotional Traits; IRI, Interpersonal Reactivity Index; FS, fantasy scale; PT, perspective taking; EC, empathic concern; PD, personal distress.
*$p < .05$.
**$p < .01$.
***$p < .001$.

Table 5
A generalized linear mixed-model logistic regression predicting the propensity to send the deceptive message: Experiment 2.

	Model 1		Model 2	
	OR.	95% CI	*OR.*	95% CI
Gender (1 = male)	0.80	[0.52, 1.22]	0.79	[0.51, 1.20]
Age	0.96	[0.85, 1.09]	0.97	[0.86, 1.10]
Condition (1 = identified)	0.78	[0.52, 1.17]	0.01**	[0.00, 0.07]
IRI fantasy scale	0.84	[0.64, 1.10]	0.60**	[0.41, 0.87]
IRI perspective taking	0.86	[0.62, 1.20]	0.70	[0.43, 1.13]
IRI empathic concern	1.02	[0.69 1.50]	0.74	[0.41, 1.36]
IRI personal distress	0.88	[0.65, 1.20]	0.91	[0.61, 1.36]
ICU unemotional	1.05	[0.76, 1.45]	0.88	[0.57, 1.37]
ICU uncaring	1.00	[0.62, 1.60]	0.99	[0.55, 1.78]
ICU callousness	0.75	[0.43, 1.31]	0.34*	[0.15, 0.78]
Red gain	1.07*	[1.01, 1.14]	1.08	[1.01, 1.14]
Yellow lose	0.92**	[0.86, 0.97]	0.92**	[0.86, 0.97]
Condition × IRI Fantasy Scale			2.14**	[1.24, 3.71]
Condition × IRI Perspective Taking			1.24	[0.64, 2.40]
Condition × IRI Empathic Concern			1.70	[0.77, 3.75]
Condition × IRI Personal Distress			1.12	[0.60, 2.07]
Condition × ICU Unemotional			1.29	[0.68, 2.45]
Condition × ICU Uncaring			1.05	[0.39, 2.87]
Condition × ICU Callousness			3.93*	[1.26, 12.27]

Note. OR, odds ratio; CI, confidence interval; IRI, Interpersonal Reactivity Index; ICU, Inventory of Callous–Unemotional Traits.
*$p < .05$.
**$p < .01$.

The regression's odds ratios are presented in Table 5. Replicating the results of Experiment 1, the analysis revealed a main effect for the possible gain for Player A; greater possible gains led participants to send more deceptive messages, $F(1, 1827) = 5.68$, $p = .017$, $OR = 1.07$, 95% CI = [1.01, 1.14]. The analysis further revealed a main effect for the possible loss for Player B; participants were less likely to send the deceptive message when it resulted in greater loss to their counterpart, $F(1, 1827) = 8.18$, $p = .004$, $OR = 0.92$, 95% CI = [0.86, 0.97]. All other main effects were not significant ($Fs < 1.58$, $ps > .210$).

The analysis further revealed the expected Fantasy Scale × Condition interaction, $F(1, 1820) = 7.43$, $p = .006$ (Fig. 3) as well as a Callousness × Condition interaction, $F(1, 1820) = 5.55$, $p = .019$. All other interactions were not significant ($Fs < 1.73$, $ps > .189$). We followed up on the interaction by separately analyzing the two conditions. We ran the same generalized linear mixed-model logistic regression with participants' age, sex, gain for Player A, loss for Player B, and the empathy measures as predictors of the propensity to send the deceptive message in the identified and unidentified conditions separately.

The analysis of the unidentified condition replicated the findings of Experiment 1, showing a simple effect for the fantasy scale, with participants higher on fantasy scale less likely to deceive compared with those low on fantasy scale, $F(1, 908) = 6.84$, $p = .009$, $OR = 0.56$, 95% CI = [0.36, 0.86]. Surprisingly, the analysis also revealed an effect for callousness in the same direction; participants higher on callousness were less likely to deceive compared with those low on callousness, $F(1, 908) = 5.45$, $p = .020$, $OR = 0.32$, 95% CI = [0.12, 0.83]. All other effects were not significant ($Fs < 2.45$, $ps > .117$).

Contrarily, and as we hypothesized, in the identified condition the effect of the fantasy scale was not significant, $F(1, 1908) = 1.91$, $p = .167$. Similarly, the effect of callousness was also not significant ($F < 1$). Nevertheless, unlike in the unidentified condition, in the identified condition higher possible losses for Player B decreased the probability of deception by Player A (the participant), $F(1, 908) = 12.92$, $p < .001$, $OR = 0.86$, 95% CI = [0.79, 0.93]. We further found that the possible gain for Player A increased the probability of deception, $F(1, 908) = 3.32$, $p = .069$. All other effects were not significant ($Fs < 1.51$, $ps > .219$).

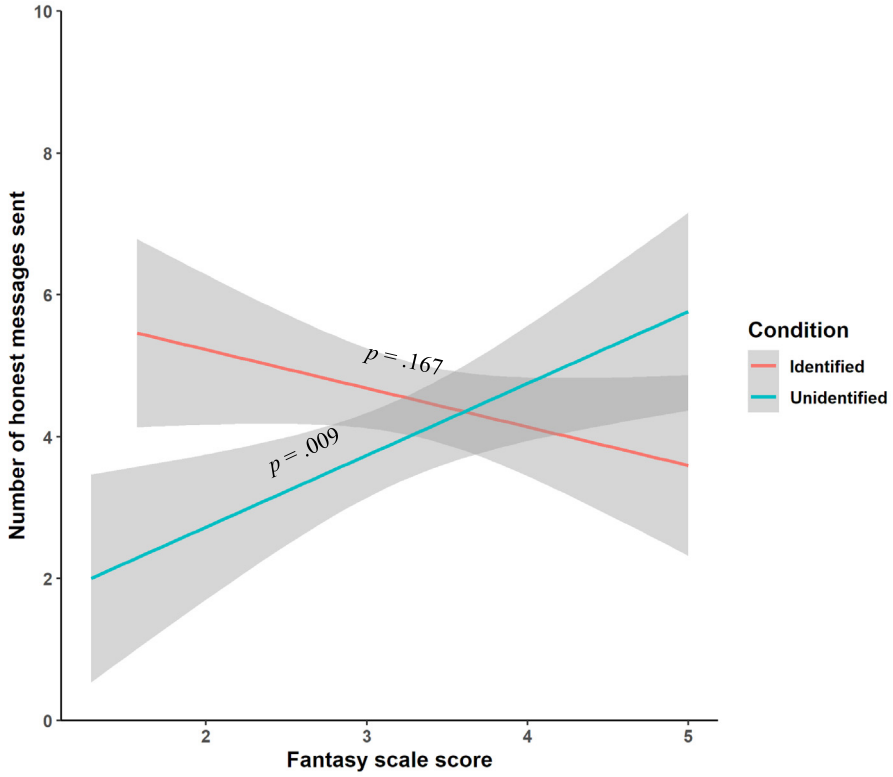

Fig. 3. The relation between the fantasy scale of the Interpersonal Reactivity Index and the number of honest messages sent by Player A in both experimental conditions in Experiment 2.

Discussion

Experiment 2 replicated and extended the results of Experiment 1. In Experiment 2, we again found that the fantasy scale predicted children's deceptive behavior, but only when the other player was not identified and therefore needed to be imagined. Contrarily, when the other player was identified and so there was less need to imagine the other player, deception was unrelated to empathy. In addition, when the other player was identified, participants were more attentive to the effects of their decisions on the other player's payoffs and were less likely to send a deceptive message when the possible loss to the other player was larger. Taken together, these findings suggest that for children to be able to refrain from unethical behavior, empathic abilities are important when the victim of the deception is unknown. However, when the one affected by children's wrongdoings is easily imaginable and identified, even children with relatively low empathic abilities refrain from inflicting heavy losses on the person.

General discussion

Lying and deceiving are common behaviors among children and young adolescents. In the current research, we examined the effects of empathy on the propensity of those behaviors. In two experiments, we found that—just like adults (Gneezy, 2005)—children are sensitive to payoffs and are more likely to deceive when they can benefit more from doing so. More important, we found that empathy—and specifically the fantasy scale, a measure of cognitive empathy—negatively predicts deception among children and young adolescents. We further found that this is the case only when the one being deceived is unidentified or unknown. Interestingly, although children are sensitive to their own

payoff, they are not always sensitive to the payoffs of others. In both experiments, we found no effect of the loss of Player B on children's rates of dishonesty when Player B was unidentified. However, children did become sensitive to Player B's payoff when Player B was identified.

Dishonesty in the form of deception involves manipulating someone else's beliefs, thereby requiring the deceiver to have an understanding of the other person's thoughts and beliefs (Hyman, 1989). Hence, one might expect cognitive empathy—which is the ability to understand the feelings and experiences of another person—to predict deception (Walczyk & Fargerson, 2019). Our results, however, point in another direction. Whereas some level of understanding of others' thoughts is clearly necessary for dishonesty (Nagar et al., 2020; Williams et al., 2016), when the other person is not identified, the ability to understand that person's *feelings* leads children to refrain from deception.

We note, however, that although we used several measures of both cognitive and emotional empathy, only one scale, namely the fantasy scale, was associated with dishonest behavior. There is a debate about the extent to which the fantasy scale measures unique empathic responses (e.g., Corte et al., 2007; Nomura & Akai, 2012). We found that the fantasy scale can uniquely predict deception in children and young adolescents, especially when the person being deceived is not identified. It seems that by 11 years of age, children can properly understand the consequences of their deceptive behavior for another child only when that child is identified, and thus more easily imaginable. Our data suggest that in such cases, decisions are governed by calculations of gains and losses and are less affected by empathy. Our results show that in such cases, even by age 11 children consider not only their own payoffs but also the harm their dishonesty might cause to their counterpart. However, when the other child is not identified and thus is less imaginable, it is harder for children to imagine the outcomes of their unethical behavior. Therefore, in such cases children need to possess high levels of empathy toward imagined individuals to resist the temptation of increasing their own gain at the cost of the other child.

We did not observe an effect of the perspective-taking scale on deception when the other child was identified. Whereas the fantasy scale refers to empathy with fictional characters, perspective taking refers to the ability to identify the mental states of real people. Nevertheless, the ability to understand what an identified other might think or experience was unrelated to participants' likelihood of deceiving that person. We suggest that by 11 years of age children's empathic abilities are relatively matured (Eisenberg et al., 2009; Overgaauw et al., 2017; Schurz et al., 2014), and children found it relatively easy to understand the feelings of Player B when this child was identified. Hence, even children with lower empathic abilities are able to comprehend the effects of their behavior on another child's mental state and adjust their behavior accordingly, as reflected in the effect found for the loss to the other player on the inclination to deceive. Therefore, individual differences in perspective-taking abilities do not predict deception. Another measure of cognitive empathy used in Experiment 1, namely the RMET, did not predict deception. We note that the average performance of our participants in the test was relatively poor (M = 20.8, which is significantly lower than results reported among 16-year-old adolescents in other studies; Greenberg et al., 2023), which might explain this null effect. In addition, this measure is very different from the fantasy scale in that the pictures in the measure, by their nature, provide information not only about the mental state of the other but also at least about the other's gender and age, thereby decreasing that person's anonymity. In this sense, the RMET behaves similarly to the perspective-taking scale and is unrelated to deception. Finally, as hypothesized, our experiments did not reveal an effect for any measure of emotional empathy.

Contrary to our prediction, and to findings in adult participants (e.g., Yam & Reynolds, 2016), children were as likely to deceive identified counterparts as they were to deceive unidentified counterparts. This null effect is surprising because in other domains, such as sharing behavior, children do display an identified victim effect (Kogut et al., 2016). Studies with adults suggest that the effect of the victim's anonymity on participants' cheating is mediated by anticipated guilt (Yam & Reynolds, 2016). It is possible that we did not observe an identified victim effect because the children in our sample did not fully internalize moral foundations (Sengsavang et al., 2015) and thus were less likely to avoid predicted guilt from deceiving others. Future research could test this explanation by measuring anticipated guilt.

Finally, we note that we also observed a surprising positive effect for callousness on deception in the identified condition in Experiment 2. As mentioned, the ICU was included in Experiment 2 for

exploratory purposes, and we did not have an ex ante hypothesis regarding this measure or any of its subscales, nor do we have an ex post explanation for this finding.

Limitations and future directions

Due to the nature of our experiments, we could only observe children's behavior but not the reasons for that behavior. Whereas a deceptive message in the sender–receiver game is usually considered a behavior that seeks to maximize one's own payoff (Gneezy, 2005), studies have shown that adults sometimes use different strategies to maximize their payoff at the expanse of the other person. For example, adults who expect the other player to suspect their intention might send the honest message with the expectation that the other player will suspect that to be a deceptive message and therefore will choose the option the adults *did not* recommend the other player to choose (Cohen et al., 2009). Future studies could measure children's intentions in the sender–receiver game to better understand their motivations and strategies. In addition, it is unknown whether children believed there was an actual Player B. However, note that participants did not deceive to the full extent possible and that in Experiment 2 their tendency to deceive was negatively associated with the loss it caused to Player B. Hence, it seems that participants did believe they were playing with a real Player B. Nevertheless, measuring for the extent to which participants believe they are playing with an actual other player is an important feature that future researchers should be aware of. Furthermore, due to the online nature of Experiment 2, we were not able to ensure that it was indeed children (rather than their parents or other adults) who participated in the study. Finally, we note that the internal consistency of our measures in Experiment 1 was somewhat low. Nevertheless, the fact that we were able to replicate our main finding of interest also in Experiment 2 corroborates that the effect in Experiment 1 was not due to random noise in the data.

One may also consider whether cultural and intergroup factors might moderate the effect of empathy on deception. Children had been shown to have an implicit ingroup bias (Newheiser & Olson, 2012), and ingroup members are more likely to evoke empathy (De Dreu & Kret, 2016; Han, 2018). Hence, it is possible that the social group of Player B will affect the empathic response of Player A, thereby also affecting Player A's willingness to deceive. Here, we did not manipulate the social group of Player B, who either was unidentified or was presented with a name of the cultural majority in Israel (i.e., nonreligious Jewish). Studying the effect of social groups on children's empathy and deception could be a fruitful venue for future research.

Participants may have also been affected by demand characteristics. However, the fact that our findings were replicated both in the presence of an experimenter in the lab and anonymously online suggests that it might not be the case here. Studies that have used similar methods to examine deception in children and young adolescents (e.g., Glätzle-Rützler & Lergetporer, 2015) have reported results that align with previous research in the field.

Finally, it is important to mention that in both of our experiments the results were obtained using computerized tasks. Previous studies have shown that online behaviors, especially toxic behaviors, can differ significantly from those observed in face-to-face interactions. This is likely due to factors such as increased sense of anonymity and lack of eye contact (Lapidot-Lefler & Barak, 2012, 2015; Liu & Agur, 2023), deindividuation (Wu et al., 2017), and dissociative imagination and minimization of authority (Suler, 2004). Hence, it is possible that our findings on deception, which can also be interpreted as a form of toxic behavior, might not generalize to noncomputerized environments.

Conclusions and practical implications

Our findings have important implications. First, it suggests a positive outlook, indicating that children and young adolescents can resist egocentric temptations and account for the negative effects of their wrongdoings on others when communicating with identified individuals. However, because the online presence of young adolescents is on the rise, they become increasingly engaged in communication with anonymous or nonidentified others. In such cases, their cognitive empathic abilities play a crucial role in their ability to maintain honest communication. Hence, our results highlight the need

for parents and educators to train children and young adolescents to identify and empathize not only with known others but also with fictional or imagined characters.

CRediT authorship contribution statement

Tom Gordon-Hecker: Conceptualization, Formal analysis, Investigation, Visualization, Writing – original draft, Writing – review & editing. **Shaul Shalvi:** Conceptualization, Funding acquisition, Supervision, Writing – review & editing. **Florina Uzefovsky:** Conceptualization, Funding acquisition, Supervision, Writing – review & editing. **Yoella Bereby-Meyer:** Conceptualization, Funding acquisition, Supervision, Resources, Writing – review & editing.

Data availability

Data will be made available on request.

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