

THE DEVELOPMENT OF CHILDREN'S PROSOCIAL LIE-TELLING BEHAVIOR

by

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DEDICATION

To my sister, Hannah, thank you for always being in my corner, knocking some sense into me when the imposter syndrome hit hard, being there when I needed someone to talk to, and then staying on the phone to encourage me to keep working.

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I. INTRODUCTION

Have you ever received a gift from a close friend or family member that you did not like and told them you loved it? Has someone that you did not know very well asked if they looked okay—and they did not—but you said that they looked great? If you have ever been in any of these social situations, you prosocially lied, or lied to the other person for their benefit (Dykstra et al., 2019; Lavoie et al., 2017a; Ma et al., 2015; Popliger et al., 2011). Contrary to antisocial lies—lies told to help oneself (e.g., to avoid getting in trouble) or harm another (Lavoie et al., 2017a)—prosocial lies are typically motivated by the desire to avoid hurting another person’s feelings and to maintain social relationships when the truth may be damaging to the relationship (DePaulo & Kashy, 1998; Lavoie et al., 2017b; Popliger et al., 2011). Essentially, if the lie the speaker tells will help and not harm the listener in a social situation, then this would be a prosocial lie (Warneken & Orins, 2015; Xu et al., 2010).

A fundamental part of social-emotional development is how we learn to recognize, protect, and respond to the feelings of other people. At its core, this is what prosocial lying is doing. The focus and emphasis of prosocial lying are to either improve or protect another person’s, rather than the speaker’s, feelings. Studying the development of children’s prosocial lie-telling behavior provides insight into how children gain the social skills essential in communicating with other people and forming social relationships (Popliger et al., 2011). Below I will discuss the developmental trajectories of antisocial and prosocial lying, including the associated cognitive and social developmental milestones that are related to their development. Then I will turn to prosocial lie-telling across different social scenarios and discuss how exploring this in the

context of the present study will help address remaining questions surrounding the developmental trajectory of prosocial lying.

Developmental Trajectories of Antisocial and Prosocial Lying

Lying is an ability that develops over the course of childhood; however, the developmental trajectories of antisocial and prosocial lying differ. Children's ability to tell antisocial lies (i.e., lies to prevent negative consequences for themselves) emerges in the early preschool years or around 3-years-old (Popliger et al., 2011; Talwar & Lee, 2002, 2008; Warneken & Orlins, 2015). However, some studies have found that even some 2-year-olds demonstrated an ability to lie (Evans & Lee, 2013; Leduc et al., 2016; Talwar et al., 2019; Williams et al., 2016a). Although children can tell lies from a young age (e.g., 2- to 3-years-old), they often struggle with the inability to maintain a lie due to semantic leakage or providing information through language or facial expressions that contradicts the lie (Nagar et al., 2020; Talwar & Lee, 2002; Talwar et al., 2017a; Williams et al., 2016b), throughout early childhood (Evans & Lee, 2013; Leduc et al., 2016; Talwar et al., 2017a). Children's ability to tell believable lies improves as they get older and by about 7- to 8-years-of-age, their semantic leakage control is more advanced and they are more convincing lie-tellers (Leduc et al., 2016).

Children's conceptual understanding of and ability to tell prosocial lies starts to emerge during the preschool years (e.g., 3-5 years-old; Xu et al., 2010). In a study by Talwar and Lee (2002), they found that children as young as 3-years-old in a disappointing gift paradigm—when children receive an undesirable gift (e.g., soap) in place of something the child would actually like (e.g., a toy)—were able to tell a white lie (i.e., prosocial lie) and say they liked the undesirable gift when prompted (Talwar & Lee,

2002; Warneken & Orlins, 2015). Although the results of this study demonstrated that some young children can prosocially lie, at this age they are still not very good at it. Children's ability to prosocially lie continues to develop throughout middle childhood, with an increase in the frequency of prosocial lie-telling as they get older (e.g., 7- to 11-years-old; Lavoie et al., 2017a; Lavoie et al., 2017b; Talwar et al., 2017b; Talwar et al., 2019; Warneken & Orlins, 2015).

As children age, they not only become better at antisocial and prosocial lying, but their moral understanding and evaluation of these different types of lies also changes. Specifically, as children age, they better understand that prosocial lies are socially acceptable, whereas antisocial lies are not. Talwar and colleagues (2016) found that older children rated altruistic prosocial lies (i.e., lies at one's expense) more positively than antisocial lies. In contrast, the younger children rated them negatively because they viewed any type of lying as inappropriate. Mojdehi and others (2020) extended this finding and found that with age Persian and Canadian children rated prosocial lies more positively. This difference in moral understanding also translates to children's behavior and by adolescence (e.g., 11- to 14-years-old), children are telling fewer lies overall but are also more likely to tell prosocial lies than younger children (Lavoie et al., 2017a; Talwar et al., 2017a).

Associated Cognitive and Social Developmental Milestones

The development of a child's cognitive abilities and social skills contributes to their ability to tell antisocial and prosocial lies. Older children might be more likely to tell prosocial lies as a result of their increased awareness of social norms, which could aid in recognizing the social benefits of prosocial lie-telling (Lavoie et al., 2017b). Older

children may also engage in higher rates of prosocial lying because of their improving cognitive control abilities, which help them to refrain from telling the truth and maintain a lie when they determine doing so would be more important (Lavoie et al., 2017b).

Another associated cognitive ability that may be important in the development of lying is *theory of mind*. Theory of mind is the understanding that the knowledge you have might be different from someone else's knowledge. This is why lying—prosocial or antisocial—is essentially theory of mind in action (Lee, 2013). In order to lie successfully, you need to understand that you know that the person you are speaking to does not know what you know.

Examinations of whether or not theory of mind is linked to better lie-telling abilities have resulted in mixed evidence. Williams and colleagues (2016b) found that greater second-order false belief comprehension—a later stage in theory of mind development that refers to one's ability to understand that it is possible for one person to have a false belief about another person's belief—was predictive of children's ability to maintain a lie and avoid semantic leakage. Moreover, Talwar and colleagues (2017a) found that children who told both antisocial and prosocial lies demonstrated more advanced theory of mind than other children. Conversely, in the same study, children who did not lie at all had demonstrated poorer understanding of theory of mind on a series of theory of mind tasks than other children.

In a follow-up study that used a more extensive series of theory of mind tasks, however, Talwar and colleagues (2019), found that theory of mind, among other cognitive abilities tested, did not predict children's lie-telling behavior. This finding might be an indication of the importance of the contextual factors that play a role in

children's lie-telling behaviors across social situations (e.g., learning via feedback from parental scaffolding; Talwar et al., 2019).

Work on cognitive abilities that may influence children's ability to prosocially lie suggests that their ability to refrain from telling the truth and maintain their lies (i.e., semantic leakage control) improves with age (e.g., around 7- to 8- years-old; Leduc et al., 2016) and more advanced theory of mind may influence the believability and frequency of their lie-telling behaviors (Talwar et al., 2017a; Williams et al., 2016b). As further discussed below, children's prosocial lying is also being shaped by social influences throughout this time period as well.

Children's responsiveness to adult modeling of prosocial lying

Given that prosocial lying is a difficult skill for children to develop, researchers have also been interested in the role of scaffolding in children's tendency to engage in prosocial lying at different ages. Scaffolding is a subset of socialization or the process through which individuals learn the social skills, customs, behaviors, and values that are essential to functioning effectively in the society they live in or within a particular group (McCarthy & Edwards, 2011). In this active process, a knowledgeable or experienced individual, such as a parent, helps a child with a goal-directed activity or task that the child cannot complete without some form of assistance from the knowledgeable figure (Hughes & Ensor, 2009; Wood et al., 1976). Although research directly examining the scaffolding of prosocial lie-telling behaviors is limited, there have been studies that have looked at the roles of adults and parents in the structuring and modeling of this behavior in real-time.

Talwar and colleagues (2007) examined children's receptiveness to parents'

suggestions to tell prosocial lies using the undesirable gift paradigm, a scenario in which a child receives an undesirable gift (e.g., a wrapped bar of soap) and then is asked if they liked the gift. Some of the children in the study received “parental coaching.” In this condition, parents were asked by the researchers to explicitly encourage their children to behave a certain way or to say something specific after receiving the undesirable gift. The children were considered to be prosocial lie-tellers if they told their parent that they did not like the gift but lied when the experimenter returned and asked them if they liked the gift. The results of this study demonstrated that parental coaching led to higher rates of prosocial lying compared to children that had not been coached by their parents. Talwar and colleagues (2007) also found that the children who told the truth were more likely to have received simple instructions—explicit statements to lie or to not hurt the experimenter’s feelings by lying—from their parents than the prosocial lie-tellers.

Children are not just sensitive to their parents’ modeling but may also be receptive to the example set by other adults. Warneken and Orlins (2015) found that children are also sensitive to the influence an adult researcher modeling prosocial lying. Specifically, Warneken and Orlins examined whether children would prosocially lie to make someone feel better about their objectively poor artwork, how this behavior was impacted by the emotional valence of the situation, and whether or not children attended to what the adult model said in response to a similar situation beforehand. In the first part of the study, the researchers examined if children would tell a prosocial lie on their own without any modelling of the behavior in response to differences in the emotional valence of a situation. In the second phase of the study, Warneken and Orlins (2015) had the adult experimenter model prosocial lying to see if children would prosocially lie more after

seeing it modelled.

The results showed that generally children would tell a prosocial lie when the person receiving feedback was sad rather than neutral and this trend was observed more among the older children (e.g., 7- to 11-year-olds; Warneken & Orlins, 2015). Typically, the 5-year-old children struggled to accurately distinguish between the different emotional valences in the first phase. However, after seeing the prosocial lie-telling behavior modelled by the experimenter, children from all age groups, including the younger children (e.g., the 5-year-olds), lied significantly more to make the recipient feel better when they expressed sadness about their drawing than when the artist was more neutral or indifferent about the situation.

Both Talwar et al. (2007) and Warneken and Orlins (2015) demonstrated that children are open to adults' scaffolding when it comes to prosocial lie-telling behaviors, either through instruction or through modeling. Together with research on the cognitive and social developmental milestones associated with the development of children's prosocial lying, research examining children's responsiveness to scaffolding suggest that prosocial lying is a complex behavior that is subject to children's ability to integrate information about the demands of the situation with what they understand to be the appropriate course of action and their cognitive abilities to follow this through. Below, I present a more general summary before moving to the contributions of this study.

Summary of what is known about the development of prosocial lying and next directions

In summary, although children's ability to tell prosocial lies typically emerges as early as 3- to 5-years-old, they are not consistent in their ability to prosocially lie and

typically require scaffolding to be able to do so (Talwar and Lee, 2002; Warneken & Orlins, 2015; Xu et al., 2010). Over development, children get better at telling convincing lies (e.g., antisocial and prosocial), and their rate of prosocial lying increases with age, beginning around 7- to 8-years-old (e.g., Lavoie et al., 2017a; Lavoie et al., 2017b; Leduc et al., 2016; Talwar et al., 2017b; Talwar et al., 2019; Warneken & Orlins, 2015).

However, although a more comprehensive trajectory of the development of prosocial lying has begun to emerge based on past research, it is still unclear what is driving this developmental trajectory. How are children learning to respond in social scenarios that may necessitate prosocial lying?

Are children learning that in a particular set of situations (e.g., when someone is giving them a gift or asking them for feedback) regardless of what the person says, the socially-appropriate (hereafter *polite*) behavior is to tell a prosocial lie? Or are children learning as they get older that they should pay attention to specific cues in social situations because they understand that sometimes the other person needs, or wants, the truth and not a lie? Presenting children with these contrasts within-subjects--one scenario in which it would be socially-appropriate to tell the truth (i.e., scenario emphasizing honesty) or and one tell a lie (i.e., scenario emphasizing politeness)--will provide better insight into two possible developmental trajectories of prosocial lying.

It is possible that as children get older, they are learning that not all social scenarios have the same contextual demands. In other words, they might be developing an understanding that the needs of their social partner may differ between social interactions and thus, it is important for them to pay close attention to the social cues to determine how they should respond. If children are developing this nuanced

understanding of social scenarios, then as they age, we would anticipate children telling the truth in scenarios that emphasize honesty and telling a lie in the scenarios emphasizing politeness. However, it is also possible that children are developing a general social rule that they should always be polite in particular kinds of social situations, regardless of what their social partner is saying and therefore, it is not necessary for children to pay attention to the social cues. If children are simply developing this general social heuristic, then regardless of whether the scenario is emphasizing politeness or honesty, we would anticipate the children telling a lie even as they age and could potentially discern between social demands. As a note, these possibilities are both in contrast to younger children telling the truth at higher rates regardless of social context.

Therefore, in the present study, by presenting children from a cross-section of ages with two scenarios with different contextual demands (honesty versus politeness), I can better discern what is driving the trajectory of prosocial lying.

The Present Study

Past studies that have examined 4- to 10-year-old children's prosocial lie-telling behavior in social scenarios have tended to focus on just one scenario (e.g., either responding to a disappointing gift or a bad drawing). How do a child's responses differ across scenarios in which prosocial lying would be considered an appropriate response? Ultimately, the main objective of this study is to examine the development of children's prosocial lying behaviors in social scenarios that are associated with prosocial lying with differing contextual demands. Below, I provide a brief overview of each scenario and the outcome behavior of interest.

Social Scenarios

To assess whether children's prosocial lie-telling differs across social scenarios, 4- to 10-year-old children were presented with two social scenarios in which it would be socially-appropriate for the child to tell a prosocial lie: a *disappointing gift* scenario and a *bad drawing* scenario, both used in previous studies of children's prosocial lying. This age range of children represents the time period in which children tend to develop the ability to identify situations in which prosocial lying is appropriate and successfully execute a prosocial lie. Below I describe the general scenarios presented to children before turning to differences in contextual cues used to assess the two possible developmental trajectories of prosocial lying.

Disappointing gift. In the disappointing gift scenario, one of two experimenters selected a bad prize for the child to receive and then asked the child to evaluate the prize. This scenario provided an opportunity for the child to either tell the truth (e.g., that the prize is bad and they do not like the prize) or tell a prosocial lie (e.g., that the prize is good and they like the prize).

Bad drawing. In the bad drawing scenario, one of the two experimenters presented an objectively bad drawing to the child. This scenario provided an opportunity for the child to either tell the truth (e.g., that the drawing is bad) or tell a prosocial lie (e.g., that the drawing is good).

Contextual cues. For each scenario there were two contexts with differing social cues: *politeness-emphasized* and *honesty-emphasized*. In the *politeness-emphasized* contexts, for both the disappointing gift and bad drawing tasks, the language was intended to indicate that it would be a socially-appropriate response to lie (see script in

Appendix A). Conversely, in the *honesty-emphasized* contexts, the language used was intended to indicate that telling the truth would be a socially-appropriate response (see script in Appendix A).

Summary of Hypotheses

In this study, I measured lying in two ways to gain a more nuanced understanding of children's lying. First, there was a binary measure of children's lying that was assessed via a sorting task into a good versus bad box. For this binary measure, if children placed the target object in the good box, it was considered a lie since both target objects (i.e., prize; drawing) had been previously rated by other children as objectively bad. Second, children provided a quantitative rating of the target object using a child-friendly scale. Children's lower ratings of the prizes and drawings were considered more honest than higher ratings.

I examined the effects of scenario (disappointing gift and bad drawing), context (politeness-emphasized versus honesty-emphasized), age, and their interactions on children's likelihood of telling a prosocial lie. I predicted that context and age would interact on children's likelihood of lying such that, as children got older, children would be more likely to lie (as defined above) in politeness-emphasized contexts, regardless of scenario, since the lie in these cases would match the social demands of the task. Conversely, younger children will be more likely to tell the truth regardless of the context, consistent with past research indicating that younger children struggle with prosocial lying.

II. METHOD

Design

The primary aim of this study is to use a within-subjects design to examine how 4- to 10-year-old children respond to different social scenarios (hereafter *tasks*)—disappointing gift task and bad drawing task—and the contextual demands of these tasks—whether *honesty* versus *politeness* is emphasized.

Participants

Twenty-three children ($n = 13$ females) between 4- to 10-years old ($M = 7.5y$) were recruited via a database of families, social media, and word of mouth. Demographic information gathered from children's parents indicated that 16 children were White and non-Hispanic/Latino, 3 children were White and Hispanic/Latino, 1 child was Black and Hispanic/Latino, 1 child was Hispanic/Latino (parent did not disclose race), and 2 parents did not disclose. Our sample also had a high level of maternal education and data from the 22 mothers that reported education level indicated that 10 mothers had a college degree, 9 had a post-graduate degree, and 3 had some college experience.

Materials

The experimenters met with the children over Zoom. Google Jamboard was used as the medium in which to present the study's tasks to the child. Google Jamboard is a digital whiteboard that works similar to presentation applications such as Microsoft PowerPoint that also allowed for manipulation of 'objects' on the tasks' slides in real-time during the study's sessions and this included both experimenter's real-time changes to the slides. During the study, children saw the following slides:

Warm-up game. For the warm-up slides, children saw rectangles with thick black borders, one on either side of the screen. One box had a thumbs-up icon in it and was introduced to the child as the “good box.” The other box had a thumbs-down icon in it and was introduced to the child as the “bad box.” Between the two boxes, there were pictures of three foods: a cracker, a piece of broccoli, and a scoop of ice cream on a cone. These foods were selected because generally children would have some foods that they liked and disliked among these options. Once they had sorted the foods into the different boxes, the experimenter removed a white box to reveal a series of faces. There were five faces of different colors—red, orange, yellow, blue, and green—each with their own definition and were introduced to the child as a way for them to help the experimenter(s) know what they thought (for a full script see Appendix A). After the children were told the meaning of each face, they were asked to choose a face for each food item, based on how much they liked the food.

Disappointing gift slides. For the disappointing gift slides, children first saw a slide with pictures of four prizes that were all the same color: a blue button, crayon, sticky note, and bracelet. After the child selected their best and worst prize, the child then saw a slide, like the warm-up slide, with rectangles with thick black borders, one on either side of the screen. One box had a thumbs-up icon in it and the other box had a thumbs-down icon in it. In the middle of the screen was a square with thick black borders and inside the square were the pictures of the four prizes presented on the previous slide. On this slide, the experimenter removed a white box and revealed the series of faces introduced on the warm-up slide.

Bad drawing slides. For the bad drawing slides, children first saw a slide with a picture of an ornate gold frame. Inside the frame was a drawing of a girl that children had previously rated as “good” in pilot studies (see picture in Appendix B). The next slide that the child is shown only featured a picture of the experimenter’s “bad” drawing of a girl (see picture in Appendix B). For the next slide, children saw the rectangles with thick black borders on each side of the page with the bad drawing in the middle. One box featured the thumbs-up icon and the other featured the thumbs-down icon. On this slide, the experimenter also removed a white box to reveal the series of rating faces.

Procedure

Study set-up and warm-up. At the beginning of each Zoom study session, the parent and child were notified that the session was being recorded. An experimenter would then walk the parent through the set-up their computer screen to make sure they were in full-screen mode (i.e., no other applications were visible while participating in the session) and that their self-view was off (i.e., they could not see themselves). Once the participant’s computer was ready for the session, the parent provided verbal consent and the child was given the opportunity to provide assent. The parent was also given the opportunity to stay with their child but were instructed not to intervene during the scenarios. Once the pre-study set-up was completed the child participated in a warm-up game in which they gained experience sorting items into the good box and the bad box and using a child-friendly rating scale that were used later in the target scenarios. In this warm-up game, children were introduced to the boxes (see script in Appendix A) and then asked to sort familiar food (e.g., broccoli, plain cracker, ice cream) items into the different boxes. Then children were introduced to the ranking scale and told what each

represented (see script in Appendix A). After this, children practiced with the faces by rating each food item. Children received feedback if their rating choice was inconsistent with their good/bad sorting (e.g., the most positive face given to something the child had placed in the bad box).

Target tasks. After completing the warm-up, children completed one version of the disappointing gift task and one version of the bad drawing task. Children were randomly assigned to one of the following pairings that counterbalanced which task was paired with the politeness cue and the order of the tasks: (1: gift–politeness, drawing–honesty; 2: drawing–honesty, gift–politeness; 3: gift–honesty, drawing–politeness; 4: drawing–politeness, gift–honesty). As an additional methodological note, the target social partner (i.e., the person to whom the prosocial lie might be directed) differed for each task.

Disappointing gift task. At the beginning of the disappointing gift task, only one experimenter was present to show the child a selection of images of possible prizes and have the child select which prize they thought was the best and which prize they thought was the worst. These prizes had been previously-rated by children and include prizes that children consider “good,” such as a bracelet or a crayon, and prizes that children consider “bad,” such as a button and a sticky note. After the child selected their best and worst prizes, that experimenter told the child they had to leave for some reason (e.g., to answer their phone).

After the child had nominated their worst prize, the other experimenter (hereafter the gift-giver) entered her screen and began to interact with the child. The gift-giver told the child, “Oh! It’s my turn to pick out a prize for you. Look at all these prizes I can pick

from!” At this point, the child was shown the same selection of prizes. The gift-giver then presented the child with one of two verbal prompts. In the honesty-emphasized context, the gift-giver said, “I really want to get better at giving prizes, but I am not sure if I will pick out a good prize. I want to learn to be the best prize giver in my class. It won’t hurt my feelings to know what you think.” In the politeness-emphasized context, the gift-giver said, “I really want to give good prizes. I love giving people good prizes! I am excited to give this to you! I think that you will really like this one.”

After the child heard one of the two contexts, the gift-giver asked a comprehension check question, “What do I want to do?” Regardless of the child’s response, the gift-giver then said, “Okay! Before I pick a prize, remember,” and then repeated the cue associated with whichever context the child was assigned. After this, the gift-giver selected the prize that the child had previously nominated as the worst prize. Thus, if the child indicated that this prize was a good prize, it would be considered a lie. The gift-giver then asked two questions: (1) “Which box should the prize go in?” (*sorting*) and (2) “What face (rating) would you give this prize?” (*rating*). The gift-giver then made an excuse to leave and the other experimenter returned and emphasized that the gift-giver was not present and could not see what they were doing or hear what they were saying. In order to assess whether children might change their responses, the experimenter asked the child what they really thought of the prize and prompted the child to sort and rate the prize again.

Bad Drawing task. At the beginning of the bad drawing task, only one experimenter was present (hereafter the drawer). The drawer presented the child with one of two verbal prompts. In the honesty-emphasized context, the drawer said, “I really want

to be good at drawing and I want to enter my drawing in a competition but I am not sure if my drawing is good or not. If my drawing is good, I will win an award. I have lots of time to work more on the drawing before I need to turn it in. It won't hurt my feelings to know what you think." In the politeness-emphasized context, the drawer said, "I really want to be good at drawing and I have been working hard on this drawing. I want to hang it up on my refrigerator. I am so excited about my drawing, and I am proud of it." After the child heard one of the two contexts, the drawer asked a comprehension check question, "What am I going to do with my drawing?" Regardless of the child's response, the drawer then said, "Okay. Before I show you my drawing, remember," and then repeated the cue associated with whichever context the child was assigned.

Following the repetition of the context, the drawer then showed the child a picture of 'their' drawing which was a drawing previously consistently rated by a pilot group of children as a "bad" drawing. Thus, if the child indicated that this drawing was a good drawing, it would be considered a lie. The drawer then asked two questions: (1) "Which box should the drawing go in?" (*sorting*) and (2) "What face (rating) would you give this drawing?" (*rating*). The drawer then made an excuse to leave, and the other experimenter returned and emphasized that the drawer was not present. They told the child that the drawer could not see what they were doing or hear what they were saying. Again, to assess whether children might change their responses, the experimenter asked the child what they really thought of the drawing and prompted the child to sort and rate the drawing again.

Measures

Children's prosocial lying behavior was measured in two ways: (1) Sorting, or children's initial box choice and (2) Rating, or children's initial rating using the child-friendly Likert scale. Each of these is described in more detail below. As a note, although other measures were collected (e.g., secondary sorting/rating of the prize/drawing), an initial review of the data suggested that children may have viewed the conversation with the second experimenter as an opportunity to "correct" their response since many of the changes in sorting were from bad to good (7 number of responses). Additionally, there were only 2 instances of children changing their initial box selection from good to bad.

Sorting. Based on pilot ratings of the drawing and the set-up of the disappointing gift task, if children selected the good box when asked to sort the target object initially, then this was considered a lie.

Rating. Children were also asked to share their initial rating of the target object. Higher scores were considered more dishonest than lower scores.

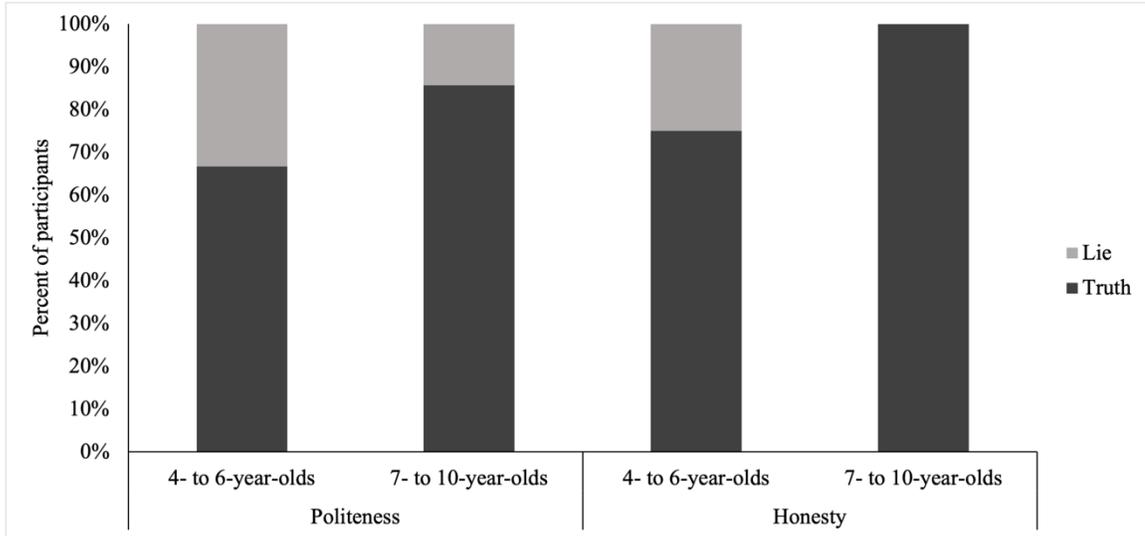
III. RESULTS

In the analyses reported below, children were sorted into two age groups: 4- to 6-year-olds and 7- to 10-year-olds. These age groups allowed for age-based comparisons given that the restrictions of the smaller sample and limited distribution of age to different condition groups.

Sorting

Figure 1 represents the percentage of children who told the truth (i.e., placed the gift in the bad box) versus the percentage of children who told a lie (i.e., placed the gift in the good box) by context (politeness-emphasized, honesty-emphasized) and age group. As indicated by Figure 1A, rates of lying were low overall, particularly for the disappointing gift task. For both age groups, more children told lies in the politeness-emphasized context than the honesty-emphasized context, although I report this cautiously given the small number of children tested. Additionally, across both contexts, younger children told more lies than the older children. As indicated by Figure 1B, overall, rates of lying in the bad drawing task were higher compared to the disappointing gift task. Similarly to the disappointing gift task, younger children told more lies in the politeness-emphasized than the honesty-emphasized context. However, contrary to the disappointing gift task, older children told lies more in the honesty-emphasized than the politeness-emphasized context. Again, these observations are presented cautiously given the small number of participants.

A. Disappointing gift task



B. Bad drawing task

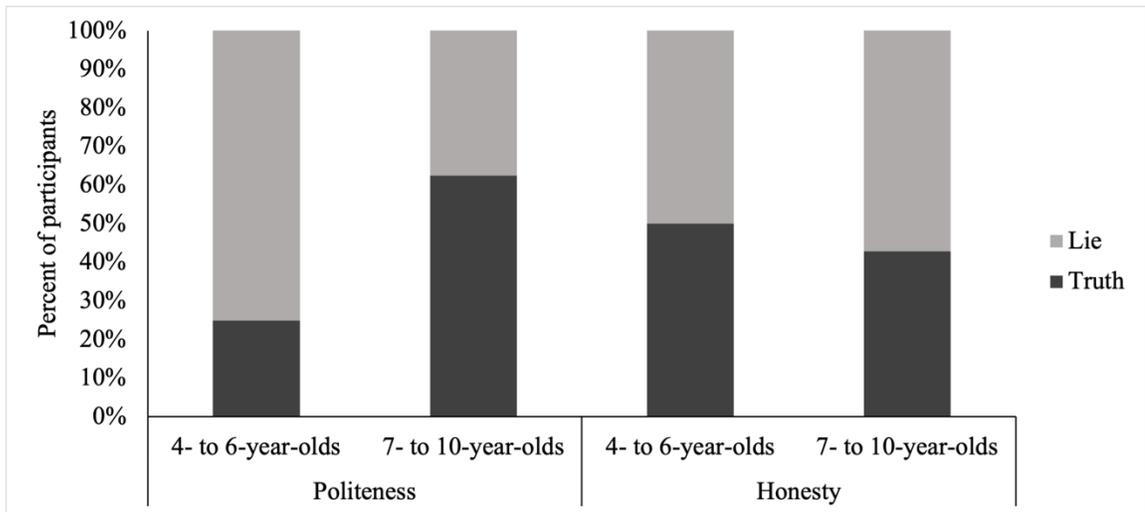


Figure 1. Percentage of children who told the truth versus who told a lie in the disappointing gift task (A) and the bad drawing task (B) by context and age group.

I used a mixed-effects binomial logistic regression to examine whether children’s likelihood of lying differed as a result of task (2: gift, drawing), context (2: politeness-emphasized, honesty-emphasized), age group (2: 4-6-years-old, 7-10-years-old), and the interaction between age group and context. I only included this interaction for two

reasons. The first reason is that due to the low number of, the model lacks the power to facilitate all possible two-way interactions and the three-way interaction in one model. The second reason is that this interaction between age group and context is a primary focus of the present study. Specifically, the present study's hypothesis proposed that by examining children's responses in these different contexts as they age, we would be better able to discern what is driving the trajectory of prosocial lying. If children become better at prosocial lying, then there should not be a difference in children's behavior between contexts at a younger age, but there should be a difference at older ages. The model included a random effect of participant to control for multiple observations per child. Full results of the model are presented in Table 1.

There was a significant main effect of task. This significant main effect indicated that children were less likely to lie in the disappointing gift task versus the bad drawing task ($OR = 0.17, p = .046$).

Table 1.

Results of Mixed-Effects Binomial Logistic Regression Analyses for Effects of Age, Task, and Context on Likelihood of Lying

Predictor	β	<i>SE</i>	<i>p</i>	<i>Odds Ratio (OR)</i>	<i>95% CI OR</i>
Intercept	0.36	0.74	.628	1.43	[0.34, 6.07]
Age Group (4- to 6-year-olds)	-0.55	0.91	.545	0.58	[0.10, 3.43]
Task (Drawing)	-1.80	0.90	.046*	0.17	[0.03, 0.97]
Context (Honesty)	0.64	0.92	.490	1.89	[0.31, 11.51]
Age Group x Context	-0.64	0.15	.579	0.53	[0.06, 5.03]

Note. * $p < .05$. Referent category noted in parenthesis after the variable name.

Rating

Figure 2 represents the average ratings by task, context, and age group. As indicated by Figure 3, overall, ratings were higher in the bad drawing task than the disappointing gift task for both age groups. As evidenced by the overlapping standard error bars, within tasks, ratings were roughly similar by age group and context.

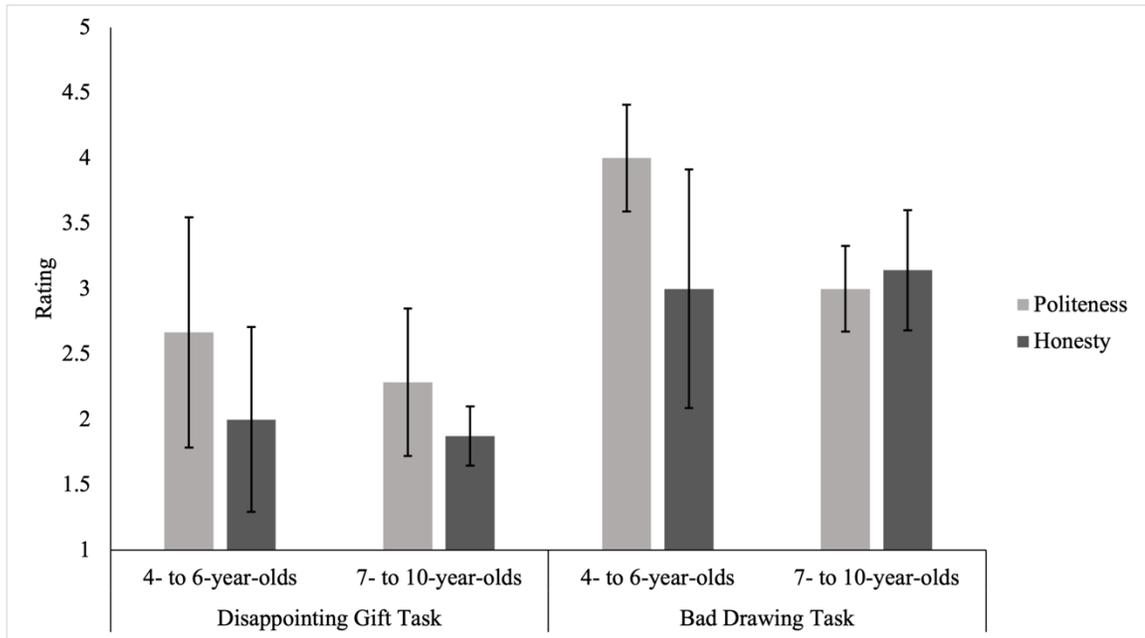


Figure 2. Mean ratings of target items (disappointing gift, bad drawing) by context and age group. Error bar represents +/- 1 standard error of the mean.

I used a generalized linear mixed-model to examine whether children's likelihood of lying differed as a result of task (2: gift, drawing), context (2: politeness-emphasized, honesty-emphasized), age group (2: 4-6-years-old, 7-10-years-old), and the interaction between age group and context. I used these effects to maintain consistency across analyses. The model included a random effect of participant to control for multiple observations per child.

There was a main significant effect of task. This significant main effect indicated that children's initial ratings were higher in the bad drawing task ($M = 3.22, SD = 1.17$) than in the disappointing gift task ($M = 2.14, SD = 1.17; F(1, 40) = 8.95, p = .005$). There were no significant main effects of context ($F(1, 40) = 1.76, p = .192$) or age ($F(1, 40) = 0.95, p = .336$) and there was not a significant interaction between context and age ($F(1, 40) = 0.96, p = .334$).

IV. DISCUSSION

The purpose of the present study was to explore how 4- to 10-year-old children's prosocial lie-telling behaviors develop and how these behaviors might differ depending on the contextual demands of situations in which it may be appropriate to tell a prosocial lie. Past studies that have explored how children's prosocial lie-telling develops in this age range have tended to only observe children's responses in one social scenario, either having them respond to a disappointing gift *or* a bad drawing scenario. The present study sought to expand on the research exploring the development of prosocial lying by having children respond to two social scenarios in which it would be appropriate to tell a prosocial lie. I compared children's responses to both a disappointing gift task and a bad drawing task to see if they present similar social demands and would result in children lying at similar rates.

Scenario was not the only variable of interest in this study. I also presented children with different versions of the disappointing gift and bad drawing tasks to assess whether children were sensitive to specific social contexts. One version of the tasks used language which conveyed that it would be a socially-appropriate response to lie (e.g., someone was excited to give a gift). The other version of the tasks used language which conveyed that it would be a socially-appropriate response to tell the truth (e.g., someone wanted to improve their gift-giving abilities). The reason for presenting these different contexts was to discern what might be driving the developmental trajectory of prosocial lying. Past research suggests that children get better at telling prosocial lies and lie more frequently as they get older. Is this because children are developing a heuristic that mandates always being polite and telling a lie in a particular set of social scenarios, such

as receiving gifts or evaluating others' creative work, no matter what the social cues of the situation might be indicating to the children how they should respond? Or are children learning that each social interaction could be different and that their response might depend on their social partner's motivations for the interaction, as shared via contextual cues.

In this study, I anticipated an interaction between context and age on children's likelihood of lying. This interaction would indicate that older children are more attentive to context and thus are becoming better prosocial liars because of a close attention to social situations. Specifically, I predicted that older children would be more likely to lie (i.e., place the target object in the good box and rate the target objects higher) in politeness-emphasized contexts in both scenarios. In contrast, younger children would be more likely to tell the truth in both the politeness-emphasized and honesty-emphasized contexts, consistent with past research that has shown that younger children struggle with prosocial lying. If there was not an interaction between context and age and overall older children simply lied more regardless of context, then this would mean that children are learning that in these types of social situations, they should just be polite and tell a lie.

Contrary to my predictions, there was not a significant interaction between age and context on children's prosocial lie-telling behaviors. Additionally, no significant differences in prosocial lie-telling behaviors were found based on age or context. Results did indicate that there was a significant difference between the disappointing gift and bad drawing tasks in both the sorting and rating measures for children overall. Specifically, these results showed that children of both age groups were less likely to lie in the disappointing gift task than in the bad drawing task, as measured both by their initial box

selection (sorting) and their initial rating of the target object (rating), regardless of context.

It is possible that there was a difference in lie-telling behaviors due to the difference in the nature of the tasks. These have been treated similarly in past research, but they may include different demands. The bad drawing task involves the use of someone presenting their own personal creation (i.e., the bad drawing). Regardless of whether the experimenter is really excited about their drawing or are simply asking for an honest opinion, they have put effort into “making” this drawing. The disappointing gift task does not involve the same level of personal investment into the target object. In this case, the gift-giver did not make the gift, but selected it from a number of options. It is possible that children sense that when someone makes something, they might be more hurt by negative feedback.

In addition, children are not directly personally affected by viewing a bad drawing, but there is a person impact of receiving a bad prize. Thus, in the disappointing gift task, children are in a situation in which they will be personally affected by their response. Children may think that if they tell the truth (that the prize is bad), they might actually get the prize they want and conclude that honesty would be a beneficial response for them.

Children’s lie-telling behavior might also differ between tasks because when moved from an in-person task to a computer-based task, prosocial lying in the disappointing gift contexts becomes more difficult, even for older children. Sierksma and colleagues (2019) presented 9- to 12-year-old children with a computer-based disappointing gift task to evaluate prosocial lie-telling behavior regarding in-group versus

out-group peers. The results of their study showed that children's likelihood of telling a prosocial lie to a peer when they received a prize in a computer-based game, rates of prosocial lying among the 9- to 10-year-olds were very low for both in-group and out-group peers. This is surprising because children are generally telling more prosocial lies by this age and other past in-person studies using the disappointing gift task have typically found higher rates of prosocial lying (Lavoie et al., 2017a; Lavoie et al., 2017b; Talwar et al., 2007; Talwar et al., 2017b; Talwar et al., 2019; Warneken & Orlins, 2015; Xu et al., 2010).

My findings are similar to those of Sierksma and colleagues (2019) in that even older children are showing very low rates of prosocial lying in the disappointing gift task. Together with my findings, the Sierksma et al. (2019) findings may suggest that moving this disappointing gift task to a computer-based format creates a different gift-receiving experience for children that is impacting their prosocial lie-telling behavior. Thus, the difference we observed between the disappointing gift task and bad drawing task might be because the bad drawing task is more translatable to an online format. This may be due in part to the reasons mentioned above, particularly the nature of something being made by the recipient of the feedback and the personal relevance of the task.

Limitations

Regarding prosocial lying, the vast majority of studies examining children's prosocial lying behavior have been conducted in-person. It is possible that the lack of any effects of age or context in the present thesis study that have been observed in past in-person studies (Lavoie et al., 2017a; Lavoie et al., 2017b; Leduc et al., 2016; Talwar & Lee, 2002; Talwar et al., 2017b; Talwar et al., 2019; Warneken & Orlins, 2015) are due

to the effects of this social behavior not replicating online. Prosocial lying is a complex social behavior and thus, it is possible that this effect is not replicating online because children might not be feeling the same social pressure to lie and feel more comfortable being honest in situations in which telling a prosocial lie would be a socially-appropriate response since they are not truly face-to-face.

Although this study is helping provide information about how children respond in these situations in an online setting, it is not without its limitations. One of the primary limitations of the present study is the overall low number of observations. Another potential limitation related to the sample size is the unequal number of participants in each age group with the older children group to younger children group almost being 2:1.

Future Directions

In addition to exploring the present study's questions with a greater number of observations, future studies could also test participants in-person versus online to see if there are any effects of context or age. Exploring these questions in-person and comparing the results to the data collected online will provide us with more information about the replicability of the effects of this social behavior. Specifically, if we see effects of age and/or context when the study is conducted in-person, this may indicate that children are more sensitive to differing contextual demands in-person than online. This would also be important to explore considering the emerging trend that older children have low rates of prosocial lying in the disappointing gift task when it is conducted online. If children tell more lies in the disappointing gift task when it's in-person versus online, this would provide additional support to the idea that children do not feel the same social pressure to lie when receiving a virtual disappointing gift.

Although prosocial lying is a skill that children get better at with age, it is still a skill that is difficult for them on their own. It is also a behavior that is socialized and scaffolded throughout their childhood; thus, knowing how this behavior is socialized, will also help provide additional insight into the development of this prosocial behavior. There are many people that are involved in the socialization and development of children's prosocial behaviors, including prosocial lying, parents are considered one of the primary agents of socialization (Eisenberg & Mussen, 1989; Fu et al., 2010; Maccoby, 1992; Malloy et al., 2019). To my knowledge, only a handful of studies have examined the impact of parent socialization practices on children's lying in general and only three studies have examined the associations between scaffolding and prosocial lying (Popliger et al., 2011; Talwar et al., 2007; Warnekin & Orlins, 2015), one using self-report, one examining real-time parental scaffolding, and one examining real-time scaffolding outside of a parental context.

One limitation related to understanding the role of scaffolding in the development of children's lying and social behaviors more broadly is that studies have tended to rely heavily on self-reports and surveys (Dykstra et al., 2019; Lavoie et al., 2016; Roberts, 2020). Self-report studies are limited in their ability to gather information accurately and comprehensively about how parents scaffold lie-telling behavior in the moment (Lavoie, Leduc et al., 2017; Ma et al., 2015). Future studies could address this limitation and better understand the role of scaffolding in children's prosocial lie-telling behavior by having parent-child dyads respond to situations that necessitate prosocial lying in real time.

In conclusion, this study sought to explore two potential developmental trajectories of prosocial lying by presenting them with a disappointing gift and bad

drawing scenario via Zoom. My findings suggest that children are more likely to tell a prosocial lie in the bad drawing task than the disappointing gift task. The absence of the anticipated main effects of age and context and specifically, the interaction between age and context provide opportunities for future studies to see if increasing the sample size will provide enough power for the effects to emerge or to further explore whether this prosocial behavior is something that does not replicate in an online moderated platform.

APPENDIX SECTION

Appendix A

Script with All Contextual Prompts

Introduction

[Exp 1]: Hello! Thank you to you both for being here today. My name is [E1] and my name is [E2] and we are researchers at Rising Stars Research Center.

Today our session will be recorded.

Okay, [child's name], to get things started, I'm going to talk with your adult first.

Parent, do you see our start screen? Great!

Consent

[Exp 1]: Before the study, we emailed you a copy of the consent form. Can you confirm that you received a copy of the consent form?

[If no, share a copy of the consent form on the screen.] I am going to share the consent form on your screen now. Please take as long as you need to read through and let me know if you have any questions.

[If yes or once the consent form has been reviewed via screen-share on Zoom] Do you have any questions for me about the information in the consent form?

[If no or once questions are answered] Your verbal consent will replace your signature on the consent form. To provide verbal consent, I will need you to read the statement currently on the screen, replacing the bracketed text with the relevant information. Keep in mind that by default, the study will be recorded so that we can keep track of your child's answers, but you also have the option of providing consent for Level 2 use of the recording so that it can be shared for educational purposes in classes and at conferences.

You can begin when you're ready.

The screen will read: Today is [DATE]. My name is [NAME]. I have read the consent form provided and I give consent for my child [CHILD'S NAME] to participate in the study. I understand that I or my child may stop participation at any time and that the study session will be recorded.

[Optional] I give consent for Level 2 use of this session's recording.

Assent

[Exp 1]: Okay [child's name] - How old are you?

If 6 or under:

I want to tell you about some games we are going to be playing.
During these games, I am going to tell you some stories and ask you some questions.
There are no right or wrong answers to anything I ask!
There are a few things you should know about the games:

- You get to decide if you want to play the games
 - Whatever you decide is OK
 - If you say ‘Yes’ now, you can change your mind and say ‘No’ later
 - You can ask questions at any time.

Okay – now I’m going to ask you a question. Do you want to play some of my games?

If 7 or older:

I want to tell you about a research study I am doing.
Research studies help us to learn new things and test new ideas.
People who work on research studies are called researchers.
During research studies, the researchers collect a lot of information so that they can learn more about something. I am a researcher, and I am doing this study because I would like to know more about how children think about the world.
During this study, I am going to tell you some stories and ask you some questions. There are no right or wrong answers to anything I ask!

There are a few things you should know about this study:

- You get to decide if you want to be in the study
- Whatever you decide is OK
- If you say ‘Yes’ now, you can change your mind and say ‘No’ later
- You can ask me or the other researchers questions at any time.

Okay – now I’m going to ask you a question. Do you want to be a part of this study and help me learn more about how children like you learn?

I see that you have not filled out the demographics form for this session.

If you can, please go ahead and scan the QR code on your screen to fill out the demographics form at your earliest convenience. Please let us know if you are having trouble reaching the survey!

Just as a reminder, your child ID is:

Setting up game

[Exp 1 cont.]: Now I just need your help for a couple of minutes to set up the game.

So now we're going to go through a few steps to get your screen all set up for the game. And this might have already happened already kind of automatically when I shared my screen with you - but are you in full screen mode or can you see other applications on your screen?

If no: Please click the maximize button in the top right corner of your zoom browser, this will put your zoom in full screen mode.

Okay, great, and are our videos floating on top of the screen like this image over here, or are they beside the screen and inside a black border? So, if you click on our videos, can you drag them to different places on the screen?

If on top: click the “view” button in the top right corner of the zoom screen, you should see some options, click the option that says “Side by Side: Gallery” view. Okay, great. So now our videos are beside the screen.

And can you see just me and [other RA], or can you see my video and your video, [plus our non-video participants here today]?

So first we'll have you hide your self-view. So, if you just hover over your zoom video image, there should be a blue button with three white dots. Click that and select “hide self-view” for your video.

IF LAB SHADOWING: We have some lab personnel shadowing this session today, so we want to hide their videos as well. [Hide non-video participants instructions] Now under view, you should be able to select “Hide non-video participants” - this will hide their zoom pictures. Great, thank you!

[To parent] One last thing! You're welcome to stay with [child's name] throughout the game, but we just ask that during the game, you don't respond to anything that's happening on the screen and don't attempt to answer any questions, so we can just get a sense of what happens without your input. But at the end of the game if you have any questions, I'm happy to answer them. Does that sound okay to you?

So, we are ready to start our games! [Child's name] you have been so patient, thank you for waiting. Are you ready to get started?

Sorting Warm-up

[Exp 1]: Today we are going to be playing some games together. If you ever can't hear me or see the screen, say STOP! and let me know.

Sometimes one of us will have to leave while we play because we are very busy today. We'll let you know when we have to leave, but one of us will always be here with you.

We are also going to ask you some questions about some things because we want to know what you think. Remember this is not a test and there are no right or wrong answers. We just want to know what you think.

[Exp 2]: We need your help sorting things as good or bad using these boxes here. There is a box for good things [under the Thumbs Up] and a box for bad things [under

the Thumbs Down]. Now we're going to practice sorting different things.

So, what do you think of broccoli? Should it go in the good box or the bad box?

What about plain crackers? Should they go in the good box or the bad box?

What do you think of ice cream? Should it go in the good box or the bad box?

Great job! Now [*say Exp 1's name*] is going to show you some faces. I have to go check the mail, I will see you later!

Faces Warm-Up

[Exp 1]: Hi! Now we are going to look at these faces, they help me know what you think! I am going to tell you what each face means, and then I am going to ask you to choose a face for each food, based on how much you like the food.

Are you ready?

Great! Here we go.

The red face, over here [*scroll over red face*] is for when you really don't like something.

The orange face, right here [*scroll over orange face*] is for when you don't like something a little bit.

The yellow face, this one [*scroll over yellow face*] is for when you feel just okay about something. You don't really like it, but you also don't dislike it.

The blue face, over here [*scroll over blue face*] is for when you like something a little bit.

And finally, the green face, right here [*scroll over green face*] is for when you really like something!

Can you tell me which face you would give the broccoli?

How about the cracker?

What about ice cream?

Great job! Thank you for playing with me!

Children will either be present with the disappointing gift task or bad drawing task first depending on their counterbalance order.

Prize Game

[Exp 1]: Now we are going to pick out a prize for you as a thank you for playing with us.

Here are the prizes that we have: a button, a crayon, a sticky note, and a bracelet. Which one of these do you like the best?

Awesome, you picked out the *[say prize name]*.

Which one do you think is the worst?

Oh, so you think the *[say prize name]* is not very good?

Cool, thank you!

Oh! I just heard someone knock on the door. I need to go check that! Wait one second and I will be back to play!

[Exp 2]: Hi there! I don't know what you just did, but I'm excited to play some games again!

Oh! It's my turn to pick out a prize for you. Look at all these prizes I can pick from!

Children will be presented with one of the two following prompts:

Politeness-emphasized prompt:

EMPHASIS: I really want to give good prizes. I love giving people good prizes! I am excited to give this to you! I think that you will really like this one.

What do I want to do?

Okay! Before I pick a prize, remember, I really want to give good prizes. I love giving people good prizes! I am excited to give this to you! I think that you will really like this one.

Honesty-emphasized prompt

EMPHASIS: I really want to *get better* at giving prizes, but I am not sure if I will pick out a good prize. I want to learn to be the best prize giver in my class. It won't hurt my feelings to know what you think.

What do I want to do?

Okay. Before I give you the prize, remember, I really want to *get better* at giving prizes, but I am not sure if I will pick out a good prize. I want to learn to be the best prize giver

in my class. It won't hurt my feelings to know what you think.

I am going to put the prize I pick out for you right here.

Here's my prize for you. I am giving you the *[say prize name]*!

Can you tell me what you think of the *[say prize name]*? Would you put it in the good box or the bad box?

[Exp 2]: Now I am going to bring the faces back and I want to know what you think about the *[say prize name]* using the faces.

Which face would you give the *[say prize name]*?

Okay!

Oh! I forgot that I left my phone in the other room. I need to go get it! My friend will be back to play with you though!

[Exp 1]: I see that you put the prize that *[E2]* gave you in the *[say which box]*. Why did you put the *[say prize name]* in that box?

[Exp 1]: *[E2]* isn't here right now, *[She/he/they]* can't see what we're doing or hear what we're saying. No one else will know what you say, I just want to know what you think. Can you tell me which box you think the *[say prize name]* should really go in?

[Exp 1]: Can you tell me which face you think the *[say prize name]* should really get?

Drawing Game

[Exp. 1] Okay! Now it's time for another game.

[Exp 1]: Look at this drawing I found! I really liked it, so I wanted to try to copy it myself.

Children will be presented with one of the two following prompts:

Politeness-emphasized prompt:

EMPHASIS: I really want to be good at drawing and I have been working hard on this drawing. I want to hang it up on my refrigerator. I am so excited about my drawing, and I am proud of it.

What am I going to do with my drawing?

Okay. Before I show you my drawing, remember, I really want to be good at drawing and

I have been working hard on this drawing. I want to hang it up on my refrigerator. I am so excited about my drawing, and I am proud of it.

Honesty-emphasized prompt

EMPHASIS: I really want to be good at drawing and I want to enter my drawing in a competition but I am not sure if my drawing is good or not. If the drawing is good, I will win an award. I have lots of time to work more on the drawing before I need to turn it in. It won't hurt my feelings to know what you think.

What am I going to do with my drawing?

Okay. Before I show you my drawing, remember, I really want to be good at drawing and I want to enter my drawing in a competition but I am not sure if my drawing is good or not. If the drawing is good, I will win an award. I have lots of time to work more on the drawing before I need to turn it in. It won't hurt my feelings to know what you think.

Here is my drawing.

Can you tell me what you think of my drawing? Would you put it in the good box or the bad box?

[Exp 1]: Now I am going to bring the faces back and I want to know what you think about my drawing using the faces.

Which face would you give my drawing?

Thank you for letting me know! Oh! I hear my phone ringing. I need to go answer that. My friend [E2] will be back to play with you!

[Exp 2]: I see that you put [E1]'s drawing in the [*say which box*]. Why did you put the drawing in that box?

[Exp 2]: [E1] isn't here right now, [She/he/they] can't see what we're doing or hear what we're saying. No one else will know what you say, I just want to know what you think. Can you tell me which box you think this drawing should really go in?

[Exp 2]: Can you tell me which face you think this drawing should really get?

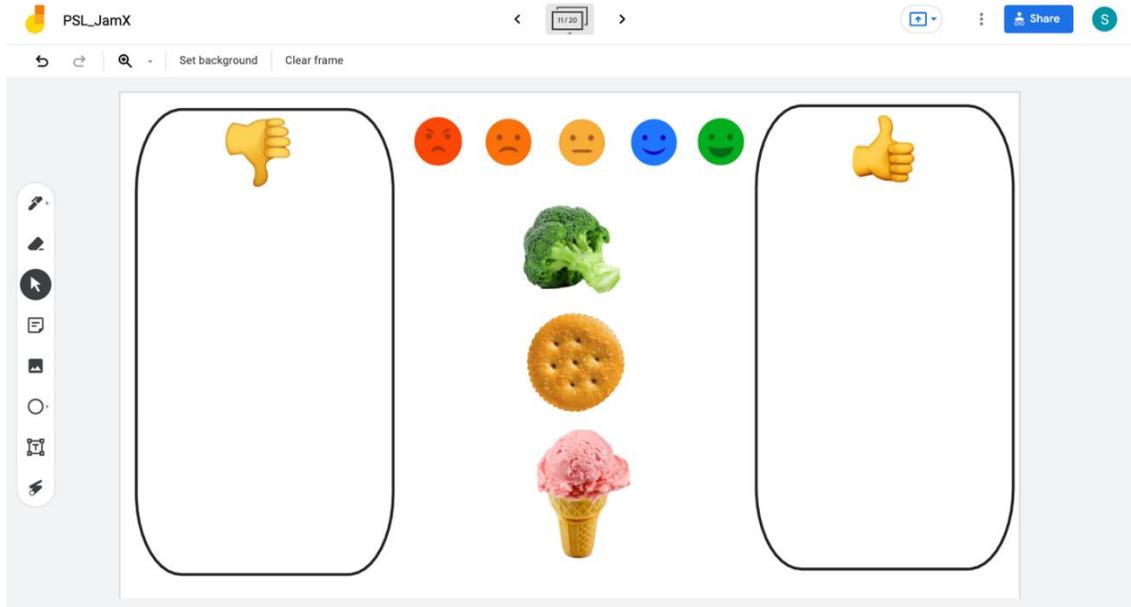
Conclusion

[Exp 2]: Okay we are all done! Parent, do you have any questions for us?

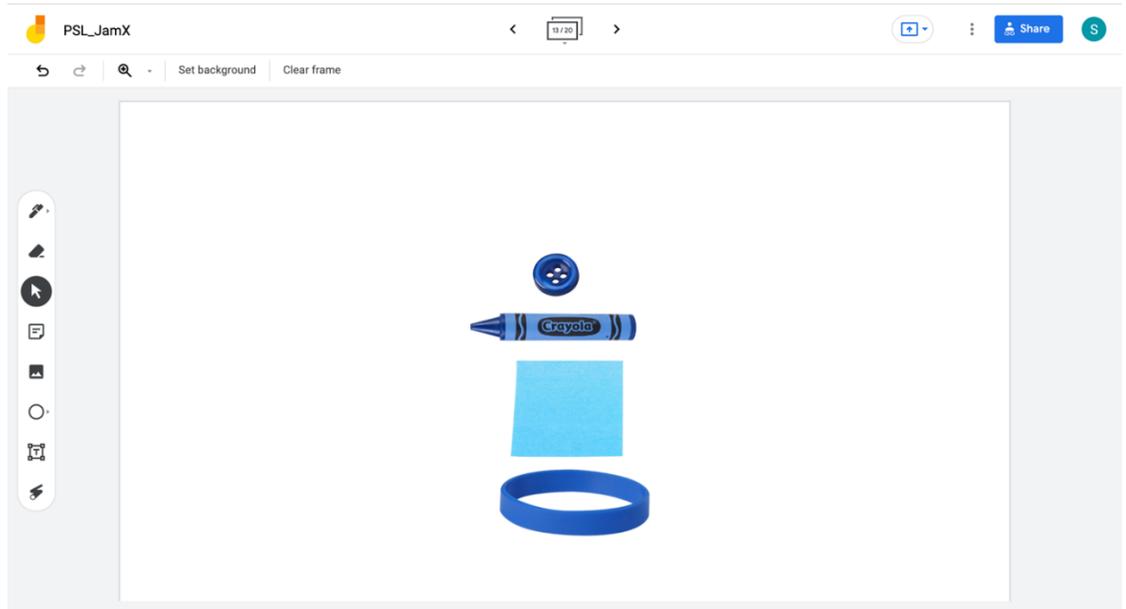
Appendix B

Jamboard Slides for All Tasks

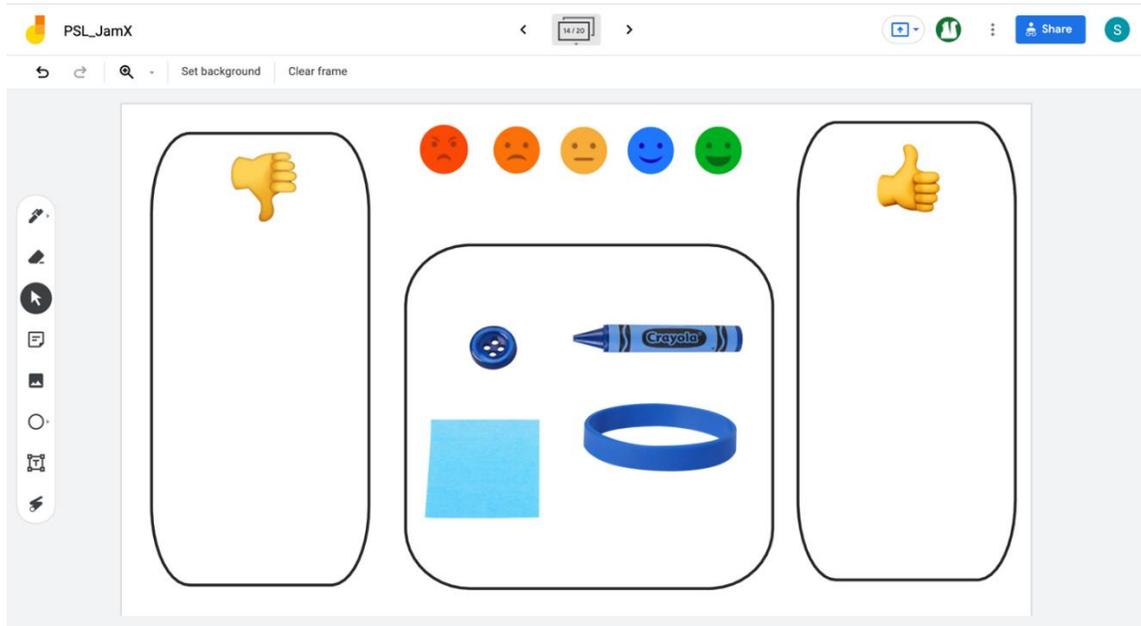
Warm-Up Slide (With Unhidden Faces)



Disappointing Gift Task Slide 1



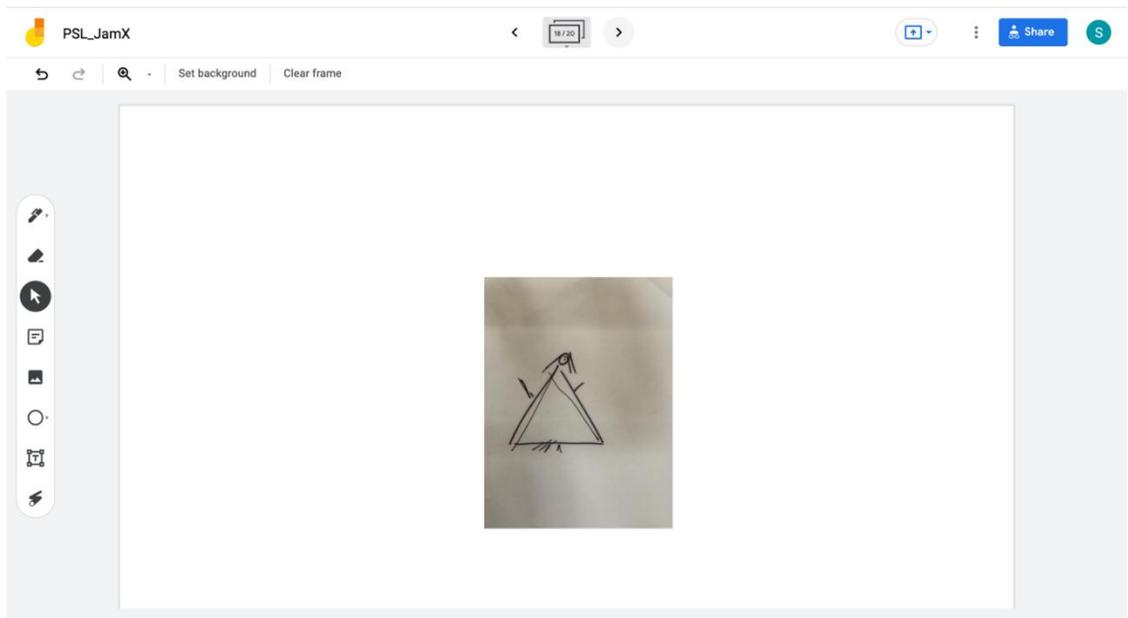
Disappointing Gift Task Slide 2 (With Unhidden Faces)



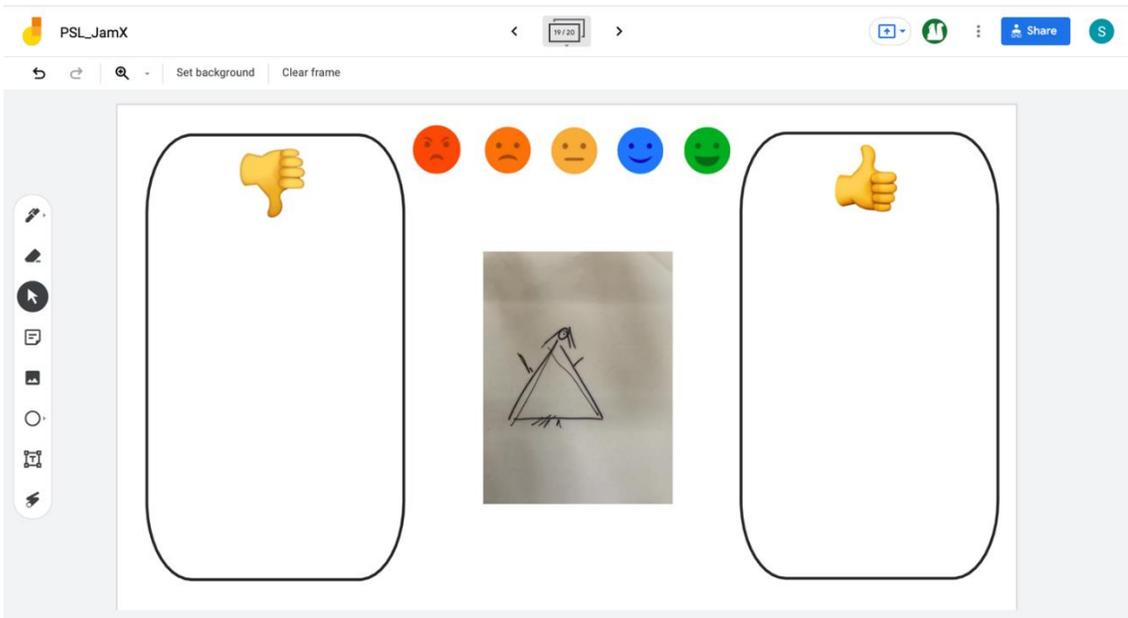
Bad Drawing Task Slide 1



Bad Drawing Task Slide 2



Bad Drawing Task Slide 3 (With Unhidden Faces)



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