

**Children's Evaluations of Intentions Regarding Violations of Novel Public-Health  
Measures**

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**Author Note**

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### **Abstract**

With the introduction of new norms during the COVID-19 pandemic, there are unprecedented questions on how children evaluate people who do not follow protective behaviors that might affect others. This study explored how children evaluate intentional and accidental violations of protective behaviors that might hurt other individuals. We presented children with stories about aliens who have to make choices about behaviors such as wearing heavy caps to cover spikes on their bodies that might otherwise hurt other aliens, mirroring the inherent dilemma in COVID-related protective measures such as mask-wearing. In a 2x2 within-subject experiment, N = 60 children aged 5-10 years old were asked to evaluate different alien characters in different dilemma situations. We manipulated the intention of the alien (accidental vs. intentional) and the severity (low vs. high) of harm caused by not engaging in protective behaviors. Our regression analyses showed that there was an interaction between severity and intention: children, across all ages, rated violators as more wrong when violations were committed intentionally in the high severity condition. Children also viewed the violators as worse friends when they were intentional and could cause high harm. These findings provide insight into how children reason about public health behaviors, making more negative attributions to individuals who intentionally fail to protect others from harm.

*Keywords:* psychology, developmental psychology, morality, intention

## **Children's Evaluations of Intentions Regarding Violations of Novel Public-Health Measures**

Growing up and learning during a pandemic has introduced a new set of rules and morals for children to adapt to, and in an abrupt fashion. While traditional childhood development studies often track the gradual acclimation of children to longstanding social norms of their community, like learning to shake hands when being introduced to a stranger, the COVID-19 pandemic raises unprecedented questions on how children adopt novel health-related norms. Specifically, how do children of all ages interpret how people who do not follow COVID-19 norms allow potential harm to themselves and the community. Understanding social norms and moral issues are an important common ground that helps govern a community and is an early hallmark of social development.

Triggered by the events of the pandemic, researchers have started to investigate children's knowledge of COVID-19. One study found that children as young as six years old have a significant awareness about COVID-19 and its preventative measures (Shaikh & Likhite, 2020). Children's understanding that these measures can prevent the spread of COVID-19 may influence their perceptions of those who refuse to follow preventative measures. Identifying the situations under which children evaluate those who do not wear protective measures has important theoretical implications for understanding how social norms surrounding the pandemic are perceived. A greater understanding of perceptions of COVID-19 rules can be crucial to the implementation and adherence to these rules.

How children interpret COVID-19 rules also raises broader questions about moral development. Historically, studies of moral development have focused on children's evaluations of moral actions with tangible outcomes. This is an important consideration regarding COVID-

19 health rules, as mask-wearing is a special circumstance where the act is perceived to be uncomfortable or inconvenient to the self but prevents harm for another. We were interested in studying if the role of intentionality in health harm related transgressions operate under similar rules as other traditionally studied transgressions. Thus, analyzing the role of intention in mask-wearing dilemmas can give us a more in depth understanding of children's reasoning about COVID-19 norms.

### **Development of Intent-based Judgment**

People in social situations are constantly confronted with the problem of making sense of other people's behavior. The ability to use intention-based moral judgment is seen as a fundamental skill in evaluating social behavior. This is a skill that develops over the course of childhood: younger children focus on the outcomes of an action even when the harm was unintentional, while older children are more likely to evaluate norm transgressors based on whether they are well- or ill-intentioned in their actions (Piaget, 1932/1965). For example, younger children are more likely to make more negative evaluations of people who have caused negative outcomes even with the knowledge of these actions as unintentional (Grueneich, 1982). Around the ages of 4-8, children make more intent-based judgments of the actor, and these judgments are mirrored in their evaluations of moral wrongness and assessments of deserved punishment (Piaget, 1965). This developmental shift to a more intent-based moral judgment has been extensively researched (e.g., Hebble, 1971, Costanzo et al., 1973, Yuill & Perner, 1988). Children, as young as age four or five, can consider intentionality as a basis of evaluating behavior when the amount of harm/damage caused is held constant (Nelson-Le Gall, 1985, Costanzo et al., 1973). While around 4-years-old, children consider relevant social information in their moral evaluations, by 8-years-old, they value intention more in their moral evaluations

(Cushman et al., 2013). These studies articulate important developments regarding the shift from focusing on outcome to valuing intention.

### **Perception of the Transgressor**

Another important finding regarding children representing intention is that in general, children attribute more negative attributions to those who intentionally cause high harm (Dodge, 1980). These negative attributions can be mediated as intent-based judgments are sensitive to social cues and can impact the child's perception of transgressors. Children perceived transgressors, who apologize, as less intentional and more remorseful, and evaluated them less negatively than transgressors who made excuses or did not respond (Ohbuchi & Sato, 1994, Goss, 2002). Contextual evidence regarding reasoning about an actor's transgression could also mitigate a negative evaluation. Twelve-year-old Dutch boys' evaluations of a transgressor's naughtiness were sensitive to both provocation and intention, while the 8-year-old boys failed to differentiate their evaluations (Hewitt, 1975). The social context is important to children's judgments of transgressors and their actions.

Considering children's negative perceptions of transgressions, it is also important to consider how this will impact their treatment of the transgressor. After judging whether the action was right or wrong, the child's future actions towards the actor may be impacted. Children are likely to forgive transgressors if they have limited knowledge surrounding the context of the transgression (Amir et al., 2021). With age, children who are more sensitive to intentionality are more likely to forgive accidental transgressions (Amir et al., 2021). Older children are more likely to accept a harm-doer's excuses if they believe the harm was not intentional (Ohbuchi & Sato, 1994). Forgiveness towards a transgressors is more likely, by children, especially if the transgressor had a good reputation and was seen as likable (Darby & Schlenker, 1989). When

considering how children will treat transgressors after their transgression, an apology has been showcased to have a great effect on children's willingness to forgive, but this was mediated by the severity and intention of the transgression (Goss, 2002). For example, children were less forgiving towards intentional and high harm transgressions (Goss, 2002).

While children may be willing to forgive transgressors, their negative judgment of transgressors also can lead them to punish transgressors. Children tend to judge intentional transgressions as more naughty and punishable (Cushman et al., 2013). Furthermore, children not only are capable of enacting punishment to maintain moral norms but also understand fixing an unfair punishment. Children, 3- and 4-year-olds, are more likely to correct an adult's punishment of an actor's accidental actions than intentional actions (Chernyak & Sobel, 2016). These studies have looked at how intentionality can affect how children forgive or punish a transgressor. There has been less research on how this judgment of character can extend past the initial transgression. A harmful transgression could have repercussions surrounding the transgressor's reputation. 5–6-year-old children were studied to be less trusting of those who have previously deceived others compared to those that helped others. (Liu et al., 2013). Children's reactions to transgressors could have harmful implications to social relationships they develop with them.

### **Types of Transgressions**

While these outcome-intention scenarios usually use moral transgressions when trying to evaluate wrongness, different types of transgressions can impact the saliency of children's social evaluations. One important distinction is between moral and conventional rule violations. Moral transgressions most salient to people are usually in the harm domain. Transgressions in this domain revolve around causing physical harm and hurting other people—for example, hitting another person. Nonetheless, transgressions relating to property damage—for example, knocking

down another one's block tower—are also a basic concept that most children understand. Children, around three years old, were recorded as judging moral transgressions as more serious than social-conventional transgressions (Smetana, 1985). Thus, various studies have looked at the role of intentionality in children's evaluations of property damage-based transgressions (Nelson-Le Gall, 1985, Chernyak & Sobel, 2016, Mulvey, 2020).

Compared to other transgressions like emotional or property damage, children usually rated transgressions involving physical harm the most negative (Elkind & Dabek, 1977) and were less likely to forgive transgressors (Goss, 2002). Prior work has focused on property damage or causing pain to others as traditional moral problems for children, but the pandemic introduces new normative practices that reflect a more complex moral understanding. COVID-19 protective measures, if seen as a way to prevent causing pain to others, allows for a novel situation to further explore children's evaluations of intentions of harm-related transgressions.

### **The Present Research**

This study aimed to explore how children evaluate intentional and accidental violations of prosocial protective health measures similar to mask-wearing. The sample for this study drew on 60 children (5-10 years old) to examine whether intentionality and severity of harm impacts children's evaluations. Given that this shift from focusing on outcomes to intentions in children's moral judgments occurs around 4-8 years old, this age-range allowed us to observe this development of incorporating more social information in their moral evaluations. Since children likely have preconceived notions surrounding mask-wearing, we addressed this question by presenting children with hypothetical scenarios using alien characters living on made-up planets. Participants saw vignettes of situations mimicking mask-wearing dilemmas with aliens having

problems that affect others (i.e., poking or brushing against them) but can be avoided by performing a target behavior that is uncomfortable to the self.

We showed children examples of transgressor aliens who are not performing the target behavior, either by accident or intentionally, and who could either cause harm (i.e., poking) or no harm (i.e., brushing against). Although the performance of this target behavior was not framed as a norm, we will refer to those not performing this behavior as ‘violators’ in this study for the sake of brevity. We measured their morality rating of the violators as we were interested in observing how intention and severity could impact how right or wrong, they saw those who could cause harm to others. Branching off from the moral domain, we collected the children’s ratings of the violators as friends and their preference of friend between the accidental and intentional violator, to see how these scenarios impact children’s social judgments.

### **Hypotheses**

The overall goal, using these measures, was to determine how intentionality and severity impact children’s moral and social evaluations of those who do not perform the target behavior. In terms of social evaluations, we were interested in looking at how the violators were judged as friends.

#### ***Morality Rating***

We hypothesized that children would rate violators less positively when violations were committed intentionally in the high severity condition. Violators who intentionally fail to protect others will be judged as more wrong than those who intend to protect others but forget, especially when there is a potential for harm.

#### ***Friend Rating***



We hypothesized that there would be an interaction effect of severity and intention that would result in children viewing aliens who intentionally could have prevented high harm as worse friends. As children may be more hesitant to rate others as bad friends, only violators who intentionally can cause harm to others will be seen as worse friends.

### ***Friend Choice***

We hypothesized an interaction between severity and intention for children's choice of violator as a friend. Children would be less likely to choose aliens as friends when the violations were in the intentional and high severity condition. When being forced to choose, violators who intentionally fail to protect others from harm will be seen as worse friends and thus, children will prefer those who at least intend to protect others.

## **Method**

### **Participants**

Our final sample were  $N = 60$  children at 5-10 years of age ( $M = 7.83$ ,  $SD = 1.69$ , 30 girls) recruited through a medical database hosted by the author's home institution, the lab's online database, and online social media advertising. Parents identified their children as follows: 3% as Asian American, 3% as Black/African American, 5% as Hispanic/Latino, 72% as White/Caucasian, and 16% as of multiple race/ethnicities. Participants were contacted via email to ask about their interest in participating. All participants were fluent in English.

There were equal numbers of children across three age groups (5-6, 7-8, 9-10), i.e., 20 participants per age group. The current study constituted an extension of a previous study, which was replicated directly prior to conducting this study in the same session. Therefore, we conducted a power analysis using the results from the initial study. The previous sample size of 48 was underpowered for the effect of interest in the previous study, and thus we needed to

increase the sample size to at least 54 participants to give us sufficient power (84.2%, CI (81.79, 86.41) to detect this effect. We chose a sample of 60 to allow us to properly counterbalance within each age group.

Written informed consent was obtained from parents and assent from children so recordings of the session could be filmed for further analysis. The study was approved by University of Michigan Health & Behavioral Science Institutional Review Board.

### **Materials**

A replication of a previous experiment was run prior to this experiment in the same session. The initial study looked at whether the framing novel protective behaviors as either self-directed or other-directed influences children's evaluations of these behaviors. Participants who participated in the replication study then also participated in this study. This current study used the same type of stimuli as the replication and builds off of the narrative presented to children in that study.

In this study, participants saw vignettes of situations mimicking mask-wearing dilemmas. Participants saw illustrations of four types of aliens and their situations along with a verbal description of the illustrations. All aliens have a problem which affects other aliens (i.e., poking or brushing against them). To fix this problem, each alien can perform a target behavior which protects the other alien from harm (See Appendix A for images of the aliens and their protective measures). However, this target behavior, wearing the protective measure, is uncomfortable to the main alien.

The participants saw all four conditions with two different types of aliens. One type of alien corresponds to each severity condition (i.e., one high severity and one low severity alien). For the severity condition, the alien either poked and hurt the other aliens (high severity) or

brushed against and did not hurt the other alien (low severity). Within each alien type, participants saw two different colored aliens representing the intention conditions. For the intention condition, one alien decided not to do the target behavior on purpose (intentional) and the other alien accidentally forgot to do the target behavior (accidental).

To walk through one example vignette, one type of alien shown to children is a Furpee. A Furpee is a type of alien that is covered in spikes. In the high severity condition, these spikes can poke and hurt other Furpees. In the low severity condition, these spikes just brush against and do not hurt other Furpees. Furpees can cover up their spikes with caps, but these caps are really uncomfortable. In all conditions, the Furpee is in a rush getting ready to go to school. In the intentional condition, the Furpee is shown thinking that they do not want to wear the caps and chooses to not wear the caps to school. In the accidental condition, the Furpee is shown thinking about wanting to wear the caps but forgets to wear the caps to school. (See Appendix B for a walkthrough of the vignettes and images shown to children)

### **Design**

There were two independent variables: Intention (Intentional/Accidental) and Severity (High/Low), crossed in a 2x2 design resulting in four conditions administered within-subjects in counterbalanced order. In total, there were four different types of aliens and two different colors per alien type. Type of alien, color, and the order of conditions were also counterbalanced. Participants within each age and gender grouping were randomly assigned a specific sequence. Therefore, each child saw two different types of alien, and two different colors of each alien type, representing the four different combinations of manipulations (high severity intentional, high severity accidental, low severity intentional, low severity accidental).

### **Procedure**

Prior to the start of the study, parents completed consent forms and obtained the child's verbal assent. In each test session, children first completed the replication study and then participated in this experiment. The study was conducted online over Zoom: the experimenter shared their screen and recorded the child's verbal responses using a Qualtrics survey. Participants were compensated with \$5 Amazon gift cards and were debriefed at the end of the study.

We introduced participants to a specific alien type who either pokes or just brushes against other aliens. Two comprehension check questions were asked to ensure the children understood the discomfort of said behavior and understood who the discomfort was directed towards. The participants were then told a story about either the intentional or accidental alien. Following the introduction of the alien, a manipulation check question was asked to check whether the children correctly understood the intention of the alien. If a child answered either manipulation check or comprehension check questions incorrectly, we repeated the explanation and question. If a child failed the question again for the next alien, we recorded that, and that trial was excluded from analysis. Of the 300 trials (5 per child, 60 children), thirty-four trials were excluded due to a failed comprehension or manipulation check. Following each vignette, we asked several questions about each vignette.

Children were asked comprehension check questions—*Who does the alien poke/brush against? Does it hurt when the alien pokes/brushes against the other alien?*—and a manipulation check question—*Did this alien accidentally or intentionally not perform the behavior?*

After children were asked their judgment of the alien and their future behavior towards said alien (see Measures). Once children finished answering questions for all four aliens, the

study concluded. Participants' parents were emailed a debriefing letter and the Amazon gift code.

## **Measures**

### ***Morality Rating of Not Performing the Target Behavior***

Following the story of the accidental/intentional alien, children were asked to evaluate the intentional and accidental aliens' actions on a 5-point Likert scale (really right, a little right, just OK, a little wrong, really wrong). This question was coded for how much the child perceives the alien as good or bad with 5 = really right and 1 = really wrong.

### ***Rating of Friend Quality***

Following the morality question, children were asked, for both the intentional and accidental alien, how good or bad of a friend the alien is on a 4-point Likert scale (very good, a little good, a little bad, very bad). This question was coded for how much the child perceives the alien as a good or bad friend with 4= a really good friend and 1= a really bad friend.

### ***Friend Choice***

Children were asked to choose between the accidental and intentional alien, which they rather prefer as a friend.

## **Statistical Analysis Approach**

We used linear mixed effects models to assess the effect of the conditions (accidental/intentional and high/low severity) on the Likert scale responses (the morality ratings of each alien's action and the rating of each alien's friendship quality). In order to assess the effect of the condition for the binary question (the choice of friend), we constructed generalized linear mixed models with predictors of severity, intention, age, gender, and subject ID as random

effects to account for repeated testing. Effects were considered significant if the  $p < 0.05$ . All analyses were performed in R, version 3.6.3, using the package lme4 (Bates et al., 2014).

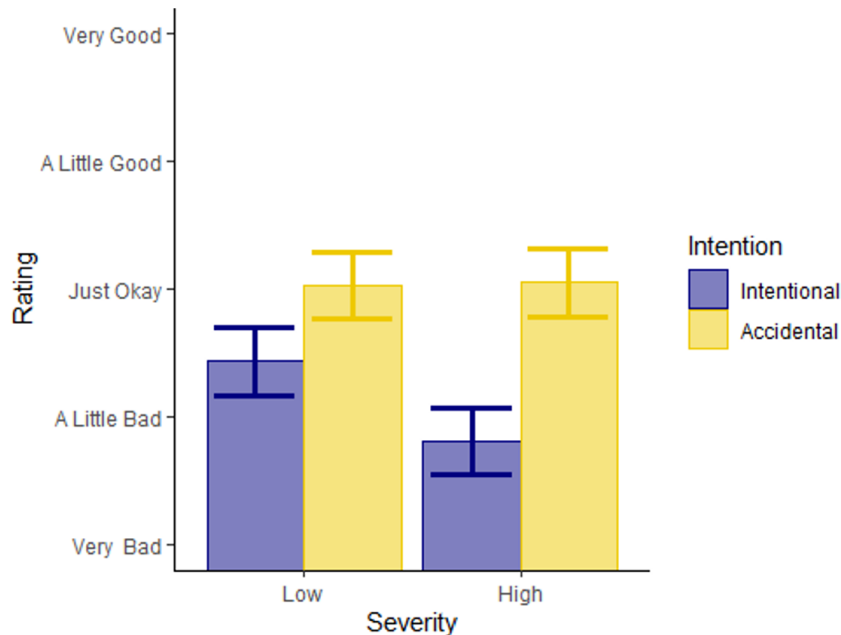
In each analysis, we first compared a full model, containing all predictors of interest, to a null model, containing trial and subject, to test whether the predictors had a significant effect on our dependent variable. If this comparison showcased a significant difference, we then used a likelihood ratio test to compare the full model to various hypothesis-driven models to assess the effects of different predictors on the dependent variables. All our main analyses reported below were pre-registered prior to data collection ([https://aspredicted.org/NVJ\\_7XN](https://aspredicted.org/NVJ_7XN)).

## Results

### Morality Rating

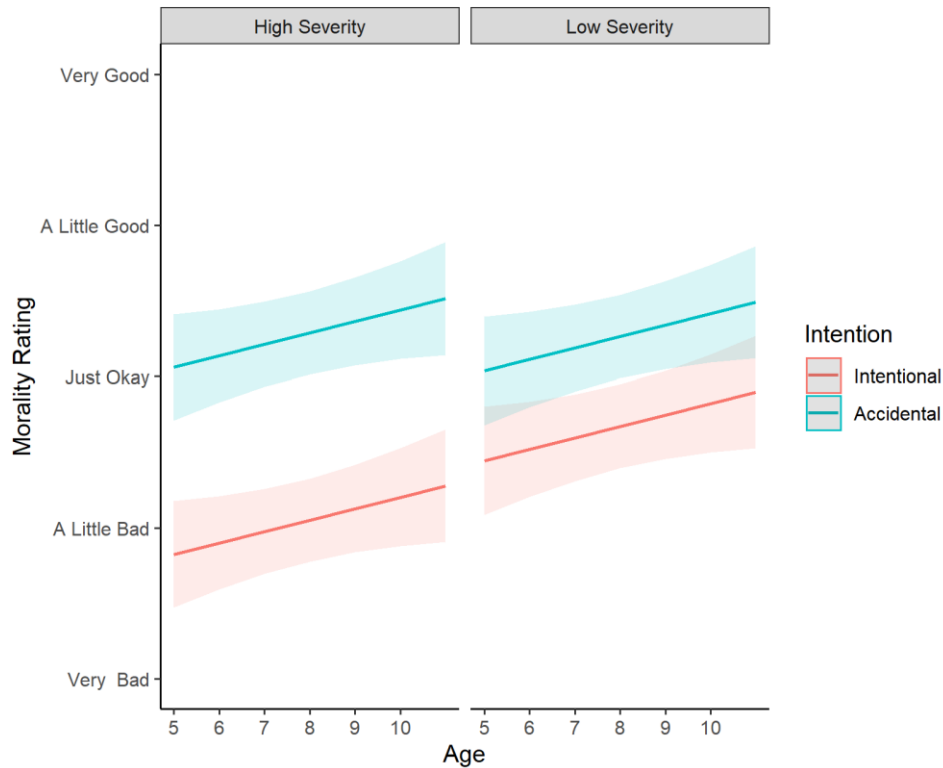
Our central focus was whether intentionality and the severity of harm would influence children's moral evaluations of those who do not follow prosocial protective measures. As can be seen in Figure 1, children rated most violators neutrally, but viewed intentional transgressors as a little more wrong compared to accidental transgressors. To examine whether severity or intention predicted differences in children's rating, we built linear mixed models with trial number age, gender, severity, intention, the interaction of severity and intention as fixed effects, subject ID as random effect, and the 5-point morality rating as dependent variable. There was a significant difference between the full model and the null model,  $X^2(5, N = 60) = 82.61, p < .001$  (See Appendix C for the statistical models). There were significant main effects of intention,  $X^2(2, N = 60) = 70.45, p < .001$ , and severity,  $X^2(2, N = 60) = 16.89, p < .001$  with the children rating intentional violators and violators that could cause high harm as more morally wrong. We predicted an interaction of intention and severity, with children rating violators less positively when violations were committed intentionally in the high severity condition. This was indeed the

case as there was significant effect of the intention and severity interaction,  $\chi^2(1, N = 60) = 9.42, p = .002$ . In high harm situations, children across all ages rated intentional norm-violators as more wrong (Figure 1).



*Figure 1. Model predictions of children's morality ratings with error bars representing 95% confidence intervals*

There was no significant effect of the children's gender on their evaluations. Furthermore, there was a marginal effect of age,  $\chi^2(1, N = 60) = 3.59, p = 0.058$ , on children's ratings. As a result, there was a trend of younger children rating all transgressors slightly worse compared to older children (Figure 2).



*Figure 2. Model predictions of children's ages on their morality ratings with error bars representing 95% confidence intervals*

These differences were most apparent in the high severity and intentional condition, but amongst the rest of the conditions, children across all ages tended to rate all violators' actions as more neutral.

### **Friend Rating**

We hypothesized that there would be a main effect of severity regardless of the agent's intentions that would result in children viewing violators who could have prevented high harm as worse friends. Overall, Figure 3 shows a ceiling effect for this question as children tend to rate most violators positively as good friends, but intentional violators who can cause harm were seen as the worst among all violators.



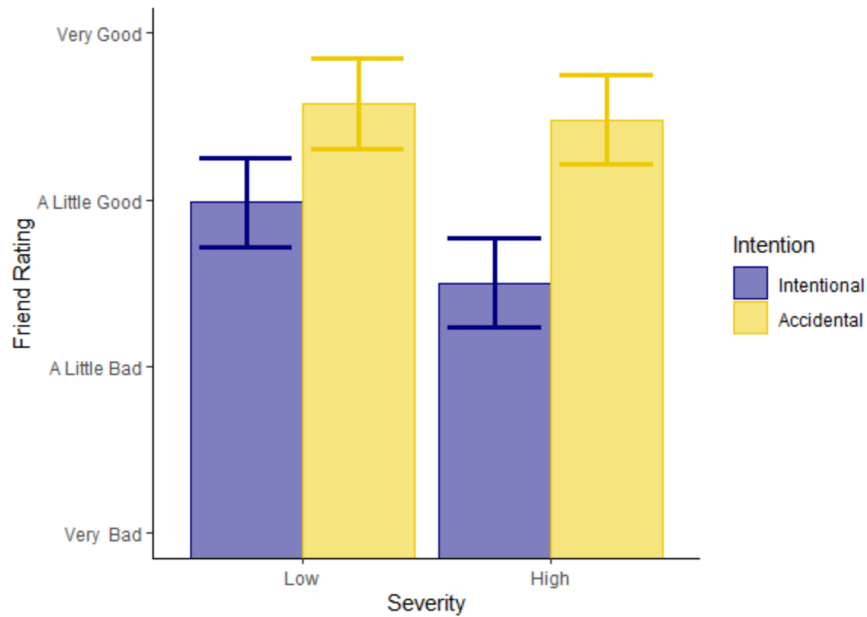


Figure 3. Model predictions of children's friendship ratings with error bars representing 95% confidence intervals

We constructed a generalized linear mixed model to examine whether severity or intention predicted differences in children's rating of how good or bad of a friend the violators were. The predictors in this model were trial, age, gender, severity, intention, the interaction of severity and intention, and subject. The dependent variable was the 4-point friend-quality rating. There was a significant difference between the full model and the null model,  $X^2(5, N = 60) = 60.73, p < .001$ . Analysis of the model comparison revealed a main effect of severity,  $X^2(2, N = 60) = 11.36, p = .003$ , with children viewing violators in the high severity of harm condition as worse friends (Appendix D for the statistical models). There was also a main effect of intention,  $X^2(2, N = 60) = 54.98, p < .001$ , with children rating intentional violators as worse friends compared to accidental aliens. There was a marginal interaction effect of severity and intention,  $X^2(1, N = 60) = 3.72, p = .054$ , as seen with the trend of children rating intentional violators as worse friends

than accidental violators, especially when the behavior prevents severe harm. There was no significant effect of the children's age or gender on their friendship ratings.

### Friend Forced Choice

We hypothesized that children would be less likely to choose the violators as friends when the violations were in the intentional and high severity condition. Overall, children were more likely to choose the accidental violator ( $M = 0.86$ ,  $SD = 0.35$ ) as a friend,  $t(107) = 10.80$ ,  $p < .001$ . We constructed a generalized linear mixed model with trial, age, gender, severity, and subject as predictors and children's friend preference of the accidental/intentional violator as the binary outcome. There was a significant difference between the full model and the null model,  $X^2(3, N = 60) = 10.86$ ,  $p = 0.013$  (Appendix E for the statistical models). Specifically, children were less likely to choose the intentional violator as a friend,  $X^2(1, N = 60) = 7.78$ ,  $p = .005$  when the behavior prevents severe harm to others (Figure 4). There was no significant effect of the children's age or gender on their choice of friend.

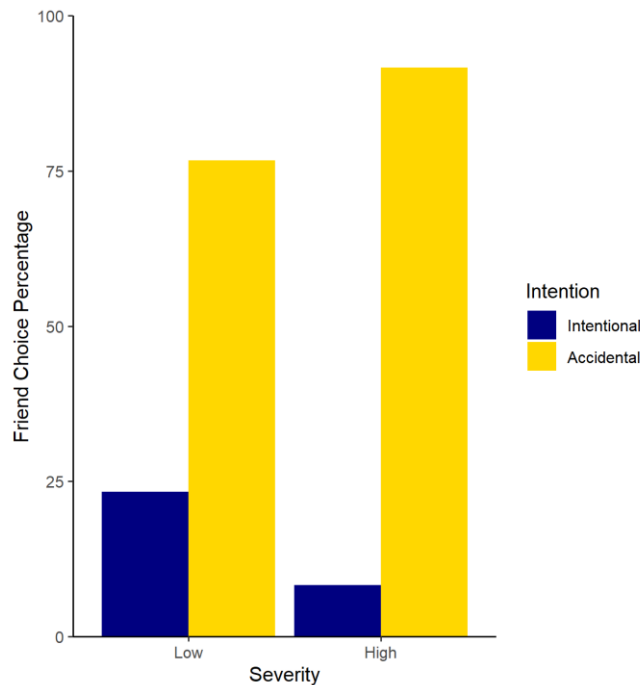


Figure 4. Raw data of children's preference of the accidental/intentional violator as a friend

### Discussion

The aim of our study was to examine how intention and severity of harm impact children's social-moral evaluations of those who do not follow novel protective measures. We had two main research questions: *Do intentionality and severity impact children's moral evaluations of violators?* and *Do intentionality and severity impact children's choice of the violators as friends?*

Overall, children were quite positive in their evaluations of the transgressors. They tended to rate the transgressors neutrally and saw them as at least good friends regardless of their behaviors. However, these ratings did differ based on intentionality and severity.

We hypothesized that children would rate violators less positively when violations in the high severity condition were committed intentionally rather than accidentally. This hypothesis was supported as children rated the intentional violator's actions more negatively than accidental transgressions when the behavior could have prevented severe harm. Similar to prior work on moral transgressions, children appear to be aware of the circumstances surrounding a transgression (i.e., the intention of the actions, the severity of harm caused) (Goss, 2002).

Looking at children's evaluations of the violators as friends, we hypothesized that there would be an interaction effect of severity and intention with the consequence that they would view aliens who could have prevented more severe harm as worse friends. Our results show that there was a main effect of severity with children rating violators in low severity cases more positively than in high severity cases. We also found a main effect of intention with children rated intentional violators as worse friends than accidental violators as better friends. The trend of rating intentional violators as more negative in high severity cases appears to continue in children's evaluations of the transgressors as good friends. While this trend was only found to be

a marginal interaction effect, a larger sample size could help in increasing the power to detect this effect.

Altogether, children tended to evaluate most violators as good friends. Since there was an apparent ceiling effect for the friend rating question, this rating scale contained limitations in finding potential differences between variables because of the lack of variance. By including the forced choice question, allowing for the most plausible option to be chosen, the children's judgments were more sensitive to intention and severity. We hypothesized that children would be less likely to choose transgressors as friends when the violations were in the intentional and high severity condition. With the forced choice friend question, we see our hypothesis supported as children, in high severity situations, preferred accidental aliens over intentional aliens as friends.

In summary, these results indicate that the effects of intention and severity impact children's social-moral evaluations. The present findings seem to suggest that children consider the amount of harm caused and the intent of the action when they evaluate transgressors morally and as friends. Children see those who refuse high severity protective measures on purpose as more morally wrong and worse friends.

### **Conclusion**

As we did not find any significant age effects in any of the dependent variables tested, the outcome-intention shift found in previous studies may be less developmentally precise. This shift of outcome to intention may relate more to the complexity of the task used to measure children's evaluations and an addition of complicated factors for children to consider in their decision making. Rather than a strict conceptual change of morality occurring around 4-5 years of age, under the conceptual continuity view, young children may not have fully developed executive functioning skills to properly express intent-based judgment but will showcase sensitivity to

intention on tasks with reduced processing demands (Margoni & Surian, 2020). With no significant differentiation between conditions for the different age groups tested, children as young as five years of age may have already developed this concept of intent in relation to morality. On the other hand, testing with a younger age range and using a more developmentally specific task for the different age ranges could showcase a better trend of children's use of intention in their judgments.

Another possible explanation for not observing the outcome-intention shift is that it is seen most clearly under a definitive causal scenario. Many paradigms used to study this shift revolve around showcasing an explicit good or bad outcome to one's actions and asking children to evaluate the transgressors based on their intentions. While, in this study, children understood that not wearing the protective measures led to harm/discomfort to others, after introducing the violator's intentions, we did not explicitly show them causing harm because of their actions. When analyzing children's moral evaluations, there was a marginal age effect with younger children rating all violators slightly more negatively and older children rating all violators more neutrally. This trend mimics the outcome-intention shift with younger children focusing more on the negative outcome, of causing others harm/discomfort, when the violators were not wearing the protective measure. Thus, it is possible that showing a clear consequence to their actions may allow for this shift to become more explicit.

Since in our study children made a distinction in their moral judgments of those who intentionally and accidentally did not wear the protective measure, these results may moralize other novel public health measures such as mask-wearing for COVID-19. Causing physical harm to others by poking them was used as the moral transgression in this study. The spreading of COVID-19 can also be seen as negatively having an impact on the welfare of others fitting in

with traditional moral norms. From this research, when the act of not wearing protective measures was framed as harming others, children saw those who intentionally refuse to protect other people as worse friends and more morally wrong.

On the other hand, the norm of mask-wearing has shifted based on specific guidelines and societal standards. Thus, children's judgments may be mediated by how harmful the moral transgression of spreading COVID-19 is believed. If the act of mask-wearing is framed as a more social-conventional norm, which focuses less on the harm for others, then this may impact children's socio-moral evaluations of others. Accordingly, our evidence illustrates that when there was no harm caused, children were more likely to judge both the accidental and intentional violators' actions as okay. For this reason, even if the act of not wearing a mask is seen as a moral transgression, how harmful children view COVID-19 could impact how severely they evaluate those who do not wear masks.

Since we found that intention and severity impact children's social-moral evaluations, this has implications for how children interact with others living in a world with COVID-19 and their adherence to COVID-19 rules. Children view the act of wearing protective measures as a moral issue and care about protecting others from harm. The results of this study indicate that when wearing protective measures is framed as preventing harm to others, children prefer being friends with someone who at least intends to follow protective measures and tries to protect others from harm. Therefore, framing mask-wearing and the following COVID-19 rules in terms of being a good friend and protecting others could be an effective way in children's adherence to public health measures.

### **Limitations**

While we attempted to recruit patients via a variety of different methods, the ability to obtain a diverse group data was restricted. Consequently, most of the children who we recruited were from the author's home institution and the lab's online database. The parents and their children, who were recruited from these databases, tend to have connections with education, research, and medicine. These children's experiences regarding protective measures may not reflect the general population of children. Thus, the generalizability of the results is questionable.

A major critique of using vignettes in intention-based research with children is the necessity of verbal responses from children. Researchers have hypothesized that intent-based evaluations may be occurring earlier than predicted, but children may have difficulties with verbally reporting with the procedures typically used (e.g., Margoni and Surian, 2016). There has been an increasingly number of studies researching intention using non-verbal responses, suggesting that children younger than 4-years-old could be sensitive to intention in their evaluations of others (Hamlin et al., 2013, Behne et al., 2005, Kuhlmeier, et al., 2003). While a potential concern for this study was that younger children could not understand the procedure and had trouble communicating their responses, all children passed the required comprehension checks. Thus, it is not for a lack of understanding as an explanation of our results. However, in the future a simpler method, without verbal responses, could detect and differentiate potential age differences and could allow for younger children to be studied.

### **Future Research**

This study specifically focused on the foundation behind children's evaluations of intentions by designing a paradigm that avoids triggering specific associations to COVID-19. Participants were recruited from across America; however, they were mainly from midwestern states which had mask mandates during the time in which this study was run. Future studies can

look more closely on how a child's experiences and views of COVID-19 could influence their evaluations of people who do not follow protective behaviors. An extension of this study might involve investigating both the parent and child's perspective on mask-wearing and how that could connect to their social-moral evaluations.

For this study, the act of poking and hurting someone was used as the main moral transgression. At the same time, potentially spreading COVID-19, by not wearing a mask, does not convey as tangible of a harm and as an immediate harm as poking someone else. In traditional transgression scenarios, children's assumptions of actors' anticipated outcomes influenced children's moral and liking judgments (Jones & Thomson, 2001). Thus, future research could use intent-outcome paradigms where the outcome is more ambiguous, and the severity of the outcome is uncertain to better mimic a COVID-19 mask-wearing scenario.

These findings provide insight into how children reason about public health behaviors. Children make more negative attributions to individuals who intentionally fail to protect others from harm. Even if someone forgets, their initial intention to wear protective measures, can absolve some of their culpability and can still maintain their reputation of being a good friend. When preventative measures are seen as a way to protect others, children view people who engage in these behaviors more positively and as better friends. Children's understanding of public health measures may be best explained when preventative measures are seen as a way of protecting others by being a good friend.



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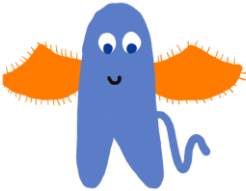





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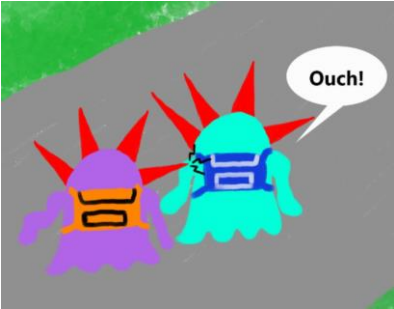


**Appendix A**

Stimuli of aliens and their protective measures

<b>Furpees</b>	<b>Blickets</b>	<b>Zibs</b>	<b>Ollers</b>
			
			

## Appendix B

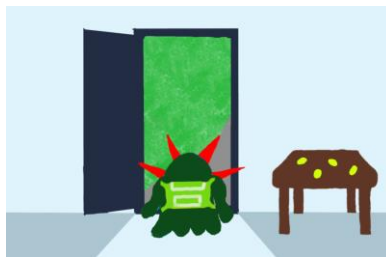
Stimuli and dependent measures as presented to participants

Narrative	Image	Measures
<p>Remember the Furpees? These are the aliens with the pokey spikes on their bodies that hurt other Furpees.</p>		<p><b>Comprehension Check 1</b> <i>When this Furpee is not wearing caps, who does the Furpee poke?</i> [themselves / other Furpees]</p>
<p>They can cover up their spikes with caps then they don't hurt other Furpees but the caps are heavy and make them feel uncomfortable.</p>		<p><b>Comprehension Check 2</b> <i>Does it hurt when the Furpee pokes other Furpees?</i> [yes, no]</p>
<p>This green Furpee decided to not wear the caps.</p>		

The green Furpee was in a rush getting ready to go to school. The green Furpee chose not to wear the caps then walked out of the door leaving the caps on the table.



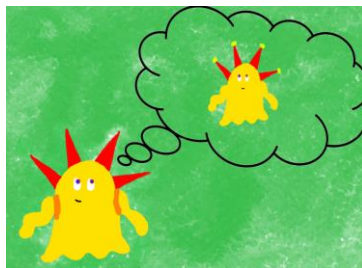
**Manipulation Check**  
*Did the green Furpee decide to not wear the caps on purpose, or did the green Furpee forget to put the caps on by accident?*  
 [on purpose, by accident]



**Morality Rating**  
*Do you think the green Furpee did something that was right or wrong or just okay?*  
 [really wrong, a little wrong, just okay, a little right, really right]

**Friend Rating**  
*Is the Green Furpee a good or bad friend?*  
 [really bad, a little bad, a little good, really good]

This yellow Furpee decided to wear the caps.



This yellow Furpee was in a rush getting ready to go to school. The yellow Furpee forgot about putting the caps on then walked out of the door leaving the caps on the table.



**Manipulation Check**

*Did the yellow Furpee decide to not wear the caps on purpose, or did the yellow Furpee forget to put the caps on by accident?*

[on purpose, by accident]



**Morality Rating**

*Do you think the yellow Furpee did something that was right or wrong or just okay?*

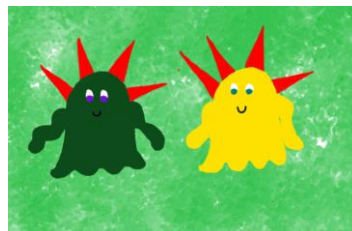
[really wrong, a little wrong, just okay, a little right, really right]

**Friend Rating**

*Is the yellow Furpee a good or bad friend?*

[really bad, a little bad, a little good, really good]

Remember that this green Furpee decided to not wear the caps on purpose and this yellow Furpee forgot to put the caps on by accident.



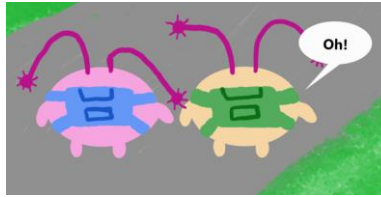
**Friend Forced Choice**

*Would you rather be friends with the green Furpee or yellow Furpee?*

[green Furpee, yellow Furpee]



Remember the Blickets?  
These are the aliens with the soft spikes on their antennas that just brush against other Blickets.



### Comprehension Check 1

*When this Blicket is not wearing a hat, who does the Blicket brush against?*  
[themselves, other Blickets]

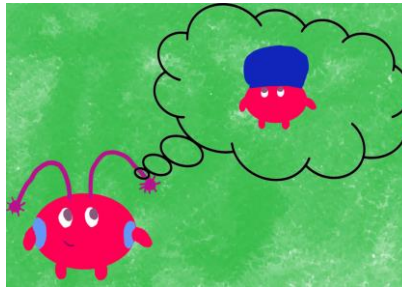
They can cover up their spikes with a hat then they don't brush against other Blickets, but the hat is heavy and make them feel uncomfortable.



### Comprehension Check 2

*Does it hurt when the Blicket brushes against other Blickets?*  
[yes, no]

This red Blicket decided to wear the hat.



This red Blicket was in a rush getting ready to go to school. The red Blicket forgot about putting the hat on then walked out of the door leaving the hat on the table.



### Manipulation Check

*Did the red Blicket decide to not wear the hat on purpose, or did the red Blicket forget to put the hat on by accident?*

[on purpose, by accident]

**Morality Rating**

*Do you think the red Blicket did something that was right or wrong or just okay?*

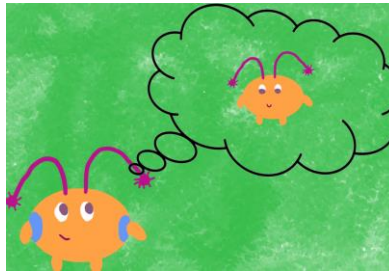
[really wrong, a little wrong, just okay, a little right, really right]

**Friend Rating**

*Is the red Blicket a good or bad friend?*

[really bad, a little bad, a little good, really good]

This orange Blicket decided to not wear the hat.



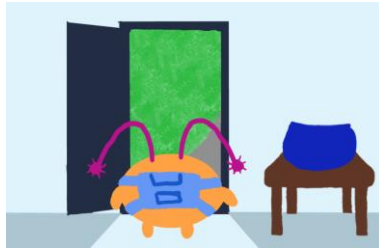
This orange Blicket was in a rush getting ready to go to school. The orange Blicket chose not to wear the hat then walked out of the door leaving the hat on the table.

**Manipulation Check**

*Did the orange Blicket decide to not wear the hat on purpose, or did the orange Blicket forget to put the caps on by accident?*

[on purpose, by accident]



**Morality Rating**

*Do you think the orange Blicket did something that was right or wrong or just okay?*

[really wrong, a little wrong, just okay, a little right, really right]

**Friend Rating**

*Is the orange Blicket a good or bad friend?*

[really bad, a little bad, a little good, really good]

Remember that this orange Blicket decided to not wear the hat on purpose and this red Blicket forgot to put the hat on by accident.

**Friend Forced Choice**

*Would you rather be friends with the red Blicket or orange Blicket?*

[red Blicket, orange Blicket]

## Appendix C

## Statistical models of morality rating

	<b>Full</b>	<b>Null</b>	<b>No severity</b>	<b>No intention</b>	<b>No severity*intention</b>
(Intercept)	1.83 (0.39) <sup>***</sup>	2.71 (0.21) <sup>***</sup>	1.49 (0.38) <sup>***</sup>	2.11 (0.40) <sup>***</sup>	1.67 (0.38) <sup>***</sup>
trial	0.01 (0.11)	-0.01 (0.13)	0.00 (0.11)	0.00 (0.13)	0.01 (0.11)
age	0.08 (0.04)		0.08 (0.04) <sup>*</sup>	0.08 (0.04)	0.08 (0.04)
gender	0.22 (0.13)		0.22 (0.13)	0.23 (0.13)	0.22 (0.13)
intention	0.59 (0.15) <sup>***</sup>		0.92 (0.11) <sup>***</sup>		0.92 (0.11) <sup>***</sup>
severity	-0.62 (0.15) <sup>***</sup>			-0.30 (0.13) <sup>*</sup>	-0.30 (0.11) <sup>**</sup>
intention:severity	0.64 (0.21) <sup>**</sup>				

*Note.* \*\*\*p < 0.001; \*\*p < 0.01; \*p < 0.05

## Appendix D

## Statistical models of friendship rating

	Full	Null	No severity	No intention	No severity*intention
(Intercept)	2.68 (0.41)***	2.95 (0.19)***	2.51 (0.41)***	3.01 (0.42)***	2.62 (0.41)***
trial	0.14 (0.10)	0.13 (0.11)	0.13 (0.10)	0.14 (0.11)	0.14 (0.10)
age	-0.01 (0.04)		-0.01 (0.04)	-0.01 (0.04)	-0.01 (0.04)
gender	0.07 (0.14)		0.07 (0.14)	0.07 (0.14)	0.07 (0.14)
intention	0.66 (0.14)***		0.79 (0.10)***		0.79 (0.10)***
severity	-0.38 (0.14)**			-0.24 (0.11)*	-0.24 (0.10)*
intention:severity	0.28 (0.19)				

Note. \*\*\*p < 0.001; \*\*p < 0.01; \*p < 0.05

**Appendix E**

## Statistical models of friend choice

	<b>Full</b>	<b>Null</b>	<b>No severity</b>
(Intercept)	2.71 (2.99)	1.50 (1.04)	2.42 (1.93)
trial	0.31 (0.71)	0.46 (0.60)	0.49 (0.60)
age	-0.07 (0.25)		-0.05 (0.19)
gender2	-1.40 (1.06)		-1.13 (0.71)
severity1	2.05 (1.15)		

*Note.* \*\*\* $p < 0.001$ ; \*\* $p < 0.01$ ; \* $p < 0.05$