

What If Pascale Had Gone to Another School: The Effect of Counterfactual Alternatives on 5-6-year-olds' Moral and Happiness Judgments

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Abstract

Counterfactual reasoning is at the centre of human daily life and plays a key role in shaping our moral and social judgments. Its effect on moral judgment in adulthood, such as justifying immoral behavior (e.g., “If you had not left your phone on the table, it would not have been stolen.”), has been studied for years. However, we still know very little about when counterfactual reasoning starts to affect humans' moral judgments. To test this, we examined the effect of better and worse counterfactual alternatives on 5-6-year-olds' (N = 91) moral and happiness judgments. We found that children judged social exclusion (e.g., a new kid has to play alone while other children play together) as less morally acceptable after imagining how it could have been better (e.g., the new kid and other children at the school could have played all together), but, contrary to past work with adults, they did not justify it after imagining how it could have been even worse (e.g., the other children could have broken the new kid's toy). However, children's happiness judgments showed the opposite effect: they reported feeling happier about reality after imagining a worse counterfactual alternative compared to children who only thought about what actually happened.

Keywords: counterfactuals; moral judgment; children; happiness judgment

Introduction

In daily life, we often consider not only what happened but also how things could have been different (Byrne, 2016). This way of thinking – *counterfactual thinking* – can have widespread effects on learning (Epstude & Roese 2008), causal reasoning (McCloy & Byrne, 2002), and the experience of emotions like regret and relief (Beck, Weisberg, Burns & Riggs, 2014). Another crucial effect of counterfactual thoughts is on our *moral judgments* (Byrne, 2020). We know that imagining counterfactual alternatives can lead adults to change their moral judgments in various ways, from justifying immoral behavior to making fairer judgments. In the current study, we investigated whether and when counterfactual alternatives begin influencing children's moral judgments in development.

In a seminal study with adults, one group of participants was informed about the bad treatment of Iraqi prisoners by US soldiers in Iraq, whereas another group imagined how Iraqi prisoners' treatment could have been worse under Saddam Hussein's authority (Markman, Mizoguchi & McMullen, 2008). Participants who considered how things could have been worse reported less morally outraged emotions and showed lower ethical standards about the conduct of US soldiers in a future war than participants who

had only thought about what actually happened. This finding shows how counterfactuals can influence adults' moral judgments.

Counterfactuals can also have positive effects on morality. In some cases, imagining how things could have been better promotes moral behavior (Timmons, Gubbins, Almeida & Byrne, 2021; Timmons & Byrne, 2023). Timmons et al. (2021) asked participants to recall a morally bad memory. Then, they were prompted to think about how what happened could have turned out differently and asked whether they thought about changing their behaviors. Participants predominantly imagined how things could have been morally better and reported they were willing to change their behaviors to be fairer. For instance, one participant recalled a childhood memory of a girl who was bullied in school. After creating better counterfactuals, the participant reported plans for how children could be included in social groups in today's world. These findings suggest that some types of counterfactuals can support adults to engage in plans to behave more morally in the future.

Recently, researchers have looked at how imagined (counterfactual) alternatives can affect young children's social evaluations (Gautam, Owen Hall, Suddendorf & Redshaw, 2023; Kushnir, 2022; Wong, Cordes, Harris, Chernyak & 2023; Zhao, Zhao, Gweon & Kushnir, 2021). In a study by Zhao et al (2021), 4-6-year-old children were presented with a character, Sophia, who waits in line to get a snack on two separate occasions—with a friend before her each time. Both friends, having made their choice of snack, always leave behind the same varied set of choices for Sophie (an apple and a banana). In one case, the friend in front of her makes a choice from two apples and a banana, whereas the other friend has a choice of an orange, an apple, and a banana. The crucial point is that the friend in the first scenario could have left fewer options – she could have taken a banana, leaving only apples for Sophie – whereas the friend in the second scenario had no alternative possibility to be more/less considerate, because there was only one fruit of each kind. By 6 years of age, children judged the first character who could have been *less* considerate as nicer than the one who had no opportunity to be more/less considerate even though the options available to Sophie were exactly the same (a banana and an apple). These results suggest that children consider counterfactual alternatives when making social evaluations. Subsequent studies also suggest that children's

social/moral evaluations are shaped by alternative possibilities around the age of 6-7 (Gautam et al., 2023; Wong et al., 2023).

However, we know little about when and how counterfactual possibilities start to affect children's *moral judgments* in development. Studies with children so far have focused on the effect of imaginary alternatives on the *social evaluation of a character* (e.g., which character is nicer-meaner) in limited social contexts such as social mindfulness (Zhao et al., 2021; Gautam et al., 2023). Moreover, they examined whether children implicitly consider counterfactual alternatives when making social evaluations. Although these studies provide some evidence for the effect of alternatives possibilities on children's evaluations, we know very little about if and when this effect emerges in different contexts such as social exclusion and for different types of evaluations (e.g., moral evaluation of a situation or behaviour) throughout childhood. Here, we explicitly prompted children to envision counterfactual alternatives ("how a situation could have been better/worse") and then examined if it made an impact on children's moral evaluations (i.e., how good or bad) of social exclusionary behaviour. We also examined the affective consequence of counterfactual comparisons.

The Current Study

In the current study, we looked at whether and when children's moral evaluations and affective responses are influenced by the availability of better or worse counterfactual alternatives, as they are with adults.

To determine an age range for the current study, we considered both when children start to make moral judgments and when they can engage in mature counterfactual reasoning. Children begin showing moral preferences in infancy (e.g., preferring helpful characters over hindering ones; Hamlin, Wynn, Bloom & Mahajan, 2011; Killen & Smetana, 2015); however, the ability to make explicit moral judgment does not emerge until around 3.5-4 years of age (e.g., being able to evaluate hitting someone as morally worse than jumping in class) (Smetana, Ball, Jambon & Yoo, 2018; Smetana, Jambon & Ball, 2014).

Regarding the development of counterfactual reasoning, there is mixed evidence over when it emerges, with most data pointing to children being able to engage in mature counterfactual reasoning between the ages of age 4 (Harris, German & Mills, 1996; Nyhout & Ganea, 2019) and 6 years (McCormack, Ho, Gribben, O'Connor & Hoerl, 2018; Rafetseder & Perner, 2018). Considering both the counterfactual and moral domains, we decided to include children aged 4-6 in the current study. After testing 11 4-year-olds, we decided not to proceed with testing this age group because 5 of them failed the control questions.

To test the effects of counterfactual alternatives on children's moral judgments, we presented children with short stories about a character whose family is moving to a new area and choosing between two schools. The character goes to one school, where s/he experiences mild social exclusion. In the experimental conditions, children then learned about the other school the character could have gone to, where s/he would have been treated either *better* or *worse*. Children in the control condition did not learn about an alternative school. We then examined children's judgments of the school the character actually went to.

For the study content, we chose to focus on social exclusion in a school environment because of its ubiquity in the early years (Fanger, Frankel & Hazen, 2012). Multiple factors play into children's moral evaluations of social exclusion, such as group identity (Killen, 2007; Killen, Mulvey & Hitti, 2013; Mulvey, 2016). Taking into account the complicated nature of social exclusion (Mulvey, 2016; Ruthland, Palmer, Şule-Yüksel & Grütter, 2022), we decided to create scenarios which did not include group-based variable such as gender, nationality, ethnicity, or immigrant status.

We hypothesized that (1) children exposed to a *better* counterfactual alternative would judge the actual scenario as less morally acceptable and would report more negative emotions, and (2) children exposed to a *worse* counterfactual alternative would judge the actual scenario as more morally acceptable and would report more positive emotions compared to children in the control condition who were not exposed to an alternative scenario. We did not have strong predictions about the age at which these trends would appear.

Method

Participants

All data were collected online via Zoom. We tested 91 children aged between 5-6¹: 31 children in the control condition (M = 5.48, SD = .51, 18 girls); 30 children in the worse alternative condition (M = 5.53, SD = .51, 14 girls); 30 children in the better alternative condition (M = 5.50, SD = .51, 18 girls). The study was pre-registered. Children in our final sample were 78.31% White, 16.87% Mixed-Multiple, 2.41% Asian, 2.41% Other Ethnic Groups (Eight parents did not indicate their ethnicity). We tested an additional 18 children, but excluded them for the following reasons (as per pre-registered exclusion criteria): having a developmental disorder (n = 2), unwillingness to answer test questions (n = 2), answering memory-check questions at or below chance level (n = 1), failing to pass either of the two counterfactual control questions (n = 13). Children resided in the UK and had to be exposed to English at least 50% of the time since birth. Parents were asked to confirm their child understood and spoke English fluently and did not have any developmental concerns.

¹We had planned to include 4-year-olds in the study, but they struggled to pass the control questions. Therefore, the final sample includes 5-6-year-olds.

Design, Procedure, and Study Materials

Participants were randomly assigned to one of three conditions: *control*, *better alternative*, or *worse alternative* conditions. All participants were presented with a character, called Pascale, who transferred to a new school. Children in the *control* condition were told that Pascale’s family decided to send her to Green School and watched the *Actual* video depicting what actually happened to her at Green School.

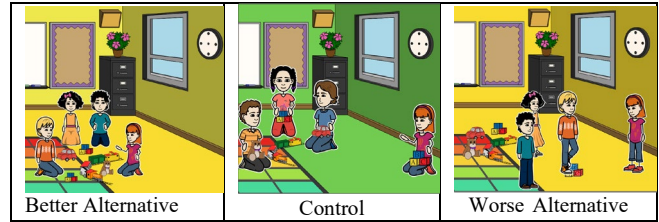
Excerpt script for the Actual video. *The kids in the class say hello to Pascale. At art time, she paints by herself while the other children paint together. At play time, she plays on her own, and the other kids do not share their toys with her. After school, she plays alone in the garden while the other children play football together.*

Children in the *better* and *worse alternative* conditions were told that Pascale’s family sent her to the Green School, but were also informed that Pascale could have gone to the Yellow School. They first watched what actually happened to Pascale at the Green school like the children in the control condition. However, afterwards, they watched another video about what could have happened to Pascale if she had gone to the Yellow School. Table 1 contains images describing a scene for each kind of video.

Excerpt script for the Better Alternative Video (For the children in the better alternative condition). *If Pascale had gone to the yellow school, the kids in the yellow school would have welcomed her and wanted to talk to her. At art time, they all would have worked together to make a big painting. At playtime, the kids in the yellow school would have shared their toys with her. After school, they all would have played football together.*



Excerpt script for Worse Alternative Video (For the children in the worse alternative condition). *If Pascale had gone to the yellow school, the kids in the yellow school would have ignored her and would not have wanted to talk to her. At art time, kids in the yellow school would have taken away all the good colours of paint. At playtime, the other kids would have taken away Pascale’s toy and broken it. After school, the other kids would not have played with Pascale and splashed her with water.*

Table 1: Images depict an example scene (playtime) from each type of scenario (main character has red hair and a pink top). Note: the participant’s and the main character’s gender identity were matched. The colours of the actual and alternative schools were counterbalanced.



After watching the videos, children were asked a series of memory-check questions to see if they remembered details about the scenarios. Afterwards, all children were asked questions about what *actually happened* to Pascale: a moral judgment question (“Was what happened at the Green School bad/just okay/or good?”) and a happiness judgment question (“Do you feel sad/just okay/or happy about what happened at the Green School?”). The test questions were asked in a fixed order, with the moral judgment question always coming first. The order from bad to good and sad to happy was counterbalanced. For each question, we first asked children about their judgments with a 3-point scale (moral: good/just okay/bad; happiness: happy/just okay/sad) on the screen. Children indicated their judgment verbally. If they chose good or bad, or happy or sad (any choice other than “just okay”), we asked them whether it was “a little” or “a lot” good/bad/happy/sad. During these questions, we displayed the actual video’s scenes in the form of a comic strip on the top of the screen to ensure clarity of reference and to ensure children remembered what happened at the Green School, above the response scales (Table 2). Test questions and response scales were adapted from past studies of children’s moral judgments (Malle, 2021; Weisberg & Leslie, 2012).

Table 2: Demonstration of adapted Likert scales for the moral and happiness judgment questions.

 <p>Moral Judgment</p>	<p>“Was what happened at the Green School bad/just okay/or good?” . If children answered “good” or “bad”, they were asked “a little” or “a lot” bad/good.</p>
 <p>Happiness Judgment</p>	<p>“Do you feel sad/just okay/or happy about what happened at the Green School?” If children answered “sad” or “happy”, they were asked “a little” or “a lot” sad/happy.</p>

Finally, children in the *better* and *worse alternative* conditions were asked two counterfactual control questions: (1) Could Pascale have gone to a different school? and (2) What could have happened if Pascale went to the Yellow

school? We have added these questions at the end of the study to ensure children had the required cognitive skills to engage in a counterfactual comparison process when making their judgments and whether they understood the relevant details about the plot we presented.

Results

Moral Judgment. We ran an ordinal logistic regression to examine whether condition and age predicted children’s moral judgments (scaled from 1= a lot bad to 5 = a lot good). Our model included condition (control vs. better vs. worse alternative) as a categorical predictor; age in months (mean-centred) as a covariate; and the interaction term of age and condition. This model showed that the main effect of Condition was significant, $\chi^2(2) = 32.05, p < .001$, whereas the effects of Age, $\chi^2(1) = .11, p = 0.745$, and the Condition x Age interaction, $\chi^2(2) = 1.11, p = 0.573$. Children in the better alternative condition made more negative moral judgments of the actual school Pascale went to compared to children in the control condition, OR = .08, 95% CI [.03 – .23], Estimate = -2.52, 95% CI [-3.66 – -1.46], SE = .56, $p < .001$. Contrary to our hypothesis, moral judgments were not significantly different between the *worse alternative* and *control* conditions, OR = 1.18, 95% CI [.46 – 3.07], Estimate = .17, 95% [-.78 – 1.12], SE = .48, $p = .729$. However, a separate regression revealed children in the worse alternative condition made more positive moral evaluations than those in the better alternative condition, OR = 14.72, 95% CI [5.10 – 46.28], Estimate = 2.69, 95% [1.63 – 3.83], SE = .56, $p < .001$. Figure 1 shows the predicted probabilities for each level (from a lot bad to a lot good) of moral judgment by condition.

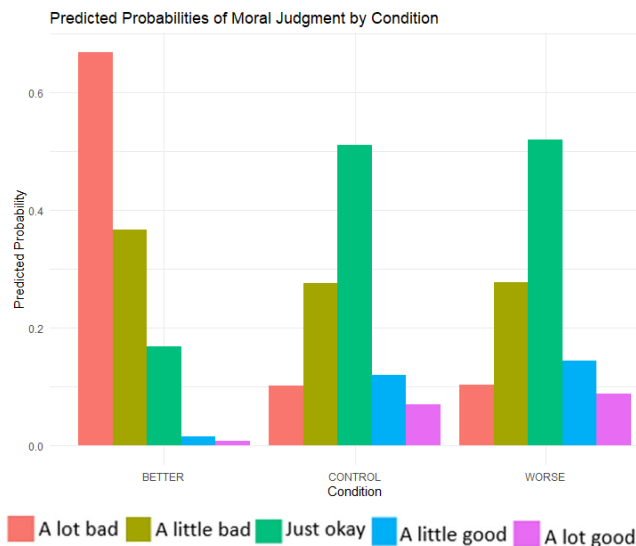


Figure 1: Predicted probabilities for each level of moral judgment by condition

Happiness Judgment. We ran another ordinal logistic regression to examine the effect of condition and age in months (mean-centered) on children’s happiness judgments (scaled from 1= a lot sad to 5 = a lot happy). This model revealed a significant main effect of Condition on happiness judgment, $\chi^2(2) = 14.44, p < .001$. The effect of Age, $\chi^2(1) = .79, p = 0.373$ and the Condition x Age interaction, $\chi^2(2) = 3.57, p = 0.168$, were not statistically significant. Being in the worse alternative condition was associated with higher happiness judgments compared to the control condition, OR = 2.91, 95% CI [1.12 – 7.76], Estimate = 1.07, 95% [.12 – 2.05], SE = .49, $p = .030$. Contrary to our hypothesis, being in the *better alternative* condition was not associated with lower happiness judgments compared to those in the control condition, OR = .44, 95% CI [.17 – 1.14], Estimate = -.81, 95% [-1.76 – .13], SE = .48, $p = .093$. However, a separate regression showed children in the better alternative felt less happy than those in the worse alternative OR = .15, 95% CI [.05 – .41], Estimate = -1.87, 95% [-2.90 – -.89], SE = .51, $p < .001$. Figure 2 shows the predicted probabilities for each level (from a lot sad to a lot happy) of happiness judgment by condition.

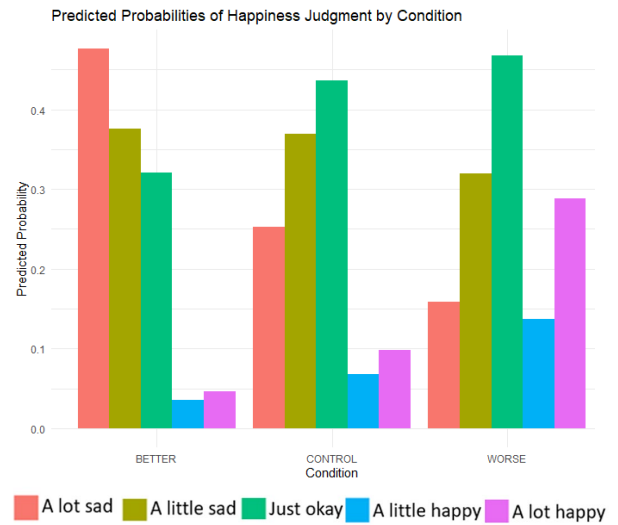


Figure 2: Predicted probabilities for each level of happiness judgment by condition

Exploratory analysis on the relationship between Happiness Judgment and Moral Judgment. We ran a correlation analysis to examine the relation between children’s happiness and moral judgments. There was a moderate positive correlation between happiness and moral judgments, $r(89) = .44, p < .001$. Follow-up correlation analyses for each condition revealed a weak positive correlation between moral and happiness judgment for children in the better alternative condition, $r(28) = .37, p = .043$, and a moderate positive correlation for those in the control condition, $r(29) = .49, p = .005$. However, for the worse alternative condition, we did not observe a significant correlation, $r(28) = .04, p = .834$. Figure 3 visualizes the relationship between moral and happiness judgments.

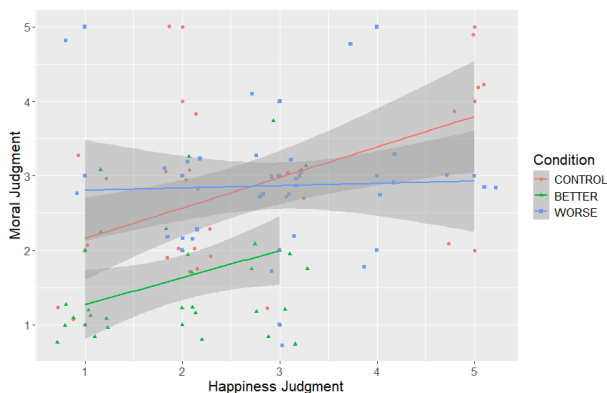


Figure 3: Scatter plot of happiness judgments vs. moral judgments by condition. Rating ranged from 1 to 5, with lower values indicate less happy (happiness judgment) and worse (moral judgment). The shaded areas represent 95% confidence intervals. Jitter function was used.

Discussion

In this study, we examined the effect of better and worse imagined alternatives to reality on young children’s moral evaluations and happiness judgments in the context of social exclusion. Five- and six-year-olds evaluated a situation as less morally acceptable after considering how things could have been better, which suggests that *better* counterfactual alternatives support young children to make better moral judgments, at least in the context of social exclusion.

However, we did not find evidence that *worse* counterfactual alternatives also shape children’s moral judgments about social exclusion in the age range studied. With an older sample, we may have found an effect of worse counterfactual alternatives, as this effect has been found in adults (Markman, Mizoguchi & McMullen, 2008). This proposed developmental gap between the effect of worse and better counterfactuals could be because morally acceptable events are default representations in the human mind (Hitchcock & Knobe, 2009; Phillips & Cushman, 2017), so envisioning how social exclusion could have been prevented (better counterfactual alternative) might be cognitively less effortful/more accessible than envisioning how social exclusion could have been even worse (worse counterfactual alternative). Although children in the worse alternative condition passed our counterfactual control questions, suggesting they understood these as alternative possibilities, the short time in which they made their moral judgments may not have left them with adequate time to reflect on and compare what happened and what could have been worse. Unlike those in the worse alternative condition, children in the better alternative condition might need less time to engage in a counterfactual comparison process because the process of envisioning a better counterfactual alternative might come more readily to them.

Another possible explanation for the finding that children’s moral judgments differed between the *control* condition and the *better alternative* condition but not the *worse alternative* condition could be that children saw the disparity between the *actual* scenario and the *better alternative* scenario as greater than the disparity between the *actual* scenario and the *worse alternative* scenario. In our sample, a few children indicated that what happened at the worse alternative school was *still* mean, suggesting perhaps a decreased contrast effect between actual and worse alternative scenarios. Due to the higher plausibility of morally acceptable counterfactual alternatives and the higher contrast effect between better and control condition, the effect of better counterfactual alternatives on morality may emerge developmentally earlier than the effect of worse counterfactuals.

Although the moral judgment question did not appear to be sensitive to the difference between the *worse alternative* and *control* conditions, we found a different pattern of findings on the happiness judgment question. Children who saw the *worse alternative* scenario reported feeling happier about the actual school Pascale went to than those in the *control* condition, but no such difference existed on the happiness ratings between children in the *better alternative* and *control* conditions. One possible explanation for why worse counterfactuals changed children’s own happiness judgment but not better counterfactuals could be related to how children interpret the plot. More specifically, we did not give any information about why Pascale and the other children at the school did not do any activities together, instead we only described the situation from outside. Therefore, participants might think that it was Pascale’s own wish to be alone. With this logic, participants could feel happier after learning what could have happened in the worse alternative school, where Pascale could have been treated in a way no one would want (e.g., the other children could have splashed her with water) but they did not feel sadder after they saw how Pascale could have done activities with others in the better alternative, because being alone could be what Pascale wanted, rather than being other children. A future study could include the character’s desire to be with other children at the school to examine whether worse and better counterfactuals follow the same pattern. We might expect happiness (affect) judgments to be more influenced by the character’s desires and goals than moral judgments, which may be more objective, outsider views of a situation.

We asked children make their *own happiness judgments* because we expected that their affective positions about an unpleasant social issue and moral evaluations might be interrelated. Even though we did not find a significant change in their affective response—but in their moral judgments—after envisioning a better alternative to reality, there was still a weak *positive correlation* between their moral evaluations and happiness judgments. In contrast to the pattern we observed in the current study, past studies have found that better alternatives appear to affect children’s emotion

judgments earlier (by the age of 4-5) than worse alternatives in a non-social context (Lara, Lagattuta & Kramer, 2019; Doan, Friedman & Denison, 2020). For instance, children in one study judged that characters who expected that they could have received more of a reward felt less happy than characters who did not have higher expectations, even when the outcome was the same for everyone (Doan, Friedman & Denison, 2020). However, this study measured others' emotions (i.e., how the character felt) which requires perspective-taking rather than participant's own emotions about an undesirable social situation which might require more empathic concern (e.g., concern/negative feelings for Pascale). Given these results, it is necessary to examine the relation among moral evaluations, own happiness judgments, and understanding others' feelings. Our study has provided the first look, to our knowledge, at the effect of imagined alternatives on two of these judgments: moral evaluations and own happiness judgments in the context of social exclusion.

The current findings raise several questions for future research. First, one of the factors masking the effect of worse counterfactual alternatives on moral judgment may be insufficient time to represent the worse counterfactual alternative in the mind because people tend to imagine how things could have been better rather than worse. Therefore, future studies might manipulate the time children spend making moral judgments because having longer time could help children to construct more vivid representations of worse counterfactual alternatives. Studies could also ask children to spontaneously generate alternatives to examine their features and see how they might influence children's judgments of reality.

Second, features of the wider context could also influence children's moral and affective judgments of social exclusion. We know that group-based variables such as gender, ethnicity, or immigrant status also play a role when evaluating social/peer exclusion (Killen, Mulvey & Hitti, 2013; Killen, 2007; Mulvey, 2016). For example, if group members think someone causes their group to fail or disrupt the group cohesion, excluding this person could be seen as legitimate. Thus, it is important to examine whether the effect of better counterfactual alternatives on moral judgments lasts even under the presence of group-based variables (e.g., excluding a girl vs. a boy from a football team).

Third, in addition to contextual factors, the underlying mechanism of counterfactual simulation also needs to be uncovered. In the current study, children could have arrived at their judgments via social comparison, counterfactual comparison, or some integration of the two (Folger & Kass, 2000; Olson, Buhrmann & Roese, 2000). For example, they might build a mental model involving only *social comparison* like "yellow school children were better than green school children so green school was bad.". However, they could also construct a mental simulation involving only *counterfactual*

comparison like "what happened at the green school could have been better, and green school children could have invited Pascale into their game". In the second constructed mental model, children could envision a representation of more inclusive behaviours to how green school children actually behaved without reference to the yellow school. In other words, they might create a unique but more inclusive counterfactual alternative after realizing there are different possibilities of reality. Another mental model, in line with integrated social comparison—counterfactual simulation approach of Folger and Kass (2000), might consist of both social comparison and counterfactual reasoning. More explicitly, children might use social comparison to create a counterfactual simulation model such as "green school children could have behaved like yellow school children - they and Pascale could have painted and played together". In this simulated model, children use the behaviours of yellow school children as a template for counterfactual alternatives to the behaviours of green school children. In a follow-up study, we are directly examining the unique effect of counterfactual comparison on children's evaluations by ruling out the possibility of a social comparison effect alone.

Finally, although we found that better counterfactuals change children's *moral judgment* in a positive direction, we do not know whether they affect children's prosocial behaviour in the realm of social inclusion. Children in the better alternative condition evaluated the actual scenario as morally worse, but this does not tell us whether they change their attitudes/behaviour around peer inclusion. For example, would they be more likely to invite a lonely child to join their group in the future? Examining whether better counterfactual alternatives support children's prosocial behaviour is an important focus for future study.

In conclusion, we showed that 5- to 6-year-old children change their moral evaluations after mentally representing how things could have been better rather than worse, making better moral evaluations after imagining better alternatives. In contrast to studies with adults, children did not appear to use worse alternative possibilities to justify (negative aspects of) reality. These effects are promising, suggesting a morally enhancing effect of better alternative possibilities, but no trade-off of the flipside. However, we found the opposite pattern for the effect of counterfactuals on happiness judgment. While better counterfactual alternatives did not significantly affect children's happiness judgment, worse ones made children feel happier about reality.

Based on our findings, positive imagination could be leveraged to change children's reasoning about social exclusion, which could help to create more inclusive environments, free from exclusion. Moreover, as we did in the current study, parents and teachers can explicitly prompt children to imagine better counterfactuals to reality in their day-to-day conversations to positively shape children's evaluations.

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References

- Beck, S. R., Weisberg, D. P., Burns, P., & Riggs, K. J. (2014). Conditional reasoning and emotional experience: A review of the development of counterfactual thinking. *Studia Logica*, 102, 673-689. DOI: 10.1007/s11225-013-9508-1
- Byrne, R. M. J. (2016). Counterfactual thought. *Annual Review of Psychology*, 67, 135-157. <https://doi.org/10.1146/annurev-psych-122414-033249>
- Byrne, R. M. J. (2020). The counterfactual imagination: The impact of alternatives to reality on morality. In A. Abraham (Ed.), *The Cambridge handbook of the imagination*. Cambridge University Press. <https://doi.org/10.1017/9781108580298.032>
- Doan, T., Friedman, O., & Denison, S. (2020). Young children use probability to infer happiness and the quality of outcomes. *Psychological Science*, 31(2), 149-159. <https://doi.org/10.1177/0956797619895282>
- Epstude, K., & Roese, N. J. (2008). The functional theory of counterfactual thinking. *Personality and Social Psychology Review*, 12(2), 168-192. <https://doi.org/10.1177/1088868308316091>
- Fanger, S. M., Frankel, L. A., & Hazen, N. (2012). Peer Exclusion in Preschool Children's Play: Naturalistic Observations in a Playground Setting. *Merrill-Palmer Quarterly*, 58(2), 224-254. <http://www.jstor.org/stable/23098463>
- Folger, R., & Kass, E. E. (2000). Social comparison and fairness: A counterfactual simulations perspective. *Handbook of social comparison: Theory and research*. Boston, MA: Springer US.
- Gautam, S., Owen Hall, R., Suddendorf, T., & Redshaw, J. (2023). Counterfactual choices and moral judgments in children. *Child Development*.
- Hamlin, J. K., Wynn, K., Bloom, P., & Mahajan, N. (2011). How infants and toddlers react to antisocial others. *Proceedings of the national academy of sciences*, 108(50), 19931-19936. <https://doi.org/10.1073/pnas.1110306108>
- Harris, P. L., German, T., & Mills, P. (1996). Children's use of counterfactual thinking in causal reasoning. *Cognition*, 61(3), 233-259.
- Hitchcock, C., & Knobe, J. (2009). Cause and norm. *The Journal of Philosophy*, 106(11), 587-612. <https://www.jstor.org/stable/20620209>
- Killen, M. (2007). Children's social and moral reasoning about exclusion. *Current Directions in Psychological Science*, 16(1), 32-36. <https://doi.org/10.1111/j.14678721.2007.00470.x>
- Killen, M., & Smetana, J. G. (2015). Origins and development of morality. *Handbook of child psychology and developmental science*, 3(7), 701-749.
- Killen, M., Mulvey, K. L., & Hitti, A. (2013). Social exclusion in childhood: A developmental intergroup perspective. *Child development*, 84(3), 772-790. <https://doi.org/10.1111/cdev.12012>
- Kushnir, T. (2022). Imagination and social cognition in childhood. *Wiley Interdisciplinary Reviews: Cognitive Science*, 13(4), e1603.
- Lara, K. H., Lagattuta, K. H., & Kramer, H. J. (2019). Is there a downside to anticipating the upside? Children's and adults' reasoning about how prior expectations shape future emotions. *Child development*, 90(4), 1170-1184. <https://doi.org/10.1111/cdev.12994>
- Malle, B. F. (2021). Moral judgments. *Annual Review of Psychology*, 72, 293-318. <https://doi.org/10.1146/annurev-psych-072220-104358>
- Markman, K. D., Mizoguchi, N., & McMullen, M. N. (2008). "It would have been worse under Saddam:" Implications of counterfactual thinking for beliefs regarding the ethical treatment of prisoners of war. *Journal of experimental social psychology*, 44(3), 650-654. <https://doi.org/10.1016/j.jesp.2007.03.005>
- McCloy, R., & Byrne, R. M. J. (2002). Semifactual "even if" thinking. *Thinking & Reasoning*, 8(1), 41-67. <https://doi.org/10.1080/13546780143000125>
- McCormack, T., Ho, M., Gribben, C., O'Connor, E., & Hoerl, C. (2018). The development of counterfactual reasoning about doubly-determined events. *Cognitive Development*, 45, 1-9. <https://doi.org/10.1016/j.cogdev.2017.10.001>
- Mulvey, K. L. (2016). Children's reasoning about social exclusion: Balancing many factors. *Child Development Perspectives*, 10(1), 22-27. <https://doi.org/10.1111/cdep.12157>
- Nyhout, A., & Ganea, P. A. (2019). Mature counterfactual reasoning in 4-and 5-year-olds. *Cognition*, 183, 57-66. <https://doi.org/10.1016/j.cognition.2018.10.027>
- Olson, J. M., Buhrmann, O., & Roese, N. J. (2000). Comparing comparisons: An integrative perspective on social comparison and counterfactual thinking. *Handbook of social comparison: Theory and research*. Boston, MA: Springer US.
- Phillips, J., & Cushman, F. (2017). Morality constrains the default representation of what is possible. *Proceedings of the National Academy of Sciences*, 114(18), 4649-4654. <https://doi.org/10.1073/pnas.1619717114>
- Rafetseder, E., & Perner, J. (2018). Belief and counterfactuality. *Zeitschrift für Psychologie*, 110-121. <https://doi.org/10.1027/2151-2604/a000327>
- Rutland, A., Palmer, S. B., Yüksel, A. Ş., & Grütter, J. (2022). Social Exclusion: The Interplay Between Morality and Group Processes. In *Handbook of Moral Development*. Routledge.
- Smetana, J. G., Ball, C. L., Jambon, M., & Yoo, H. N. (2018). Are young children's preferences and evaluations of moral and conventional transgressors associated with domain distinctions in judgments?. *Journal of Experimental Child Psychology*

- Psychology*, 173, 284-303.
<https://doi.org/10.1016/j.jecp.2018.04.008>
- Smetana, J., Jambon, M., & Ball, C. (2014). The social domain approach to children's moral and social judgments. In M. Killen & J. Smetana (Eds.), *Handbook of moral development*. New York: Psychology Press.
- Timmons, S., & Byrne, R. M. (2023). How People Think about Moral Excellence. *Advances in Experimental Philosophy of Action*, 209-220. [10.5040/9781350266353.0017](https://doi.org/10.5040/9781350266353.0017)
- Timmons, S., Gubbins, E., Almeida, T., & Byrne, R. M. J. (2021). Imagined alternatives to episodic memories of morally good acts. *The Journal of Positive Psychology*, 16(2), 178–197. <https://doi.org/10.1080/17439760.2019.1689410>
- Weisberg, D. S., & Leslie, A. M. (2012). The role of victims' emotions in preschoolers' moral judgments. *Review of Philosophy and Psychology*, 3(3), 439–455. <https://doi.org/10.1007/s13164-012-0101-8>
- Wong, A., Cordes, S., Harris, P. L., & Chernyak, N. (2023). Being nice by choice: The effect of counterfactual reasoning on children's social evaluations. *Developmental Science*, e13394.
- Zhao, X., Zhao, X., Gweon, H., & Kushnir, T. (2021). Leaving a choice for others: Children's evaluations of considerate, socially-mindful actions. *Child development*, 92(4), 1238-1253.