# Parents' Political Ideology Predicts How Their Children Punish

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**Open Practices Statement:** Experiment 1 was not pre-registered; all data, analysis scripts, and materials are publicly available at https://osf.io/y9s3k/?view_only=be8495e21bf04172be0f013edb9e37f4. Experiment 2 was pre-registered; the pre-registration is available at https://osf.io/4kpg8/?view_only=08866aebad4d4681be4acec79eb64f83. All data, analysis scripts, and materials for Experiment 2 are publicly available at https://osf.io/y9s3k/?view_only=be8495e21bf04172be0f013edb9e37f4.

**Word Count**: **2,000/2,000**

**Abstract**

From an early age, children are willing to pay a personal cost to punish others for violations that do not affect them directly. Various motivations underlie such "costly punishment": people may punish to enforce cooperative norms (amplifying punishment of *in-groups*) or to express anger at perpetrators (amplifying punishment of *out-groups*). Thus, group-related values and attitudes (e.g., how much one values fairness or feels out-group hostility) likely shape the development of group-related punishment. The present experiments ($N$=269, ages 3-8) tested whether children's punishment varies according to their parents' political ideology—a possible proxy for the value systems transmitted to children intergenerationally. As hypothesized, parents' self-reported political ideology predicted variation in the punishment behavior of their children. Specifically, parental conservatism was associated with children's punishment of out-group members, and parental liberalism was associated with children's punishment of in-group members. These findings demonstrate how differences in group-related ideologies shape punishment across generations.

**Word Count: 149/150**

**Keywords:** Social cognition, punishment, morality, cognitive development, political ideology, belief transmission, intergroup dynamics

## Statement of Relevance

A remarkable aspect of human behavior is that people are willing to punish wrongdoers for actions that did not affect them directly, even when it is costly to do so. For example, one might file a police report for a crime they witnessed, even if it makes them late to work. We considered how the development of this behavior—particularly *who* children punish—might vary as a function of the group-related values and attitudes (e.g., fairness concerns, out-group dislike) transmitted to them. To do so, we tested whether children's punishment varies according to the political ideology of their parents. As predicted, differences in parents' political ideology corresponded to differences in children's punishment behavior. Conservatism was associated with punishment of out-groups, whereas liberalism was associated with punishment of in-groups. These findings illustrate that values and attitudes transmitted intergenerationally influence how people respond to moral transgressions within and outside of their communities.

**Word Count: 150/150**

## Parents' Political Ideology Predicts How Their Children Punish

From early in development, children are willing to incur a personal cost to punish the wrongdoings of others, even when those wrongdoings do not affect them directly (Jordan et al., 2014; Marshall et al., 2020; Yudkin et al., 2020). This behavior—known as *costly third-party punishment*—is pervasive across cultures (Henrich et al., 2006). Yet, the motivations that underlie it remain unclear. One possibility is that a desire to enforce cooperative norms within a community motivates costly third-party punishment (Mathew & Boyd, 2012). By this account, people should be most willing to punish members of their own communities, for whom norm compliance is most important. Alternatively, punishment may reflect a desire to cause harm or express anger to perpetrators (Carlsmith et al., 2002). By this account, people might be more willing to punish those *outside* of their own community (as people often view out-groups more negatively; Tajfel, 1970). Children's punishment behavior is sometimes consistent with both theoretical accounts (e.g., Jordan et al., 2014; Yudkin et al., 2020), suggesting there may be important variation in the motivations underlying punishment behavior that emerge early in development. Here, we considered this possibility by testing whether parents' political ideology—a useful proxy for group-related values, beliefs, and attitudes—predicts variation in the emergence of children's group-based punishment behavior.

To understand how different values and motivations might affect punishment behavior, imagine a child headed to an amusement park who makes a brief stop at a café. There, they see another child—whose shirt has a logo from the first child's school (i.e., an in-group member)—steal a cookie from a third child's bag. The first child has a choice: they could tell their parent, thereby risking a delay that could cause them to miss their park visit (i.e., a costly punishment), or they could choose not to get involved and enjoy their day as planned. In this scenario, the

child might speak up because they wish to uphold a norm among their schoolmates that people do not steal from one another (Boyd et al., 2003; Schmidt & Tomasello, 2012) or because they fear that if the wrongdoing is not reported, the transgressor might steal from others within their group. In other words, the child may opt to punish because they view punishment as *rehabilitative* (e.g., Dunlea & Heiphetz, 2021) and are thus motivated to punish members of their own groups, for whom norm compliance may be most important (Misch et al., 2021; Yamagishi & Kiyonari, 2000). Consistent with this possibility, three- and four-year-old children who were led to feel responsible for maintaining group norms were more likely to sacrifice a desired activity to punish in-group, compared to out-group, norm violators (Yudkin et al., 2020; for similar findings in adults, see Shinada et al., 2004).

Now, suppose the transgressor were wearing a shirt from a rival school (i.e., an out-group member). In this case, the child might speak up because they seek *retribution* for the harm done (McAuliffe & Dunham, 2021) or because they do not feel a strong sense of obligation to protect out-group members from bad outcomes (Rhodes & Chalik, 2013). The child may also attribute the out-group member's behavior to bad moral character (Chatman & Hippel, 2001) or simply feel less warmth and more anger toward them, such that punishment feels more satisfying (Ackerman et al., 2006; Dunham et al., 2011). Indeed, elementary-school-aged children were found to enact costly punishment more severely toward out-group than in-group members in economic games (Jordan et al., 2014)—a context in which children's punishment behavior is often driven by spite (McAuliffe et al., 2014). Similar patterns have also been documented in adults (Delton & Krasnow, 2017; see also Bernhard et al., 2006; Yudkin et al., 2016).

Thus, how group membership influences children's punishment behavior may be shaped by their values, beliefs, and attitudes about groups, as well as by their motivations for punishing

others. Notably, these factors are likely related to the political ideology of their parents. For example, political conservatism is associated with increased concerns for group loyalty (Graham et al., 2009), more general tendencies toward out-group hostility (De Zavala, et al., 2010, Jost et al., 2003; but see Brandt & Crawford (2016) for an alternative perspective), and more retributive punishment motives (Gerber & Jackson, 2013)—all of which could increase out-group punishment. Conversely, liberalism is associated with prioritizing fairness over loyalty (Graham et al., 2009) and with endorsing rehabilitative (vs. retributive) punishment behaviors (Confino et al., 2022), both of which may support the development of in-group punishment as a means of enforcing norms within one's own group.

Political ideology is highly transmissible across generations. Adolescents' (Meeusen & Boonen, 2020) and young adults' (Cavalli-Sforza et al., 1992) ideologies tend to resemble those of their parents, and values related to parents' political ideology (e.g., authoritarianism) are linked to children's behavior in early childhood (Reifen Tagar et al., 2014; see also Cowell & Decety, 2015; Gelman et al., 2004; Kim et al., 2021; Rhodes & Gelman, 2009; Rico & Jennings, 2016; Segall et al., 2015). Thus, we tested whether and to what extent the development of costly punishment behaviors toward in-group and out-group members reflects the political ideology of parents—a proxy for the group-related values, beliefs, and attitudes transmitted to children. Specifically, we hypothesized that parental conservatism would be associated with increased punishment of out-group members and liberalism would be associated with increased punishment of in-group members. We used existing data to probe the influence of parental political ideology on children's costly punishment (Experiment 1) and then conducted a pre-registered experiment to provide a confirmatory test of these hypotheses with a larger sample of ideologically diverse families and a broader age-range of children (Experiment 2).

# Experiment 1

## Method

Experiment 1 entailed new analyses of a dataset collected in 2015-2016. In the original study, three- to six-year-old children were recruited from a children's museum in New York City, NY to participate in a study on costly punishment (Yudkin et al., 2020). We briefly summarize the Experiment 1 methods below; the full study protocol is available at https://osf.io/y9s3k/?view_only=be8495e21bf04172be0f013edb9e37f4.

### *Participants*

Parents of participating children were asked to complete a demographic survey while their child completed the main study. The parent survey was added to the protocol partway through data collection; thus, responses were available for only a subset of participants from the original study. Included in this survey was a question assessing "parents' political affiliation," from 1 ("Very liberal") to 5 ("Very conservative"). A total of 88 parents provided this information ($M_{age}$ of children in this subsample = 5.25 years, $SD_{age}$ = .85, *range*: 3.64, 6.98; 53% girls, 47% boys; 42% identified as White, 26% as Multi-racial, 17% as Asian, 5% as Black, and 5% as Hispanic; 6% of parents did not report this information). The political ideology of parents in this subsample was slightly skewed toward liberalism, with the average falling closest to "Somewhat liberal" ($M$ = 2.34, $SD$ = .86, *range*: 1, 4). All participants in this subset who had completed the child portion of the protocol were included in these analyses.

### *Procedure*

**Set-up.** Upon entering the study room, the experimenter drew children's attention to a big slide in the corner and asked them if they wanted to go down it (see *Figure 1*). Before the child could answer, the experimenter pointed out that the slide had a "Closed" sign affixed to it,

which meant that the slide was only open to children at the museum who had been following the rules. The experimenter then asked if the child had been following the rules. Once the child said yes (all did), the experimenter turned the sign to "Open" and offered children the chance to go down the slide.

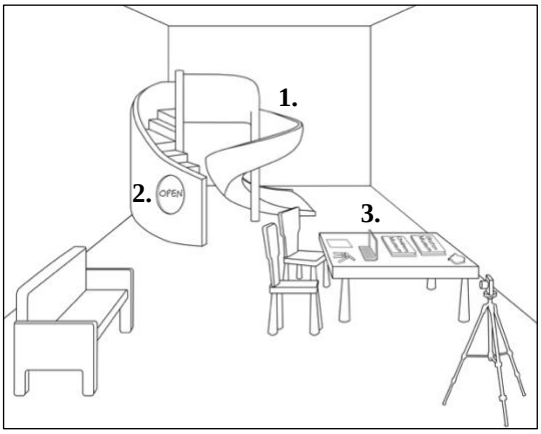


*Figure 1*. Set-up of Experiment 1, adapted from Yudkin et al. (2020). (1) Slide to be revoked as punishment; (2) Sign on slide reflecting punishment decision ("Open" = no costly punishment; "Closed" = costly punishment); (3) Area in which experiment was run, including laptop that played video of transgression.

**Group Manipulation**. The experimenter then told the child that museums across the country were making books with drawings from the children who visited them. The experimenter explained that *this museum* (in New York City, NY) and *a museum in a different city* (Boston, MA) were both making books; shortly thereafter, the child began drawing a picture for the New York City museum. After a few minutes, the experimenter told the child a story about what had happened earlier that day, when a different child ("Stacy" or "Ethan," randomized across participants; hereafter, "the transgressor") was drawing a picture. By random assignment, children learned that the transgressor had been drawing a picture for museum in New York City (rendering them an *in-group* member) or Boston (rendering them an *out-group* member). Children learned that a second child—from the same museum as the transgressor—had also drawn a picture that day and asked the transgressor to hold it while they went to the bathroom.

**Transgression**. Next, children were shown a video of what happened while the other child was in the bathroom. In the video, the transgressor ripped up the child's picture, tearing it into small pieces—an act we believed children would interpret as a clear violation of moral rules and may seek to punish (i.e., Vaish et al., 2011).

**Punishment Decision**. Next, children learned that the transgressor planned to come back later in the day to play on the slide. The experimenter offered children two options for how to proceed: they could (1) put up the "Open" sign, making the slide accessible to both themselves (at the end of the game) and the transgressor (later in the day), or (2) put up the "Closed" sign, barring use of the slide for both themselves and the transgressor. Once children made their decision, they affixed the appropriate sign to the slide.

Throughout the experiment, children completed a series of comprehension checks and other measures to assess their understanding, beliefs, and evaluations about the events. Here, we report how parental ideology predicted children's tendency to engage in costly punishment toward in-group and out-group members; for details and analyses on the other measures, see Yudkin et al., 2020.

**Parental Political Ideology.** As children completed the experimental protocol, parents completed a brief demographic survey. As part of the survey, parents reported their political ideology on a scale from 1 ("Very liberal") to 5 ("Very conservative").

## Results

### *Analytic Strategy*

Analyses were conducted using the lme4 package in *R* Version 4.0. All Experiment 1 analyses were exploratory. Inferential tests were modeled as logistic regressions, with punishment decision entered as a binary variable (0 = no punishment, 1 = punishment) and

parental political ideology modeled as a continuous variable and mean-centered. Predictor variables (group membership of transgressor, parental political ideology) were entered as between-subjects fixed effects.

***Overall Punishment Rates***

Just over half of children in our subsample (53.41%) enacted costly punishment, opting to close the slide for both the transgressor and themselves (this was consistent with the larger sample in Yudkin et al., 2020). All other children chose to leave the slide open.

***Group Membership and Political Ideology***

Consistent with our hypothesis that parental political ideology would interact with transgressors' group membership to predict children's costly punishment, the two-way interaction between these predictors was statistically significant ($b$ = 1.13, $SE$ = .56, $t$ = 2.03, $p$ = .043, Nagelkerke's $R^2$ = .08; *Figure 2*)[1]. Simple-effects tests within group condition revealed that this interaction was driven by punishment of out-groups: the more conservative parents were, the more willing their children were to punish out-group members ($b$ = .93, $SE$ = .44, $t$ = 2.12, $p$ = .034). The relation between ideology and punishment of in-group members was not statistically significant ($p$ = .564).

To determine where on the spectrum of parental ideology children differed in their treatment of in-group and out-group members, we used the Johnson-Neyman procedure (Johnson & Fay, 1950), which identifies the point in a two-way interaction at which the difference between two groups becomes significant (Carden et al., 2017). Though this interval will vary somewhat according to the nature of the participant sample and the precise study methods implemented, it is nonetheless useful because it can provide a rough approximation of where on

[1] This interaction remained significant ($p$=.042) when adding a second variable from Experiment 1—whether or not children were placed into a leadership role—as a covariate.

parents' ideological spectrum children's treatment of in-group vs. outgroup members would be expected to diverge. Analyses with an alpha level set at $p = .05$ revealed that children punished out-group members more than in-group members when parents themselves identified on the more conservative end of the political spectrum (i.e., between "Moderate" and "Somewhat conservative"; > 3.6). The Johnson-Neyman threshold for children of liberal parents was below the lower scale limit of 1, suggesting that even children of "Very liberal" parents did not punish in-group members differently from out-group members.

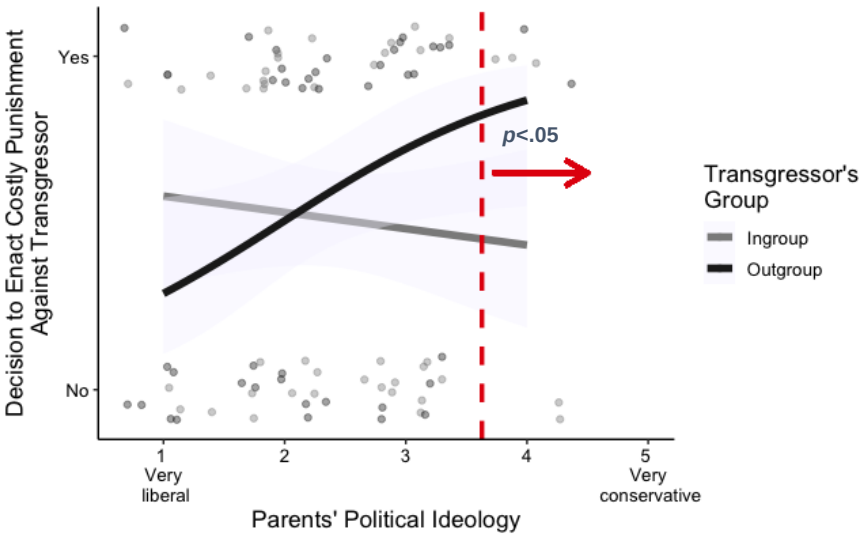


*Figure 2.* Raw values depicting the interaction between transgressor group and parental political ideology on children's costly punishment decisions in Experiment 1 with 95% confidence intervals. Small circles represent responses of individual participants (no participants scored "5" for political ideology). The dotted vertical line represents the point on the political ideology scale at which punishment of in-group and out-group transgressors diverged ($p$<.05).

## Experiment 2

Experiment 1 provided preliminary evidence that parental political ideology is linked to the development of costly punishment. However, this study had several limitations. First, Experiment 1 analyses were post-hoc and not pre-registered (and were barely significant at $p <$ .05). Second, the liberal skew of Experiment 1's sample reduced the generalizability of our analyses. We designed Experiment 2 to provide confirmatory tests of our hypotheses in a larger

and more ideologically diverse sample. As in Experiment 1, we anticipated differences in group-based punishment as a function of parents' political ideology. Moreover, based on prior evidence that conservatism relates to greater willingness to punish among adults (King & Maruga, 2009) and that correlations between parent and child beliefs often strengthen with age (Gelman et al., 2004), we predicted that parental conservatism would relate to more punishment overall and that effects of ideology would strengthen across development. We pre-registered our hypotheses and methods at https://osf.io/4kpg8/?view_only=08866aebad4d4681be4acec79eb64f83.

## Method

We administered Experiment 2 on a virtual platform for developmental research (Rhodes et al., 2020). Because we could not directly replicate either the costly punishment paradigm (i.e., opening or closing a slide) or the group manipulation (i.e., museum membership) on an online platform, we first conducted a pilot study ($N$ = 42). This pilot validated a new procedure for Experiment 2, which included a costly punishment measure that could be successfully implemented online (see SOM-R). We then based the design of Experiment 2 on these new procedures.

### *Participants*

Participants were recruited in the Spring of 2021 from a virtual laboratory (Rhodes et al., 2020). This online laboratory contains a user database of parents and children from across the United States and provides an effective, engaging, and reliable experimental platform for unmoderated research with families (see Leshin et al., 2021 for evidence of replicability across in-person and online methods). As such, this system offered us an excellent opportunity to extend our research questions to a more ecologically diverse sample and to test the robustness of our Experiment 1 findings with a different set of punishment measures.

Following an a priori power analysis, we aimed to recruit 200 children; due to the nature of recruitment on the online platform, we obtained a sample of 203 children. As specified in our pre-registration, we excluded all children from outside of the United States ($N$ = 9) and those whose parents did not provide political ideology data ($N$ = 13). Therefore, our final sample for analyses consisted of 181 children. Children in our sample ranged from five to eight years ($M_{age}$ = 6.49 years, $SD_{age}$ = 1.14, *range*: 5.01, 8.95; 48% girls, 52% boys), and came from 33 states across the U.S. (*Figure 3)*. Based on parental report, 61% of our sample identified as White, 18% as Asian, 13% as Multi-racial, 5% as Hispanic, and 2% as Black (1% of parents did not report this information). The political ideology of parents, reported on a scale of 1 ("Very liberal") to 7 ("Very conservative") was more conservative and more dispersed than in Experiment 1, with at least nine parents represented at each level of the scale ($M$ = 3.43, $SD$ = 1.69, *range*: 1, 7).


*Figure 3.* The regional variation of families in Experiment 2 ($N$=181). This research was conducted on a virtual platform for developmental science research, accessible across the United States (Rhodes et al., 2020).

### *Procedure*

**Set-up.** The entire experimental protocol was animated and narrated; children completed the study independently from their home computers, with data recorded by the experimental design software that presented the study. The entire session was also video recorded by the participant's webcam. There was no experimenter present during testing. First, children watched

a short, fun animal video that they were told was a reward for following the rules of the study thus far (e.g., clicking through the experimental protocol). Then, the video was placed into a virtual "video bank," and children were told that they might have the opportunity to watch another video later.

**Group Manipulation.** Next, children learned about two groups of kids: *Toogits*, pictured as stick figures wearing orange shirts, and *Flurps*, pictured as stick figures in blue shirts. Children were then asked two questions about their personal preferences, and answers to these questions ostensibly determined which of the two groups children belonged to. Then, by random assignment, half of the children were told that they were a member of the Toogit group, and half were told that they were a member of the Flurp group. To assess children's comprehension of the group manipulation, children were asked to identify the group that they were a part of; all children who supplied the wrong answer received corrective feedback. Next, children completed a measure of in-group preference, wherein they were asked to imagine a Toogit behind one door and a Flurp behind another and then select which door to open. The screen then returned to the video bank, and children were told that they had earned the chance to watch one more animal video at the end of the game as a reward for continuing to follow the rules.

Next, children were introduced to a gender-matched child ("Stacy" and "Ethan," as in Experiment 1; hereafter, "the transgressor") who was described as a member of the Toogit group. To ensure that children understood the group identity of the transgressor relative to theirs, children were asked to identify the group to which the transgressor belonged and determine whether the transgressor's group was the same as or different from theirs. Children who answered incorrectly received corrective feedback. Next, children were told that the transgressor

had been drawing pictures with another child yesterday and had been asked to hold the child's picture while they went to the bathroom (the story from Experiment 1).

Unlike Experiment 1, we left the group membership of this child unspecified to de-confound the effects of the *transgressor's* group membership with those of the *victim's* group membership. That is, in assigning the victim to the same group as the transgressor in Experiment 1, we left open the possibility children's punishment decisions could be anchored on their relationship to the *victim* rather than to the *transgressor*. We deemed this possibility unlikely, as the group membership of the transgressor in Experiment 1 was made far more salient than that of the victim. Nonetheless, we sought a more precise test of the role of the transgressor's group membership by omitting this information about the victim in Experiment 2.

**Transgression.** To illustrate what had happened while the other child went to the bathroom, children were shown the same video from Experiment 1 (i.e., of the transgressor ripping up the picture they had been asked to hold—a clear violation of moral rules).

**Punishment Decision.** Next, children were told that the transgressor planned to play the same online game tomorrow and that two animal videos had been saved in the video bank for them to watch. Children were then asked to help the experimenter figure out whether or not the transgressor should get to watch them. Since children's decision to recommend that the transgressor not get to watch the video posed no cost to the child, this measure tapped children's endorsement of non-costly punishment. By including this measure along with our measure of costly punishment (presented later in the experimental protocol), we could examine whether or not the same factors shape children's thinking about costly vs. non-costly punishment.

Children were then told that they had two options: they could (1) choose to *open the video bank*, making the animal videos accessible to themselves (after the game) and the

transgressor (the next day), or (2) *lock the video bank* for one minute, imposing a one-minute delay to their own video-watching and the transgressor's video-watching. Children then completed two comprehension checks to ensure they understood the two options (open vs. lock) and received corrective feedback as necessary. To help children envision what a one-minute delay would feel like, children were shown a one-minute timer that ran for 10 seconds and depicted how far around the second-hand would need to go to reach one minute. For information about how we determined that a one-minute delay operated as a meaningful cost to children in this context, see SOM-UR.

After the timer demonstration, children made their decision to *open* or *lock* the video bank. Finally, children answered a series of questions about the transgressor, including how they thought the transgressor would feel after the punishment decision (on a 1-6 scale from "Very sad" to "Very happy"), whether the transgressor would continue misbehaving in the future ("Yes" or "No"; see Dunlea & Heiphetz, 2021), why the transgressor acted the way they did (due to situational vs. inherent factors, i.e., "Because they had a really bad day" vs. "Because they are a really mean person"), whether the child would want to play with the transgressor in the future ("Yes" or "No"), and whether the transgressor felt remorse about their behavior ("Yes" or "No"). Key elements of the Experiment 2 procedure are outlined in *Figure* 4 (for the full experimental protocol and video of the complete procedure, see https://osf.io/y9s3k/?view_only=be8495e21bf04172be0f013edb9e37f4).

**Parental Political Ideology.** Following the child portion of the protocol, parents completed a brief demographic survey in which they reported their political ideology. Since the political ideology data from Experiment 1 was relatively undispersed, we expanded the Experiment 2 scale to range from 1 ("Very liberal") to 7 ("Very conservative") to allow for

detection of more variability. Other items on the demographic questionnaire included questions probing parents' level of religiosity, parenting style (Robinson et al., 1995), and child-rearing values (Feldman & Stenner, 1997).

**Video Coding.** To ensure that the children's responses were not influenced by others in their testing environment (e.g., parents, siblings), a subset of videos were coded for parental interference in Datavyu (Lingeman et al., 2014). Previous studies conducted on our online platform have found very low instances of interference (Leshin et al., 2021). Thus, we pre-registered a plan to code a randomly selected 20% of study videos ($N$ = 40). Our trained coder confirmed very low rates of interference within this subsample (< 1% of trials). For additional quality assurance (and to align with evolving research practices on the online platform), we enlisted a second research assistant to code for reliability ($N$ = 20). Similarly low rates of interference were detected on this pass, and reliability was excellent (interrater agreement rate: 99.39%). Thus, all data were retained for analyses. For more details, see SOM-UR.

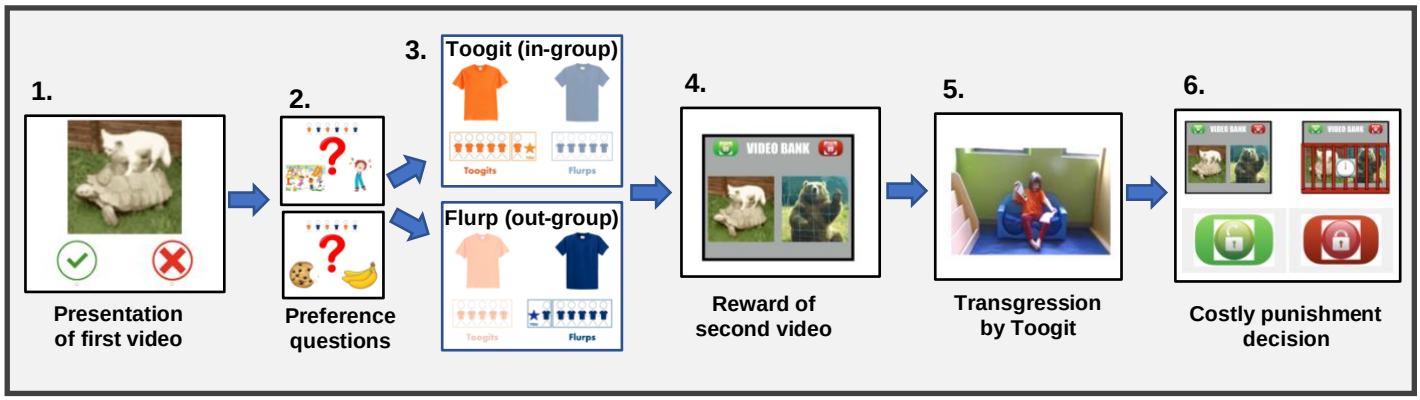


*Figure 4.* Procedure for Experiment 2. Children began by watching a fun animal video (1). Then, they answered two preference-based questions (2) to determine whether they were part of the Toogit group (in-group relative to the transgressor) or Flurp group (out-group relative to the transgressor; 3). For "following the rules" (i.e., answering the questions), children learned that they had earned a second video (4). Next, children saw another child–either an in-group or out-group member–transgressing (5) and had to decide whether to punish the transgressor *and* themselves by locking the video bank (6). Parents completed a political ideology survey at the end of the study.

## Results

### *Analytic Strategy*

Analyses were conducted using the lme4 package in *R* Version 4.0. As in Experiment 1, inferential tests were modeled as logistic regressions, with punishment decision entered as a binary variable (0 = no punishment, 1 = punishment). Predictor variables (e.g., group membership of transgressor, mean-centered parental political ideology, mean-centered age) were entered as between-subjects fixed effects.

### *Comprehension of Paradigm*

Children responded as expected to all questions, confirming comprehension of the paradigm. In addition to valuing the animal videos and comprehending the transgression and costly punishment set-up, children also understood the group manipulation well (see *Table 1*). Responses to these questions did not vary by parental political ideology.

| | **Liking of Animal Video** | | **Comprehension of Group Manipulation** | | | |
|---|---|---|---|---|---|---|
| *Question* (see OSF for full script) | *Do you like the animal videos? (How much?)* | *Do you want to watch more later? (How much?)* | *Which group are you a part of?* | *Which group is [the transgressor] a part of?* | *Is [the transgressor] in the same or a different group as you?* | *Who would you want to meet (in-group or out-group member)?* |
| **Response** | **97%** "yes" (**86%** "a lot") | **91% "yes"** (**76%** "a lot") | **94%** correct | **98%** correct | **96%** correct | **67%** in-group |

| | **Comprehension of Transgression** | | **Comprehension of Costly Punishment Paradigm** | | **Final Group Check** |
|---|---|---|---|---|---|
| *Question* (see OSF for full script) | *What did [the transgressor] do with the drawing?* | *Was what [the transgressor] did nice or not nice?* | *What happens if we press the "lock" button?* | *What happens if we press the "open" button?* | *Which group is [the transgressor] a part of?* |
| **Response** | **93%** correct | **99%** not nice | **94%** correct | **83%** correct | **99%** correct |

*Table 1.* Summary of children's responses to questions from Experiment 2 assessing their liking of the animal video reward, their comprehension of the group manipulation, their comprehension of the transgression, their comprehension of the costly punishment paradigm, and their recall of the transgressor's group. Overall, children responded as expected to all measures reported above, and parents' political ideology did not moderate responses to these questions.

### *Overall Punishment Rates*

Close to half of children chose to enact costly punishment (45.86%)—a rate similar to Experiment 1 (53.41%) and previous studies (e.g., Yudkin et al., 2020). About half of children (50.83%) chose not to punish, and 3.31% of participants skipped the question altogether. Children's use of costly punishment increased with age ($b$ = .55, $SE$ = .14, $t$ = 3.82, $p$ < .001).

This suggests that our online platform produced similar results to in-person measures of costly punishment.

Further confirming that children understood the punishment paradigm, children who chose to punish thought the transgressor would feel significantly less happy ($M$ = 1.95) than children who chose not to punish ($M$ = 5.60, on a scale of 1 (really sad) to 6 (really happy); $SD$ = 2.08; $b$ = -3.64, $SE$ = .16, $t$ = -22.80, $p < .001$). Children who punished were also more likely to think the transgressor would change their behavior in the future (i.e., "The next time someone asks the [the transgressor] to hold their paper for them will they hold it, or tear it up?"): 65% of punishers vs. 38% of non-punishers thought the transgressor would hold the paper next time ($SD$ = 50%; $b$ = 1.25, $SE$ = .37, $t$ = 3.37, p < .001; a pattern that strengthened with age, $b$ = 1.64, $SE$ = .37, $t$ = 4.48, $p < .001$). Further, children who punished were more likely to attribute the transgressor's actions to inherent—rather than situational—features (i.e., "Did [the transgressor] act like they did because they're a really mean person, or because they had a really bad day?"), with 47% of punishers vs. 23% of non-punishers attributing the transgression to the child being a "really mean person" ($SD$ = 48%; $b$ = 1.03, $SE$ = .34, $t$ = 3.01, $p$ = .003). Finally, children who punished were three times as likely than those who didn't to decline the opportunity to play with the transgressor in the future (i.e., "If [the transgressor] had a fun game and invited you to play it with them, would you play it?"): 39% of punishers vs. 13% of non-punishers said "No" ($SD$ = 44%; $b$ = 1.22, $SE$ = .40, $t$ = 3.03, $p$ = .002). Children's punishment decisions did not relate to their expectations of the transgressor's remorse (i.e., "Do you think [the transgressor] feels bad about what they did?"; 73% of punishers vs. 67% of non-punishers said "Yes"; $p$ = .553).

***Group Membership and Political Ideology***

Mirroring Experiment 1, we observed the predicted two-way interaction between group membership and parental political ideology ($b$ = .52, $SE$ = .21, $t$=2.52, $p$ = .012, Nagelkerke's $R^2$ = .20; *Figure 5*) in a pattern consistent with our hypotheses. Simple-effects tests within group condition revealed that the interaction was driven by punishment of in-group members. When faced with the decision to punish an in-group transgressor, the more conservative (vs. liberal) parents were, the less willing their children were to punish a transgressor ($b$ = -.44, $SE$ = .15, $t$ = -2.98, $p$ = .003). By contrast, the relation between ideology and punishment for out-group members was not significant ($p$=.572).

As in Experiment 1, we used the Johnson-Neyman procedure to identify the level political ideology (from 1 to 7) at which children's punishment of in-group and out-group punishment significantly diverged (Johnson & Fay, 1950, threshold at $p$ = .05). Children of parents who were more politically conservative (roughly 2 points more conservative than the scale mid-point; > 5.9) were more likely to punish out-group members than in-group members—replicating the pattern from Experiment 1. Additionally, children whose parents were on the more liberal end of the ideology spectrum (slightly more than 2 points more liberal than the scale mid-point; < 1.7) were more likely to punish in-group members than out-group members. Counter to our other pre-registered hypotheses, we found no evidence that children of conservative parents punished more overall, and the effect of group membership and parent ideology did not interact with child age ($b$ = .18, $SE$ = .20, $t$ = .86, $p$ = .388).

Although children's endorsement of non-costly punishment ($M$ = 71%, $SD$ = 46%)—assessed before the costly punishment decision—predicted their use of costly punishment ($p$ < .001), their endorsement of non-costly punishment did not vary as a function of group

membership, political ideology, or their interaction (*p*s > .40; for more analyses with the non-costly punishment measure, see SOM-UR).

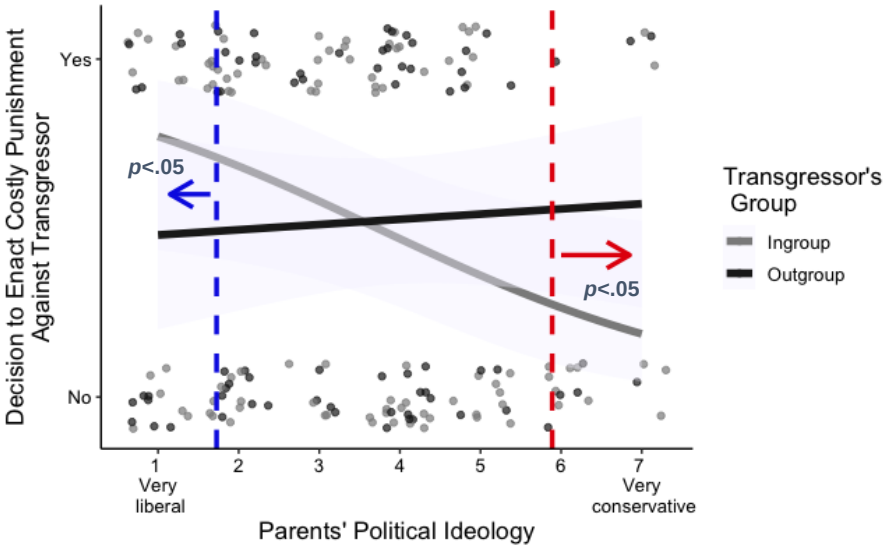


*Figure 5.* Predicted values for the interaction between group and parental political ideology on children's costly punishment decisions in Experiment 2, accounting for children's age, with 95% confidence intervals. Small circles represent responses of individual participants. Dotted vertical lines represent the points on the political ideology scale at which punishment of in-group and out-group transgressors diverge ($p < .05$).

### *Effects on Punishment-related Beliefs*

In exploratory analyses, we tested whether the interactive effects of parental ideology and transgressor group membership were unique to costly punishment or if this interaction was associated with other aspects of children's punishment-related cognition. A significant interaction emerged for children's reluctance to play with the transgressor in the future ($b = .45$, $SE = .23$, $t = 1.97$, $p = .049$; *Figure 6*). This interaction was primarily driven by those who had witnessed an out-group transgression. Among these children, the more conservative parents were, the more likely children were to reject the opportunity to play with the (out-group) transgressor ($b = .34$, $SE = .16$, $t = 2.10$, $p = .036$; *Figure 6*). The effect of ideology on children's desire to play with in-group transgressors, however, was not significant ($p = .514$).

As above, we used the Johnson-Neyman technique to identify the level of political ideology at which children's play preferences differed significantly for in-group and out-group transgressors (Johnson & Fay, 1950, threshold at $p = .05$). Children of more conservative parents (slightly more conservative than the scale midpoint; > 4.7) were more likely to reject a play opportunity with an out-group member compared to an in-group transgressor. The threshold for children of liberal parents was below the lower scale limit, suggesting that even children of "Very liberal" parents did not show differences in their desire to play with in-group vs. out-group transgressors.

Group membership and parental political ideology did not interact to predict any of our other punishment-related measures, including the time children took to make their punishment decision ($p = .682$), the perception that the transgressor would change ($p = .662$), the attribution provided for the transgressor's misbehavior ($p = .241$), or the perception that the transgressor felt bad about their behavior ($p = .966$).

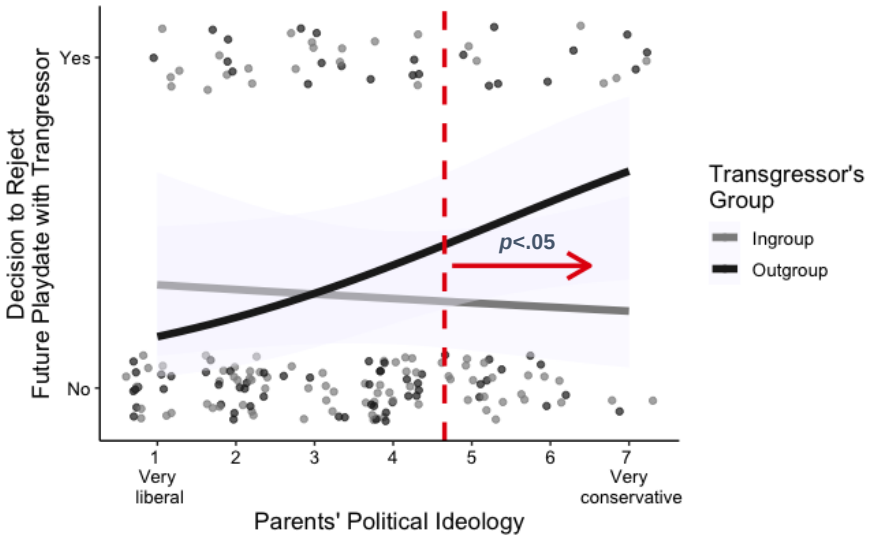


*Figure 6*. Predicted values for the interaction between group and parental political ideology on children's desire to play with the transgressor in Experiment 2, accounting for children's age. Data points represent individual responses, and error bands represent 95% confidence intervals. The dotted vertical line represents the point on the political ideology scale at which punishment of in-group and out-group transgressors diverge ($p<.05$).

***Secondary Measures of Parents' Ideological Beliefs***

As an additional robustness check of the role of parent ideology in predicting children's group-based punishment, we ran a set of exploratory analyses to test whether parental beliefs *related to* political ideology (e.g., beliefs about social inequality) also interacted with group condition to predict children's costly punishment. To do so, we obtained secondary data from a separate study of parents' beliefs run on our online platform and, using unique participant identifiers, matched responses on this secondary questionnaire to a subset of families from our Experiment 2 sample ($N$ = 128). We focused our analyses on three parent measures that are conceptually related to political ideology: endorsement of essentialist explanations for inequality (associated with conservatism; Hussak & Cimpian, 2018), endorsement of structural explanations for inequality (associated with liberalism; Jost et al., 2004), and prioritization of freedom as a personal value (associated with conservatism; Rokeach, 1973).

All three ideological belief measures interacted with group membership in a similar manner as our main measure of political ideology. Specifically, when faced with the decision to punish an out-group transgressor, the more parents endorsed essentialist explanations for inequality and rejected structural explanations for inequality (i.e., conservative viewpoints), the more willing children were to punish the transgressor. Conversely, when faced with the decision to punish an in-group transgressor, the more parents prioritized freedom as a personal value (i.e., a conservative viewpoint), the less likely children were to punish the transgressor (*Figure 7)*. In each case, the slope of the line predicting punishment of the other group trended in the opposite direction but was not statistically different from 0. Additionally, children at the liberal end of the spectrum for each measure were more likely to punish in-group than out-group members. Thus, across ideology measures (i.e., those directly tapping political ideology and those tapping closely

related beliefs), conservatism related to greater out-group punishment and liberalism related to greater in-group punishment, with some variation across analyses for which effect is observed (for further details on these analyses, see SOM-UR).

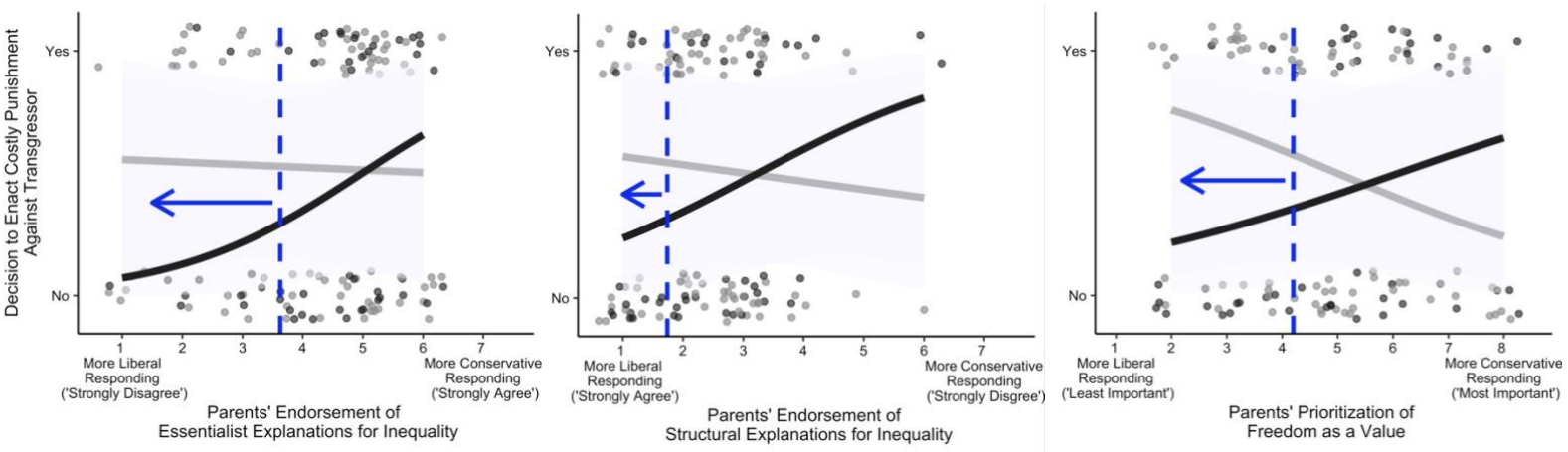


*Figure 7*. Predicted values for the interaction between group and three measures of parents' ideological beliefs on children's costly punishment decisions in Experiment 2, accounting for children's age (interaction *p*s = .036, .077, and .007). Note: Parent responses were re-coded such that lower values indicate *more liberal* responses and higher values indicate *more conservative* responses, in line with the political ideology scales from Experiments 1 and 2. Data points represent individual responses, and error bands represent 95% confidence intervals. For more details, see SOM-UR.

### *Alternate Parent Measures & Neighborhood Characteristics*

To further clarify whether parental ideology has a unique role in predicting children's behaviors, we examined whether aspects of parents' beliefs that are correlated with but conceptually distinct from political ideology might also influence children's punishment. We conducted a series of exploratory analyses on other parent measures obtained in Experiment 2: parents' self-reported authoritarian parenting style ($N$ = 147), orientation toward agency vs. responsibility ($N$ = 158), child-rearing values ($N$ = 161), and religiosity ($N$ = 131). In contrast to the ideological belief measures, none of these conceptually distinct measures interacted with group membership to predict children's costly punishment (*p*s > .200), despite yielding high correlations with political ideology (*r*s = .28-.57, *p*s < .001). Furthermore, parents' political ideology continued to interact with the transgressor's group membership to predict children's

costly punishment even when these alternate measures were included as covariates in our models. This suggests that our main findings were robust to model specification. For more detailed analyses with these measures, see SOM-UR.

In another set of exploratory analyses, we examined whether features of children's neighborhoods that may covary with political ideology could have accounted for our pattern of results. Using publicly available zip code data from the 2019 United States census projections and the Opportunity Atlas (Chetty et al., 2020), we considered whether the total population, racial-ethnic diversity, and percentage of college graduates in children's neighborhoods interacted with transgressor group membership to predict children's costly punishment behavior. None of these variables interacted with group membership to predict punishment (two-way interaction *p*s > .14). Furthermore, the two-way interaction between political ideology and group membership remained consistent when adding each of these variables into our original model as a covariate (two-way interaction *p*s < .02). For more details, see SOM-UR.

## General Discussion

In two experiments, including one administered in a museum in New York City (Experiment 1) and an online study with families across 33 U.S. states (Experiment 2), parent ideology interacted with transgressor group membership to predict children's punishment behavior. Overall, parental conservatism was associated with punishment of out-group members, whereas parental liberalism was associated with punishment of in-group members, with some variation in these relations across samples, measures, and analyses. These results contribute important insights to debates within developmental (Jordan et al., 2014; McAuliffe et al., 2017), social (Shinada et al., 2004; Delton & Krasnow, 2017), and evolutionary psychology (Fehr & Gachter, 2002; Boyd et al., 2003) on how groups shape punishment behavior. Specifically, our

findings suggest that people may not uniformly punish in-group or out-group members. Rather, variation in values and attitudes may shape how these psychological processes unfold in different punishment contexts.

In the present experiments, parents' ideology—as measured by self-reported liberalism vs. conservatism and by measures probing ideological beliefs (e.g., explanations for inequality, prioritization of freedom)—consistently interacted with information about the transgressor's group membership to predict children's punishment behaviors. In contrast, parent variables that are correlated with but conceptually distinct from ideology (e.g., religiosity, authoritarian parenting), as well as other features of children's environments (e.g., racial-ethnic diversity), did not. These findings reveal the unique role of political ideology in shaping the development of group-related punishment and suggest the need for future work on the social, cultural, and biological processes by which values are transmitted across generations.

Despite directional consistency of the two-way interaction across Experiments 1 and 2, the simple effects of group and political ideology manifested slightly differently. In Experiment 1, parental conservatism corresponded to *more out-group* punishment. In Experiment 2, parental conservatism corresponded to *less in-group* punishment in our primary analyses but both *less in-group* and *more out-group* punishment in exploratory analyses of ideological beliefs. Additionally, differential punishment of in-group vs. out-group members was found only among children of more conservative parents in Experiment 1, among both those of more conservative and more liberal parents in primary analyses of Experiment 2, and among those of more liberal parents in exploratory analyses from Experiment 2. Based on these findings and the overall global similarity in patterns across experiments and measures, we suspect that the effects of ideology may be bidirectional. That is, parental conservatism seems to predict increased out-

group punishment and parental liberalism predicts increased in-group punishment. On this account, variations across experiments may reflect differences related to the size and ideological variability of our samples, along with imprecision in our parent measures (which are proxies rather than direct assessments of parental values). Additionally, the inconsistent effects of liberalism on in-group punishment could reflect the possibility that liberalism—while increasing children's concerns about fairness and thus encouraging in-group punishment—could also increase egalitarian reasoning (Hirsch et al., 2010), thus reducing children's consideration of group membership in these contexts. This possibility should be considered in future work.

Another important question concerns the underlying processes (e.g., biological, cultural, psychological) that are responsible for the transmission of parental values across generations (e.g., Alford et al., 2005). Though our findings do not provide clear evidence of the means of transmission, Experiment 2 sheds light on potential psychological processes underlying the interaction between ideology and group membership. First, parent ideology did not interact with group membership to predict children's endorsement of *non-costly* punishment. Thus, if we can assume that children's beliefs about non-costly punishment map onto their behaviors (which sometimes, but not always, occurs; Blake et al., 2014), then the processes at play here may be particular to how children weigh the cost to *themselves* in deciding whether to punish in-group vs. out-group members. Secondly, our findings support the possibility that children of more conservative parents are more willing to punish out-group members due to out-group hostility rather than in-group favoritism (Tajfel & Turner, 1979). These children were particularly unlikely to want to play with out-group transgressors but did not show higher levels of in-group bias on the initial group preference measure. We speculate that the behavior of children of more liberal parents reflects a desire to maintain norms of fairness and reciprocity within their group

(or alternatively, heightened feelings of in-group shame; Berndsen & Gausel, 2015; Piff et al., 2013). However, specific hypotheses concerning the processes underlying transmission and those underlying children's reasoning will need to be tested in future work.

**Conclusion**

The present findings suggest that political ideology shapes punishment across development. Counter to previous findings among adults (King & Maruga, 2009), parental conservatism (vs. liberalism) was not related to increased punishment overall. And counter to previous developmental research on belief transmission (Gelman et al., 2004), our patterns did not strengthen with age. Rather, we found that across development, the link between ideology and punishment hinged on group membership. Parental conservatism was associated with children's punishment of out-groups, whereas parental liberalism was associated with children's punishment of in-groups. Our findings add rich insights to our understanding of how costly punishment functions in group contexts and provide new evidence of the powerful transmission of belief systems across generations.

## Author Contributions

R.A. Leshin and D.A. Yudkin developed the study concept, with input from M. Rhodes and J. Van Bavel. All authors contributed to the study design. Data collection and data analysis were performed by R. A. Leshin and D.A. Yudkin. R.A. Leshin drafted the manuscript, and D.A. Yudkin, M. Rhodes, J Van Bavel, and L. Kunkel provided critical revisions. All authors approved the final version of the manuscript for submission.

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