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Preschoolers value those who sanction non-cooperators

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ABSTRACT

Large-scale human cooperation among unrelated individuals requires the enforcement of social norms. However, such enforcement poses a problem because non-enforcers can free ride on others' costly and risky enforcement. One solution is that enforcers receive benefits relative to non-enforcers. Here we show that this solution becomes functional during the preschool years: 5-year-old (but not 4-year-old) children judged enforcers of norms more positively, preferred enforcers, and distributed more resources to enforcers than to non-enforcers. The ability to sustain not only first-order but also second-order cooperation thus emerges quite early in human ontogeny, providing a viable solution to the problem of higher-order cooperation.

1. Introduction

Humans regularly cooperate with others, often even with strangers and often even at a cost to themselves (Sober & Wilson, 1998). Since such cooperation results in a greater loss for the cooperating individuals than for free riders (who benefit from the outcomes of the cooperation without investing any resources), it is a puzzle how such cooperation could evolve and be maintained. The classic theories of kin selection and reciprocity provide some answers, but they cannot explain cooperation in large groups of unrelated individuals (Sripada, 2005). One effective solution to the puzzle of large-scale cooperation is that those who break the norms of cooperation are punished, which induces the norm-violators to cooperate more in future interactions and thus enforces the norms of cooperation (Boyd & Richerson, 1985; Nowak, 2006; Nowak & Sigmund, 2005).

However, norm enforcement can be costly and risky to the enforcer. Despite these costs, people across numerous cultures are willing to pay costs to punish non-cooperators and thus enforce cooperative norms (Fehr & Gächter, 2002; Henrich, 2004). Such norm enforcement can itself be considered a cooperative act because in addition to the enforcer, all other members of the group also benefit from the non-cooperator's increased future cooperation (Yamagishi, 1986). A second-order problem of cooperation thus arises: If enforcers pay costs and take risks to enforce norms on non-cooperators, but the non-cooperator's increased future cooperation benefits not only the enforcer but also other group members, then enforcers are at a disadvantage relative to non-enforcers. How, then, can the costly and risky enforcement of cooperative norms evolve and be maintained?

One possibility is that enforcers receive benefits for their punitive behavior that non-enforcers do not receive (Barclay, 2006; Fessler & Haley, 2003; Gintis, Smith, & Bowles, 2001). For instance, enforcers may be seen to be more committed to the group and its norms, less willing to tolerate norm violations, and more trustworthy than non-enforcers. Enforcers may thus be judged more positively, respected, preferred, and more likely to be selected as cooperative partners than non-enforcers (Fessler & Haley, 2003; Frank, 1988). Moreover, as norm enforcement can be considered a cooperative act, and as cooperative people receive more material rewards from group members than less cooperative people (e.g., Milinski, Semmann, & Krambeck, 2002; Wedekind & Milinski, 2000), enforcers may also receive more material rewards than non-enforcers.

A few empirical studies have examined the question of how costly norm enforcement could be sustained (e.g., Barclay, 2006; Horita, 2010; Kiyonari & Barclay, 2008; Nelissen, 2008) and have shown that enforcers do typically receive more reputational and material benefits than non-enforcers (though these effects are not unequivocal and adults may even disapprove of particularly severe or aggressive norm enforcement; Eriksson, Andersson, & Strimling, 2016). However, these studies have all involved adults, leaving unclear when in ontogeny this solution to the problem of second-order cooperation becomes functional. In other words, we

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do not yet know whether and when children begin to contribute to maintaining norm enforcement and cooperation in the sophisticated ways that are required for large-scale human cooperation. To draw this conclusion, one must study young children's evaluative judgments of enforcers and non-enforcers.

There is a rapidly growing body of developmental work on children's evaluations of first-order norm violations. This work shows that by 3–5 years of age, children protest against first-order transgressions and punish, avoid helping, and distribute fewer resources to first-order transgressors (e.g., Kenward & Dahl, 2011; Kenward & Östh, 2012; Kenward & Östh, 2015; Riedl, Jensen, Call, & Tomasello, 2015; Salali, Juda, & Henrich, 2015; Smetana, Schlagman, & Adams, 1993; Vaish, Carpenter, & Tomasello, 2010; Vaish, Missana, & Tomasello, 2011). In contrast, research on children's responses to second-order norm violations is very sparse. We are aware of only two studies that have broached this question. In one study, 8-month-old infants were shown to prefer to touch a "taker" puppet that had taken a toy away from an antisocial puppet rather than a "giver" puppet that had given a toy to an antisocial puppet (Hamlin, Wynn, Bloom, & Mahajan, 2011). This result was interpreted as showing that infants prefer characters who act negatively towards (or punish) antisocial others. However, as the study was conducted with young infants and used the rather non-specific measure of touching, it is unclear what the nature of infants' evaluations was. For instance, rather than evaluating the taker as a punisher of the antisocial character, perhaps infants preferred the actor who behaved in line with their own evaluations (i.e., behaved negatively towards the antisocial character); indeed, the study's authors themselves acknowledge a similar alternative interpretation (Hamlin et al., 2011). Without more differentiated measures of children's evaluations and some insight into the reasoning behind the evaluations, it is difficult to know whether the mechanisms that sustain second-order cooperation are indeed present in childhood.

A second study examined whether 4-year-old children identified more with (in the sense of choosing to re-enact the role of) a punisher of first-order transgressors than a non-punisher (Kenward & Östh, 2012). The study revealed that although children approved of punishing first-order transgressors, they did not identify more with punishers than non-punishers, hinting that by 4 years of age, children may not yet value norm enforcers. However, as the main focus of that study was not on children's evaluations of enforcers versus non-enforcers, Kenward and Östh did not examine this question systematically or in detail. We thus currently know very little about children's responses to second-order cooperation.

In the present study, therefore, we presented 4- and 5-year-old children with scenarios in which transgressors broke a moral norm by causing harm to a victim. The norm of not causing harm was then either enforced by a norm enforcer, or was not enforced by a non-enforcer. After watching these scenarios, children were asked to evaluate the enforcer and non-enforcer and their behavior, and children's personal preferences for the enforcer versus non-enforcer were assessed. Finally, children were given the opportunity to distribute flowers between the enforcer and non-enforcer in order to assess whether they would provide more resources to the enforcer than the non-enforcer.

The decision to test 4- and 5-year-olds was guided by relevant prior research in which children of similar ages were successfully tested using a similar procedure and which was also concerned with children's understanding of relatively complex cooperation and group norms (Misch, Over, & Carpenter, 2014; Vaish, Carpenter, & Tomasello, 2011). In those studies, 5-year-olds evaluated positively, preferred, and distributed more resources to (a) a moral transgressor who displayed remorse more than one who displayed no remorse (Vaish et al., 2011), and (b) a loyal group member more than a disloyal one (Misch et al., 2014), whereas 4-year-olds did not. Because the present study was also concerned with children's emerging understanding of rather sophisticated norms of cooperation and because our method was adapted from these prior studies, we expected that 5-year-old children should evaluate positively, prefer, and distribute more resources to enforcers than non-enforcers, whereas 4-year-olds may not yet show these effects (as also hinted at by the results of Kenward and Östh (2012)).

2. Method

2.1. Participants

Participants were 4-year-old children (N = 24, 12 girls) between 54 months, 6 days and 59 months, 9 days (M = 56 months, 2 days; SD = 1 month, 20 days) and 5-year-old children (N = 24, 12 girls) between 66 months, 6 days and 71 months, 14 days (M = 68 months, 16 days; SD = 1 month, 22 days). Five additional children were tested but excluded due to experimenter error (n = 2 4-year-olds) or unwillingness to participate (n = 2 4-year-olds and n = 1 5-year-old). All children were native German speakers whose parents had given permission for them to participate in child development studies. Children were recruited from and tested in their daycare centers in a medium-sized German city.

2.2. Design and materials

During the experiment, children sat at a table on which two identical laptop computers were placed next to one another, one to the left and one to the right of the child. All videos were played using the full-screen option in Quicktime Player. A camera recorded a frontal view of the children and a microphone placed between the computers supplied sound to the camera. The procedure had two phases. In each phase, children saw one Enforcement and one Non-enforcement video, about which they received comprehension probe questions (as manipulation checks, i.e., to make sure they grasped the content of the videos) and eight test questions. After the second phase (with a second set of Enforcement and Non-enforcement videos), children received a distribution of resources task and one final test question about why they had distributed the resources in the way that they had. Thus, altogether, children watched four videos (two per phase) and answered 17 test questions (eight after each of the two phases and one after the distribution of resources task).

2.3. Video stimuli

Videos featuring three adult actresses (research assistants in the lab) served as stimuli. Each video featured a 'transgressor' intentionally harming a 'victim,' i.e., breaking the moral norm that one ought not to cause intentional harm to innocent others. An 'observer' watched the interaction, expressed disapproval of the transgression, and then either enforced the moral norm on the transgressor (Enforcement video) or did not enforce the norm (Non-enforcement video). The roles of transgressor (Lisa) and victim (Anya) were always played by the same actresses in all videos, while two different actresses (Susie and Tina) played both the enforcer and the non-enforcer roles across the videos. Each video featured one target object: a doll, ball, clay bird, or picture.

All videos began with three actresses seated around a table: the victim, the transgressor, and one of the two observers – either the enforcer or the non-enforcer. Anya (the future victim, sitting on the left) excitedly brought out and presented the target object to Lisa (the transgressor, sitting on the right) for approximately 15 s, as follows: