

## Extrinsic Rewards Undermine Altruistic Tendencies in 20-Month-Olds

Felix Warneken and Michael Tomasello  
Max Planck Institute for Evolutionary Anthropology

The current study investigated the influence of rewards on very young children's helping behavior. After 20-month-old infants received a material reward during a treatment phase, they subsequently were less likely to engage in further helping during a test phase as compared with infants who had previously received social praise or no reward at all. This so-called *overjustification effect* suggests that even the earliest helping behaviors of young children are intrinsically motivated and that socialization practices involving extrinsic rewards can undermine this tendency.

**Keywords:** altruism, helping, intrinsic motivation, socialization, overjustification effect

**Supplemental materials:** <http://dx.doi.org/10.1037/2333-8113.1.S.43.supp>

Since at least the time of Rousseau and Locke, there has been debate about the nature of human altruism. Do people go out of their way to help others because they are inherently altruistic or because they are shaped by their social environments to be that way? In terms of more modern psychological concepts, we may ask whether human altruism is intrinsically or extrinsically motivated; that is, do human beings help one another because the helpful act itself is inherently rewarding or only because the helpful act is instrumental in bringing about separate outcomes such as material rewards or the avoidance of punishment?

Relevant to this debate is recent research that has found that very young children—at the end of the infancy period—both understand helping as a distinct psychological act (Kuhlmeier, Wynn, &

Bloom, 2003) and also have a tendency to help themselves. Warneken and Tomasello (2006, 2007) found that infants as young as 14–18 months of age readily help other people with their problems across many occasions and in the absence of rewards. Warneken, Hare, Melis, Hanus, and Tomasello (2007) found that the provision of material rewards is not necessary to elicit this helping and does not seem to increase children's tendency to help in the immediate context. The fact that humans display these behaviors at such an early age suggests that altruism does not originate in socialization practices alone since 14-month-olds have had very few opportunities to be rewarded for helping or to be urged to help, thus challenging the view that humans begin life focused solely on their own benefits and develop altruistic behaviors only because they are externally rewarded for doing so (Bar-Tal, 1982; Cialdini, Baumann, & Kenrick, 1981; Dovidio, Piliavin, Schroeder, & Penner, 2006). Rather, these findings suggest that very early in development humans might have an intrinsic motivation to act altruistically at least in some circumstances (Eisenberg, 1992; Eisenberg, Fabes, & Spinrad, 2006).

A curious feature of intrinsic motivation is that it can be undermined by salient extrinsic rewards—what has also been called the *overjustification effect* (Deci, 1971; Lepper, 1981). For example, in the seminal study by Lepper, Greene, and Nisbett (1973), 3- to 5-year-old children who initially took pleasure in drawing

---

Felix Warneken and Michael Tomasello, Department of Developmental and Comparative Psychology, Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany.

Many thanks to the children and their parents for their cooperation. We thank Anja Gampe, Johanna Gundermann, Juliane Dauksch, and Liane Jorschick for their help in developing the study and testing the children. Thanks also to Roger Mundry for statistical advice and Hannes Rakoczy for helpful comments.

Correspondence concerning this article should be addressed to Felix Warneken, Department of Developmental and Comparative Psychology, Max Planck Institute for Evolutionary Anthropology, Deutscher Platz 6, Leipzig 04103, Germany. E-mail: [warneken@eva.mpg.de](mailto:warneken@eva.mpg.de)

This article is reprinted from *Developmental Psychology*, 2008, Vol. 44, No. 6, 1785–1788.

were less motivated to continue drawing in a posttest period if they had engaged during the interim in drawing in order to receive a material reward (as compared with children who had engaged in drawing during the interim with no expectation of a reward). Social-psychological theories suggest that such external rewards induce an extrinsic motivational orientation, as individuals attribute their reasons for engaging in the activity to the salient external reward (Lepper, 1981) or perceive external rewards as controlling their behavior (Deci, Koestner, & Ryan, 1999; Ryan & Deci, 2000). This new extrinsic motivation to perform the activity *in order to* receive a reward supplants the previously intrinsic motivation, so that when the extrinsic reward is no longer forthcoming, the motivation for the activity decreases.

The only evidence for this undermining effect of extrinsic rewards on altruistic behaviors is a study by Fabes, Fultz, Eisenberg, May-Plumlee, and Christopher (1989) conducted with relatively older children. That study found that rewards undermined the subsequent helping behavior of 6- to 12-year-old school children. However, it is not known whether this effect is also present at an age when altruistic behaviors are just beginning to emerge in early ontogeny and children have had less experience with adult rewarding practices. (Indeed, no studies have investigated the undermining effect of extrinsic rewards in very young children for any kinds of behaviors.) Such an overjustification effect would provide further evidence for the hypothesis that altruistic behaviors are initially intrinsically motivated, with later socialization practices facilitating or impeding this tendency rather than creating it in children.

In the current study, therefore, we investigated the influence of rewards on children's helping by comparing their tendency to help after experiencing different kinds of rewards. The study consisted of two parts. For a treatment phase, children were randomly assigned to one of three conditions that differed in an adult's response to their helping: Material Reward, Praise, and Neutral (no reward). Children who helped during the treatment phase proceeded to a subsequent test phase. In this test phase, children had the opportunity to help over consecutive trials but received no reward or praise for doing so. If young children are intrin-

sically motivated to help, material rewards during the treatment phase would undermine children's intrinsic motivation to help in the subsequent test phase relative to the condition in which children received no rewards for helping. By contrast, social rewards such as praise that convey positive competence information rather than being instrumental or controlling are conceived as having either no effect or a possibly positive effect on intrinsic motivation (Deci et al., 1999; Henderlong & Lepper, 2002). We therefore expected that praise would sustain or even increase children's tendency to help in the test phase as compared with this tendency in the other conditions.

## Method

### Participants

The final sample consisted of 36 German children (16 girls and 20 boys) who were approximately 20 months of age ( $M = 20$  months; age range, 19–21 months). They had been recruited from the birth register of a medium-sized urban city in Germany, came from mixed socioeconomic backgrounds, and had German-speaking parents. None of the children had previously participated in a study on helping.

### Helping Tasks

Children were tested in an experimental room, accompanied by a parent who remained passive during testing. Testing was performed by two research assistants who were unaware of the hypothesis of the study. The first experimenter conducted the helping tasks, whereas the second experimenter operated remote-control cameras from an adjacent room and rearranged the setup between tasks.

The first experimenter (E1) sat at a desk in the corner of the room and performed activities such as writing a letter with a pen or cleaning up the desk by putting crumpled paper balls into a basket (see Supplemental Online Material). During the activity, she accidentally dropped one object onto the floor (such as the pen or the paper ball) and unsuccessfully reached for it with an outstretched arm by bending over the desk and making sounds of effort. The child could help by picking up the target object and handing it to E1. Each trial lasted up to 30 s: For

the first 15-s phase, E1 focused only on the object. If the child did not help during this phase, E1 then named the object and alternated gaze between the object and child during a second 15-s phase.

There were six such helping tasks, all involving out-of-reach objects. The tasks were very similar, differing mainly in the kind of objects that were dropped on the floor. These tasks were presented in two blocks of three tasks, one block during the treatment phase and the other block during the test phase (Block A: marker, paper balls, clips; Block B: pen, plates, clothespins). The order of blocks and the order of tasks within a block were counterbalanced across participants.

### Design and Procedure

**Warm-up.** During warm-up, the second experimenter (E2) introduced the children to an apparatus that had proven to be an effective reward for children in previous experiments (Warneken et al., 2007). When a cube was thrown through an opening in the apparatus, it would slide down a transparent tube into a box and create an attractive jingling sound (see Supplemental Online Material). The cubes needed to operate the “jingle machine” were used as rewards for the children.

**Treatment phase.** For the treatment phase, children were randomly assigned to one of three conditions: In the Reward condition, E1 rewarded children’s helping with a toy cube. She offered the cube while reaching for the target object and handed it to the child if she helped, stressing the exchange with the statement: “For this, you get a cube.” In the Praise condition, E1 did not offer a material reward. Instead, E1 thanked and praised the child for her help: “Thank you, [CHILD’S NAME]; that’s really nice!” In the Neutral condition, E1 just took the object and continued the action without addressing the child in any way. This neutral condition served as baseline for children’s spontaneous helping in the absence of any material or social rewards.

In this treatment phase, we tested children until they reached the criterion of helping in 5 trials. The treatment phase consisted of maximally four tasks with 3 trials each (12 trials total). As soon as children had helped five times, they proceeded to the test phase. If they

had not helped once after 9 trials or had helped less than five times after 12 trials, the session was terminated. Thirty-six children reached the criterion and proceeded to the test phase ( $n = 12$  per condition), with no gender or age differences between children who did or did not reach this criterion. Eight additional children did not detach from the parent, and 5 children moved freely through the room but never helped. These children therefore were not exposed to the treatment varying among conditions (how E1 would have responded to the helping act). Five children helped between one and four times—and thus were exposed to E1’s response to helping—but did not reach the criterion (2 children in the Neutral, 2 in the Praise, and 1 in the Reward conditions). The final sample of 36 children who reached the criterion of helping in 5 trials needed only a mean of 5.9 trials ( $SD = 1.6$ ), with no difference between conditions ( $M = 6.1, 5.3, \text{ and } 6.2$  for Neutral, Praise, and Reward, respectively),  $F(2, 33) = 0.98, p = .39, \eta^2 = .06$ .

**Test phase.** The test phase was the same for all children. We presented children with three helping tasks of 3 trials each (9 trials in total). The helping task was basically equivalent to the treatment phase, except that different objects were used. This time, E1 offered neither a material nor a social reward for helping to any of the children. Because pilot testing had shown a near ceiling effect for helping, we gave children the opportunity to play with distractor toys. The distractor toys were three different instruments, which were installed on a colorful box (35 cm  $\times$  25 cm  $\times$  12 cm). When children pressed one of the several buttons, the instruments would play different melodies and sounds and light up (see Supplemental Online Material). There were three such distractor toys (violin, trumpet, guitar), so that we could use one for each of the three helping tasks administered during the test phase (in counter-balanced order). Before each task, E2 brought in one of the distractor toys and installed it on the floor in the opposite corner of E1’s desk. This meant that children had to stop playing the instruments and leave the distractor in order to help.

## Observational and Coding Procedure

All sessions were videotaped and coded by Felix Warneken. The test phase was always coded first, with the coder being ignorant of the condition to which the child had been assigned. A random sample of 25% of children was independently coded by a research assistant to assess interrater reliability. We coded whether the child performed the helping behavior, which was defined as picking up the target object and handing it to E1 ( $\kappa = 1.00$ ); latencies of helping, which were defined as occurring from the moment that E1 was reaching for the object until the moment in which the child put it in E1's hand,  $r(N = 134) = .99, p < .001$ , between coders; and whether children played with the distractor toy during the trial ( $\kappa = .95$ ).

## Preliminary Analyses

There was no effect of gender, task, or task order on any of these measures. Further analyses were thus collapsed across these factors. Children helped after an average of 12.1 s ( $SD = 5.3$  s) and usually during the first 15-s phase in which E1 had not yet addressed the child directly ( $M = 78\%$ ,  $SD = 27\%$ ), with no difference between conditions in either measure. In an average of 73% ( $SD = 24\%$ ) of trials, children were engaged with the distractor toy until immediately before E1 dropped the object and thus had to leave it to provide help.

## Results

Children continued to help on a high level in the subsequent test phase when no material or social reward was offered and when helping entailed interrupting an attractive activity (almost three fourths of the time across all conditions). However, children in the Reward condition, who had previously received a material reward, helped less (see Figure 1). An univariate analysis of variance with condition (Neutral, Praise, Reward) as independent variable and percentage of trials with helping as dependent variable revealed an effect of condition,  $F(2, 33) = 5.66, p < .01, \eta^2 = .26$ . Post hoc tests (Fisher's least significant difference) revealed that this effect was due to the Reward condition ( $M = 53\%$ ), which differed significantly from both the Neutral ( $M = 89\%$ ,  $p < .01$ ) and the

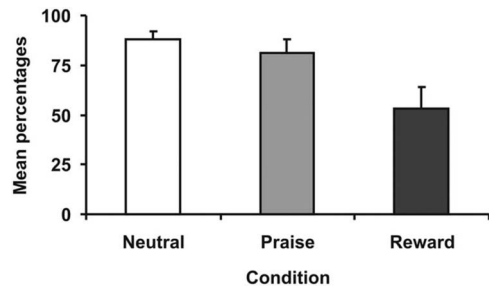


Figure 1. Mean percentage of trials with helping during test phase as a function of previous treatment condition ( $n = 12$  children per condition). Error bars represent standard error of the mean.

Praise conditions ( $M = 81\%$ ,  $p < .02$ ). Thus, children helped equally often after having experienced praise or a neutral response by the recipient in previous interactions but helped less often after they had received material rewards. On the level of the individual, 34 of the 36 children who had helped previously continued to help in the test phase; only 2 children (both previously in the Reward condition) stopped helping completely.

## Discussion

The current study shows, first of all, that very young children already have a strong tendency to help. The majority of 20-month-old infants helped and did so over repeated trials in the absence of material or social rewards—even when they had the alternative to play an attractive game. This yields further evidence for the claim that children are highly motivated from an early age to help others.

However, material rewards served to diminish this motivation. This finding provides evidence for an overjustification effect in which extrinsic rewards undermined children's intrinsic altruistic motivation. For those children who are motivated to help, external rewards can have a detrimental effect. This effect occurs already at the end of the infancy period when altruistic behaviors are just beginning to emerge. These results thus speak against theories that propose that young children are largely oblivious to the needs of others initially and act prosocially only to receive concrete rewards (Bar-Tal, 1982; Cialdini et al., 1981; Dovidio et al., 2006). On the contrary, children have an initial inclination



to help, but extrinsic rewards may diminish it. Socialization practices can thus build on these tendencies, working in concert rather than in conflict with children's natural predisposition to act altruistically.

This finding has important implications for attempts to facilitate prosocial behaviors in young children. In accordance with research on the effect of so-called verbal rewards on intrinsic motivation, receiving praise does not show these negative effects and might even be expected to increase the inclination to help relative to no praise. This is because verbal praise typically endorses the intrinsic motivation rather than supplying an alternative motivation; indeed, in some theories if one acts solely to receive praise, the intrinsic motivation is supposed to be undermined in this case as well (Deci et al., 1999; Henderlong & Lepper, 2002). The fact that praise did not undermine motivation in our study could then, in this theory, serve as additional evidence for intrinsic motivation. Finally, we should also note the possibility that material rewards might have positive effects when children's inclination to help is, for some reason, very low or that the encouragement through others might be necessary when children are too shy or otherwise inhibited to perform acts of helping spontaneously. As Lepper et al. (1973) pointed out in their seminal article on intrinsic motivation in children, the overjustification effect only occurs when the motivation to perform a certain activity is already quite high, which was the case for most, but not all, children in our sample. But if young children are motivated to help others (as was the majority of participants tested in this and previous studies; Warneken & Tomasello, 2006, 2007; Warneken et al., 2007), external rewards appear to be superfluous if not deleterious.

To our knowledge, the children in this study sample were the youngest in whom the undermining of intrinsic motivation (the overjustification effect) has been shown in any behavioral domain. At 20 months of age, our children were much younger than children tested in other studies of this effect (the youngest children in those studies being 3 years and older, Fabes, 1987; Lepper et al., 1973). This result can be taken as prima facie evidence that an overjustification effect does not require abstract social reasoning capabilities (Lepper, 1981; Lepper, Sagotsky, Dafoe, & Greene, 1982). Perhaps when rewards

are offered children simply come to perceive a formerly self-sufficient activity as merely a means to some more valuable end.

## References

- Bar-Tal, D. (1982). Sequential development of helping behavior: A cognitive-learning approach. *Developmental Review*, 2, 101–124.
- Cialdini, R. B., Baumann, D. J., & Kenrick, D. T. (1981). Insights from sadness: A three-step model of the development of altruism as hedonism. *Developmental Review*, 1, 207–223.
- Deci, E. L. (1971). Effects of externally mediated rewards on intrinsic motivation. *Journal of Personality and Social Psychology*, 18, 105–115.
- Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, 125, 627–668.
- Dovidio, J. F., Piliavin, J. A., Schroeder, D. A., & Penner, L. A. (2006). *The social psychology of prosocial behavior*. Mahwah, NJ: Erlbaum.
- Eisenberg, N. (1992). *The caring child*. Cambridge, MA: Harvard University Press.
- Eisenberg, N., Fabes, R. A., & Spinrad, T. (2006). Prosocial development. In N. Eisenberg (Ed.), *Handbook of child psychology: Social, emotional, and personality development* (6th ed., Vol. 3, pp. 646–718). Hoboken, NJ: Wiley.
- Fabes, R. A. (1987). Effects of reward contexts on young children's task interest. *The Journal of Psychology*, 121, 5–19.
- Fabes, R. A., Fultz, J., Eisenberg, N., May-Plumlee, T., & Christopher, F. S. (1989). Effects of rewards on children's prosocial motivation: A socialization study. *Developmental Psychology*, 25, 509–515.
- Henderlong, J., & Lepper, M. R. (2002). The effects of praise on children's intrinsic motivation: A review and synthesis. *Psychological Bulletin*, 128, 774–795.
- Kuhlmeier, V., Wynn, K., & Bloom, P. (2003). Attribution of dispositional states by 12-month-olds. *Psychological Science*, 14, 402–408.
- Lepper, M. R. (1981). Intrinsic and extrinsic motivation in children: Detrimental effects of superfluous social controls. In W. A. Collins (Ed.), *Minnesota symposium on child psychology: Vol. 14. Aspects of the Development of Competence*. Hillsdale, NJ: Erlbaum.
- Lepper, M. R., Greene, D., & Nisbett, R. E. (1973). Undermining children's intrinsic interest with extrinsic reward: A test of the "overjustification" hypothesis. *Journal of Personality and Social Psychology*, 28, 129–137.
- Lepper, M. R., Sagotsky, G., Dafoe, J. L., & Greene, D. (1982). Consequences of superfluous social

- constraints: Effects on young children's social inferences and subsequent intrinsic interest. *Journal of Personality and Social Psychology*, *42*, 51–65.
- Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, *25*, 54–67.
- Warneken, F., Hare, B., Melis, A. P., Hanus, D., & Tomasello, M. (2007). Spontaneous altruism by chimpanzees and young children. *PLoS Biology*, *5*, 1414–1420.
- Warneken, F., & Tomasello, M. (2006, March 3). Altruistic helping in human infants and young chimpanzees. *Science*, *311*, 1301–1303.
- Warneken, F., & Tomasello, M. (2007). Helping and cooperation at 14 months of age. *Infancy*, *11*, 271–294.

Received June 12, 2007

Revision received May 27, 2008

Accepted May 29, 2008 ■