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Asymmetrical consequences of behavioral change through reward and punishment

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Abstract

Previous research (Greitemeyer & Weiner, 2003) has demonstrated that compliance, because of an anticipated reward is attributed more to the person than compliance because of an anticipated punishment. The present research extended these findings to an educational context. Three studies revealed that parents who ask their children to change inappropriate behaviors are more likely to ascribe their children's improvement to the child, if the child was promised a reward, rather than threatened, to receive a punishment if the child did not improve. Moreover, because a child's improved behavior is more likely to be ascribed to the child given a reward as compared to a punishment, parents expect that rewards (as opposed to punishments) are more likely to sustain improved behavior, when the incentive is no longer offered. Finally, participants report to be more likely to induce behavioral change through reward rather than punishment. Copyright © 2007 John Wiley & Sons, Ltd.

To change an inappropriate behavior, operant conditioning is often applied (Skinner, 1953; Thorndike, 1913). Operant conditioning is defined as a type of learning in which a behavior is strengthened or weakened, when it is followed by certain consequences. Whereas anticipated rewards (i.e., positive reinforcers) generally strengthen behavior, punishments generally weaken behavior. Most educators stress that reward, rather than punishment should be used to change inappropriate behavior (e.g., Banks, 2002; Larsen & Tentis, 2003). However, very often no clear rationale for this suggestion has been given. In the present research, it is examined whether an improved behavior, because of a reward (as opposed to a punishment) is rather ascribed to the person, and, consequently, rewards more than punishments are perceived as more likely to sustain improved behavior, even when the incentive is no longer offered.

Early theorists (Thorndike, 1911) assumed that reward and punishment could be construed as opposite sides of a coin and symmetrical in their consequences. Presently, however, this assumption has

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not remained undisputable. For example, Miller (1944) demonstrated that motivation increases as the distance to a goal decreases. However, the change in strength of motivation seems to depend on the goal (i.e., obtaining reward versus avoiding punishment). The slope of motivation for rewards decreases less as a function of distance from the desired goal than does the strength of motivation to avoid punishments. Attribution theorists have even contended that reward might decrease, whereas punishment might increase motivated behavior (Meyer et al., 1979). Persons who are rewarded for success at an easy task might assume that they have low ability. On the other hand, persons who are punished for failure might assume that they have the ability to accomplish the task. These beliefs are associated with enhanced achievement striving (Weiner, 1986). In sum, and opposed to the assumptions by Thorndike (1913), reward and punishment could be asymmetrical in their consequences on motivated behavior.

In a different context, recent research has documented that the effect of anticipated rewards versus punishments on dispositional causation also are not symmetrical. For instance, Alanazi and Rodrigues (2003), Rodrigues (1995), and Rodrigues and Lloyd (1998) demonstrated that compliance because of an anticipated reward is attributed more to the person than compliance because of an anticipated punishment. Assume, for example, a doctor asks a nurse to administer a drug that has not been officially approved and offers the nurse either a pay raise or threatens that the nurse's wages will be lowered, if she does not administer the drug. If the nurse complies and administers the drug, the nurse is perceived more responsible for this transgression, when the compliance follows a promise of a pay raise as opposed to the threat of a pay cut (see also Reeder & Spores, 1983; Wells, 1980).

In a subsequent series of studies, Greitemeyer and Weiner (2003) showed that the asymmetrical consequences of reward and punishment on perceptions of responsibility and dispositional attributions were reliable across a variety of incentives and requested behaviors. More importantly, they demonstrated that this asymmetry was not based on unequal norms (i.e., differences in perceived compliance rates), which yielded different dispositional inferences. For example, it was found that if the doctor offers the nurse a strong incentive (e.g., ''If you do this, I will write a strong letter of recommendation for the job you applied for next year.'') so that almost all nurses would comply, the nurse would be perceived as less responsible for complying than if the doctor would have offered a weak incentive (e.g., ''If you do not do this, I will write a weak letter of recommendation for the job you applied for next year.'') (Kelley, 1967). In fact, Greitemeyer and Weiner (2003) found that the more respondents perceived themselves as likely to comply with the request for a transgression, the less the transgressor was perceived as responsible. However, these authors documented that the asymmetrical consequences of reward and punishment on perceptions of responsibility remained significant, even after controlling for perceived compliance rates. Meaning, even though respondents held the transgressor less responsible if they themselves were likely to comply with the request, when these compliance rates were controlled for, the asymmetrical consequences of reward and punishment on perceptions of the transgressor's responsibility still remained significant.

In the present studies, the findings reported by Greitemeyer and Weiner (2003) are applied to an educational context, in which a series of vignettes depict school-related situations, whereby parents want their children to change inappropriate behaviors (e.g., disrupting the classroom or being disrespectful toward the teacher). To motivate their child to improve, the parents either promise a reward for improvement or threaten a punishment in case the child does not improve. The child complies with the request; that is, does better. Given positive relative to negative incentives, it is anticipated that the child's improvement should be more ascribed to the child. In addition to applying the previous research by Greitemeyer and Weiner (2003) to a new context, in Study 1 and Study 2, this work was applied to a sample of parents. The present research also goes beyond the previous work by examining whether differences in perceived dispositional causation affected perceptions of long-term effects of positive and negative incentives.

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EFFECTS OF POSITIVE AND NEGATIVE INCENTIVES ON LEARNING

Rewarding students for learning has often been criticized to undermine intrinsic motivation (e.g., Deci, Koestner, & Ryan, 1999). Because a reward for a behavior may result in the student ascribing a successful performance to the reward, rather than to the intrinsic positive properties of the activity, motivated performance may decrease (Lepper, Greene, & Nisbett, 1973; Lepper, Keavney, & Drake, 1996). Such motivation researchers contend that the usage of reinforcement strategies decreases individuals' perceptions of competence and self-determination, thereby decreasing individual's intrinsic motivation to master or perform a task. Therefore, motivation researchers, concerned with the rise of usage of reward contingency systems by educators have gone as far as referring to the usage of external rewards and even verbal praise as bribery (Kohn, 1993).

However, other researchers have argued that rewards increase intrinsic motivation, when used appropriately (Eisenberger, Pierce, & Cameron, 1999). When rewards provide a student with information about their mastery of a task, or when the rewards are offered contingent on performance, then improvement should continue, even when the reward is no longer offered. The debate, regarding the usage of external reinforces on intrinsic motivation is inconclusive and two recent meta-analytic studies yielded contradictory results (Cameron, Banko, & Pierce, 2001; Deci et al., 1999). In contrast, most educators and psychologists agree that punishment does not lead to any positive behavior and, thus, tends to only to suppress behavior. Once the threat of punishment is taken away, the child may continue to use the undesirable behavior. Thus, it is expected that parents anticipate rewards more than punishments to sustain improved behavior when the incentive is no longer offered. Finally, this effect is expected to be mediated by ascriptions of dispositional causation: Because an improved behavior is rather ascribed to the person given rewards rather than punishments, rewards are more likely to sustain improved behavior even when the reward is no longer offered. This research question has not yet been examined.

To sum up, the following hypotheses were tested in the present research:

Hypothesis 1: There are greater dispositional attributions to the child for behavioral change given a reward than a threatened punishment.
Hypothesis 2: Given a reward, relative to a punishment, participants expect that the improved behavior will be sustained even when the incentive is no longer offered.
Hypothesis 3: The effect of Hypothesis 2 is mediated by the effect of Hypothesis 1: Inasmuch as participants rather ascribe the child's improved behavior to the child given a reward as compared to a punishment, they expect that rewards have more long-lasting outcomes.

To test these hypotheses, three studies were conducted. In a first study, parents were told to imagine that their child has poor grades in school. They were asked to imagine that they use different positive and negative incentives to change their child's low school achievement, and the parent was told that the child did, in fact, improve. For each incentive, participants indicated to what extent the improvement was due to something about the child and whether they expected the child to continue to improve, even when the incentive was no longer offered. In addition, perceived behavior rates were assessed. This allowed for covariation of these judgments from the dispositional causation ratings, and thus to rule out that the greater attributions to the person given rewards rather than punishments could be ascribed to unequal behavior rates. The second study aimed to replicate the first study, with parents imagining that their child behaved badly in school rather than had poor grades. In the third study, it was further tested whether participants, because of their expectation that reward more than punishment will sustain improved behavior, when the incentive is no longer offered, were more likely to report to induce behavioral change through reward rather than punishment.

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STUDY 1

Participants were asked to imagine that they used different positive and negative incentives to change their children's low school achievement. On an explorative basis, we examined whether different causes of the child's poor performance moderated the effect of incentive valence on parents' reactions (although this was not expected). Previous work has documented that effort and ability are perceived as the main causes determining achievement (Weiner, 1986). Hence, whether the child's performance was due to low effort or despite high effort, and whether the child's performance was due to low ability or despite high ability, were manipulated in a factorial design.

Method

Participants were 121 adults (92 women and 29 men) who had at least one child ($M = 2.16$, $SD = 0.86$, range = 1–6). The participants' ages ranged between 28 and 63 ($M = 39.21$, $SD = 6.05$). All participants were approached in different public buildings in Munich/Germany by either a female or a male research assistant and were asked to fill out the questionnaire. At the onset of the questionnaire, participants were asked to imagine that their child's school performance was poor. In the condition low effort/low ability, participants read:

''You receive a phone call from school. A teacher informs you that your child has very bad grades in all tests. According to the teacher, this is due to the fact that your child is lazy. The child does not do the homework, tends to skip class, does not pay attention, and is not participating in the lessons. In addition, your child's abilities are not sufficient enough to handle the class material and your child has concentration problems. You are very worried about your child's poor academic performance and want your child to do better. What incentive you use is given below.''

In the high effort conditions, it was said that the child has very bad grades in all tests, in spite of the fact that the child tries hard to be successful in school. The child turns in the homework on time, is present every day, pays attention, and participates actively in the lessons. In the high ability conditions, it was said that the child has very bad grades in all tests, in spite of the fact that the child is smart and concentrated.

Participants then read 32 different incentives or behaviors. Sixteen of the incentives/behaviors were positive and 16 were negative. A positive incentive/behavior was operationalized as a reward for doing better. A negative incentive/behavior indicated a threat for not doing better. The content of the positive incentives/behaviors was matched by a corresponding negative incentive/behavior (see Table 1). An example of a positive incentive was ''If you do better, I will allow you stay up longer during the weekends,'' and the matched negative incentive, ''If you do not do better, I will make you go to bed earlier during the weekends.'' A positive behavior was ''You express more affection,'' with the negative behavior ''You withhold affection.'' In all of the present studies, the effects of incentive and behavior on the main dependent variables were similar. For readability, incentives and behaviors are referred to as incentives. Each participant responded to all 32 incentives. Hence, a 2 (Incentive Valence) $\times$ 16 (Kind of Incentive) $\times$ 2 (Effort: high vs. low) $\times$ 2 (Ability: high vs. low) factorial design, with repeated measures on the first two factors was employed.

For each incentive, participants indicated the percentage of children that they believed would do better, given the incentive (behavior rates). Then, participants learned that the child does in fact improve. That is, participants read that the child has better grades. For each incentive, participants then responded to one question measuring dispositional causation (on a scale from 1 *not at all* to 9 *very much*). The corresponding question was ''To what extent is the child's improvement due to something about the child (personality, traits, etc.)?''. Participants also indicated the long-term effects of the incentives. They were asked how the child would do when the incentive is no longer offered (on a scale

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Table 1. Mean ratings for behavior change, dispositional attributions, and continued improvement as a function of kinds of positive and negative incentive (Studies 1 and 2)

	Study 1			Study 2		
Positive negative incentive	B	D	I	B	D	I
Incentive						
I will give you more pocket money every month	43.2	6.00	+0.54	33.1	5.57	+0.56
I will lessen your pocket money every month	39.9	5.13	+0.08	27.1	5.14	−0.07
I will allow you to watch more TV	37.8	5.83	+0.17	25.4	5.30	+0.51
I will make you watch less TV	40.8	4.88	+0.17	24.6	4.85	−0.05
I will allow you to spend more time with your friends	36.1	5.96	+0.92	26.2	5.55	+0.61
I will make you spend less time with your friends	34.5	5.25	+0.29	23.4	4.99	+0.01
I will do more activities with you that you like	35.2	6.08	+1.08	26.9	5.55	+0.54
I will do fewer activities with you that you like	32.6	5.38	+0.29	20.1	4.78	+0.21
I will take you to the special events you always wanted to go to	33.8	4.83	+0.25	31.8	5.15	+0.31
I will not take you to the special events you always wanted to go to	33.8	5.13	−0.04	20.8	4.74	−0.13
I will allow you to stay more nights over at your friend's house	35.7	5.58	+0.33	25.6	5.36	+0.46
I would not allow you to stay as many nights over at your friend's house as you do now	31.1	5.00	+0.13	20.2	4.97	+0.04
I will allow you to stay up longer during the weekends	29.7	5.25	+0.71	21.6	5.31	+0.57
I will make you go to bed earlier during the weekends	35.5	5.42	+0.13	19.7	4.89	+0.04
I will allow you to go to the sport training more often than you are going now	28.1	5.75	+0.67	23.5	5.10	+0.50
I will make you to go to the sport training less often than you are going now	32.0	5.29	−0.08	20.7	4.83	−0.02
I will buy you more season tickets for an event of your choice	29.7	5.08	+0.13	25.9	5.15	+0.19
I will stop buying you season tickets for an event of your choice	25.5	5.00	+0.13	17.9	4.60	−0.08
I will take you out to dinner at your favorite restaurant more regularly	25.5	5.00	+0.17	17.1	4.76	+0.16
I will not take you out for dinner at your favorite restaurant more regularly	24.3	4.71	−0.38	11.6	4.50	−0.08
I will take you shopping regularly	20.9	4.21	−0.04	18.3	4.73	+0.16
I will not take you shopping regularly	13.3	3.92	−0.17	12.2	4.51	−0.08
Behavior pattern						
You express more affection	44.0	6.92	+1.58	38.5	6.80	+1.17
You withhold affection	25.5	4.33	−0.17	12.1	4.39	−0.14
You praise the child more	42.9	6.96	+2.00	40.9	6.79	+0.93
You do not praise the child as much	22.5	4.08	−0.54	11.7	4.49	−0.28
You express your disappointment less	20.1	5.29	+0.29	25.9	5.66	+0.47
You express your disappointment more	42.5	5.54	+0.83	22.7	4.97	+0.18
You tell your child more often how you appreciate her	37.2	6.63	+1.67	38.4	6.56	+1.02
You tell your child less often how you appreciate her	23.4	4.75	−0.04	14.0	4.27	−0.46
You express less anger	22.3	4.71	+0.08	25.1	5.45	+0.53
You express more anger	32.5	4.58	+0.21	15.2	4.41	−0.24

Note: The positive incentive followed the words: ''If you do better,'' the negative incentive followed the words: ''If you do not do better.''
B, behavior change; D, dispositional attribution; I, continued improvement.

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from −4 *will do worse* to +4 *will do better*). Each incentive was immediately followed by these two items. Question order was counterbalanced. Question order as well as incentive order had no effect on any of the main dependent variables in any of the following experiments. Thus, these variables are not considered further. As manipulation checks, participants indicated to what extent is their child's low school achievement due to low effort and to what extent is their child's low school achievement due to low ability, respectively (on scales from 1 *not at all* to 9 *very much*).

Results and Discussion

Manipulation Checks

Parents were more likely to agree that their children's low school achievement was due to low effort in the low effort conditions ($M = 5.33$, SD = 2.00) than in the high effort conditions ($M = 4.31$, SD = 2.36), $t(111) = 2.47$, $p < .05$. Parents were also more likely to agree that their children's low school achievement was due to low ability in the low ability conditions ($M = 3.96$, SD = 2.37) than in the high ability conditions ($M = 2.64$, SD = 1.51), $t(109) = 3.52$, $p < .01$. Thus, the manipulations were successful.

Behavior Rates

A 2 (Incentive Valence) × 16 (Kind of Incentive) × 2 (Effort) × 2 (Ability) ANOVA with repeated measures on the first two factors revealed a significant main effect for Kind of Incentive, $F(15, 1485) = 12.61$, $p < .001$, $\eta^2 = .11$, indicating that the incentives differed in the perceived likelihood of improving the child's behavior (see Table 1). In addition, there was a main effect of Incentive Valence, $F(1, 99) = 90.09$, $p < .001$, $\eta^2 = .48$. The perceived likelihood of the child's improved behavior was higher for the positive ($M = 27.8\%$) than for the negative ($M = 18.4\%$) incentives. The main effects of Effort and Ability, respectively, as well as the interactions between Incentive Valence and Effort and between Incentive Valence and Ability, respectively, were not significant.

Dispositional Causation

An ANOVA revealed a significant main effect for Incentive Valence, $F(1, 101) = 45.34$, $p < .001$, $\eta^2 = .31$. There were higher ratings of dispositional causation for the positive ($M = 5.55$) than for the negative incentives ($M = 4.71$). Thus, Hypothesis 1 was confirmed. The main effects of Effort and Ability, respectively, as well as the interactions between Incentive Valence and Effort and between Incentive Valence and Ability, respectively, were not significant. A 2 (Incentive Valence) × 16 (Kind of Incentive) × 2 (Effort) × 2 (Ability) ANCOVA, with repeated measures on both factors, using the behavior rates for each incentive as covariates, was performed next. Most importantly, the main effect for Incentive Valence remained significant after controlling for behavior rates, $F(1, 85) = 9.89$, $p < .01$, $\eta^2 = .10$.

Effect of Incentive When no Longer Offered

An ANOVA revealed a significant main effect for Incentive Valence, $F(1, 98) = 37.32$, $p < .001$, $\eta^2 = .28$. Parents expected the child would continue to improve, given a positive ($M = +0.54$) rather than a negative incentive ($M = -0.07$). Moreover, only the positive incentives yielded an expectation of

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continued improvement, $t(148) = 5.07$, $p < .001$ (for the negative incentives, $t(145) = -0.30$, $p = .77$). Thus, Hypothesis 2 received support from the data. The main effects of Effort and Ability, respectively, as well as the interactions between Incentive Valence and Effort and between Incentive Valence and Ability, respectively, were not significant.

To test whether perceived dispositional causation mediated the effect of Incentive Valence on continued improvement, a 2 (Incentive Valence) $\times$ 16 (Kind of Incentive) 2 (Effort) $\times$ 2 (Ability) ANCOVA, with repeated measures on the first two factors, using perceived dispositional causation for each incentive as covariates, was performed on the data. The main effect for Incentive Valence was no longer significant when controlling for dispositional causation, $F(1, 96) = 1.28$, $p = .26$, $\eta^2 = .01$. In contrast, the effect of the covariate was significant, $F(1, 96) = 7.52$, $p < .01$, $\eta^2 = .07$. Thus, as suggested by Hypothesis 3, perceptions of dispositional causation mediated the effect of Incentive Valence on continued improvement. That is, participants expected that rewards have more long-lasting outcomes than punishments, because they were more likely to ascribe the child's improved behavior to the child given a reward rather than a punishment.

In sum, given rewards rather than punishments, participants were more likely to ascribe a child's improvement to the child. In addition, this effect remained significant after controlling for behavior rates. Thus, the asymmetrical effects of reward and punishment on dispositional attribution cannot be ascribed to differences in social norms. Participants also expected that the improved behavior would be more likely to sustain when the reward, relative to the punishment, is no longer offered. Moreover, perceptions of dispositional causation mediated the effect of incentive valence on continued improvement. That is, participants expected that rewards have more long-lasting outcomes than punishments, because they ascribe the child's improved behavior to the child. The aim of Study 2 was to replicate the pattern of results reported above. Additionally, participants were asked about poor behavior rather than poor academic achievement. The design and procedure of Study 2 were very similar to that of Study 1. However, a different vignette was used.

STUDY 2

Method

Participants were 32 German adults (26 women and 6 men) who had at least one child ($M = 2.34$, SD = 0.83, range = 1–5). The participants' ages ranged between 31 and 47 ($M = 39.26$, SD = 4.75). The same incentives and the same dependent measures (besides the manipulation checks) were used as in Study 1. However, participants were asked to imagine that their child behaved badly in school. Concretely, they read:

"You receive a phone call from school. A teacher informs you that your child is being disrespectful to the teachers, is not waiting in line for his/her turn, and is aggressive to classmates. You are worried about your child's bad behavior in school and ask your child to do better. What incentive you use is given below."

Results and Discussion

Behavior Rates

A 2 (Incentive Valence) $\times$ 16 (Kind of Incentive) ANOVA with repeated measures on both factors revealed a significant main effect for Kind of Incentive, $F(15, 375) = 5.40$, $p < .001$, $\eta^2 = .18$,

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indicating that the incentives differed in the perceived likelihood of improving the child's behavior (see Table 1). The main effect of Incentive Valence was not significant, $F(1, 25) = 2.43$, $p = .13$, $\eta^2 = .09$. The perceived likelihood of improving the child's behavior was relatively equal for the positive ($M = 32.6\%$) and the negative ($M = 30.6\%$) incentives.

Dispositional Causation

An ANOVA revealed a significant main effect for Incentive Valence, $F(1, 23) = 10.15$, $p < .01$, $\eta^2 = .31$. As in Experiment 1, there were higher ratings of dispositional causation for the positive ($M = 5.63$) than for the negative incentives ($M = 4.90$).

Effect of Incentive When no Longer Offered

An ANOVA revealed a significant main effect for Incentive Valence, $F(1, 23) = 11.17$, $p < .01$, $\eta^2 = .33$. Participants expected that the child would continue to improve, given a positive ($M = +0.66$) rather than a negative incentive ($M = +0.05$). Moreover, compared to the scale midpoint, only the positive incentives yielded an expectation of continued improvement, $t(28) = 1.96$, $p = .06$ (for the negative incentives, $t(27) = 0.01$, $p = .99$). Moreover, the main effect for Incentive Valence was no longer significant when controlling for dispositional causation, $F(1, 22) = 2.64$, $p = .12$, $\eta^2 = .11$. However, in contrast to Study 1, the effect of the covariate was not significant, $F(1, 22) = 0.47$, $p = .50$, $\eta^2 = .02$.

In sum, as in Study 1 (while using a different vignette), given rewards rather than punishments, participants were more likely to ascribe a child's improvement to the child, and, thus, they expected that the improved behavior would be more likely to sustain when the incentive is no longer offered. Note, however, that the mediator (dispositional causation) was not positively related with the outcome (effect of incentive when no longer offered) while controlling for the predictor variable (incentive valence). This (nonsignificant) finding could be simply due to the small sample size in Study 2. However, to clarify whether ratings of long-term effects of incentive indeed are positively affected by ratings of dispositional causation, a third study was conducted.

STUDY 3

In Study 3, we also tested whether participants were more likely to report to induce behavioral change through reward rather than punishment. Educators, as well as lay people are convinced that reward is better than punishment for learning (e.g., Banks, 2002; Larsen & Tentis, 2003). However, although educators invariably advocated reward rather than punishment, no clear rationale has been given. Therefore, we examined *why* rewards are more likely to be offered than punishments. In Studies 1 and 2, given rewards rather than punishments, participants expected that the improved behavior would be more likely to sustain when the incentive is no longer offered. Because of the expectation that reward, more than punishment will sustain improved behavior when the incentive is no longer offered, it is anticipated that participants report to be more likely to offer rewards rather than punishments. To test this reasoning, participants also indicated the likelihood that they offer their child a positive or negative incentive, respectively, to change their child's behavior.

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Method

Participants were 65 students (44 women and 21 men) of the Ludwig-Maximilians-University Munich who participated for course credit. The participants' ages ranged between 19 and 40 ($M = 24.92$, $SD = 4.80$). The great majority of the participants ($N = 63$) did not have children. One participant had one child and another participant had three children. Participants received either the low achievement vignette or the bad behavior vignette. The same vignettes were used as in the previous studies. Participants responded to eight positive and eight negative incentives (see Table 2). A 2 (Incentive Valence) × 8 (Kind of Incentive/Behavior) × 2 (Type of Behavior: bad behavior vs. low achievement) factorial design, with repeated measures on the first two factors was employed. The same dependent variables were measured as in Experiments 1 and 2. In addition, participants responded to two items measuring how likely it is that they would offer their child a positive (negative) incentive to change the child's behavior (on a scale from 1 *not likely* to 9 *very likely*).

Table 2. Mean ratings for behavior change, dispositional attributions, continued improvement, and likelihood of offering incentive, as a function of kinds of positive and negative incentive and kind of behavior (Study 3)

	Bad behavior			Low achievement		
positive negative incentive	B	D	I	B	D	I
Incentive						
I will give you more pocket money every month	64.6	3.77	−0.67	43.8	5.28	−0.03
I will lessen your pocket money every month	54.5	3.16	−1.20	32.2	4.88	−0.53
I will allow you to spend more time with your friends	51.7	5.48	+0.47	40.9	5.84	+0.17
I will make you spend less time with your friends	50.3	5.10	−0.63	34.0	5.31	−0.50
I will do more activities with you that you like	47.2	6.10	+0.90	33.9	5.84	+0.20
I will do fewer activities with you that you like	36.6	5.32	+0.40	24.3	5.03	+0.17
I will allow you to stay more nights over at your friend's house	48.9	5.26	+0.67	34.7	5.50	+0.03
I would not allow you to stay as many nights over at your friend's house as you do now	41.5	4.61	−1.00	29.5	5.38	−0.30
I will allow you to stay up longer than normally during the weekends	38.2	5.16	−0.03	26.8	5.44	+0.27
I will make you go to bed earlier than normally during the weekends	39.7	4.16	−1.03	23.7	5.00	−0.23
I will allow you to go to the sport training more often than you are going now	36.7	5.68	+0.47	32.1	5.66	+0.10
I will make you to go to the sport training less often than you are going now	38.2	4.58	−0.53	24.8	5.13	−0.17
Behavior pattern						
You express more affection	53.4	6.77	+1.17	43.4	6.31	+0.23
You withhold affection	42.2	4.32	+0.53	21.0	5.28	+0.90
You praise the child more	48.8	6.52	+0.97	44.9	6.38	+0.80
You do not praise the child as much	23.7	4.68	−0.10	16.9	5.66	+0.03

Note: The positive incentive followed the words: ''If you do better,'' the negative incentive followed the words: ''If you do not do better.''
B, behavior change; D, dispositional attribution; I, continued improvement.

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Results and Discussion

Behavior Rates

A 2 (Incentive Valence) × 8 (Kind of Incentive) × 2 (Type of Behavior) ANOVA with repeated measures on the first two factors revealed a significant main effect for Kind of Incentive, $F(7, 434) = 12.41$, $p < .001$, $\eta^2 = .17$, indicating that the incentives differed in the perceived likelihood of improving the child's behavior (see Table 2). In addition, the main effect of Type of Behavior was also significant, $F(1, 62) = 8.58$, $p < .01$, $\eta^2 = .12$. The perceived likelihood that the child's behavior improves was higher for bad behavior ($M = 44.8\%$) than for low achievement ($M = 32.5\%$). Finally, there was a main effect of Incentive Valence, $F(1, 62) = 47.27$, $p < .001$, $\eta^2 = .43$. The perceived likelihood of improving the child's behavior was higher for the positive ($M = 43.4\%$) than for the negative ($M = 33.8\%$) incentives.

Dispositional Causation

An ANOVA revealed a significant main effect for Incentive Valence, $F(1, 61) = 46.48$, $p < .001$, $\eta^2 = .43$. There were higher ratings of dispositional causation for the positive ($M = 5.69$) than for the negative incentives ($M = 4.85$). Moreover, in an ANCOVA, using behavior rates for each incentive as covariates, the main effect for Incentive Valence remained significant after controlling for behavior rates, $F(1, 59) = 23.41$, $p < .001$, $\eta^2 = .28$. In addition, the ANOVA revealed a significant interaction between Incentive Valence and Type of Behavior, $F(1, 61) = 4.59$, $p < .05$, $\eta^2 = .07$. Given bad behavior, there were higher ratings of dispositional causation for the positive ($M = 5.59$) than for the negative incentives ($M = 4.49$), $F(1, 30) = 34.14$, $p < .001$, $\eta^2 = .53$. Similarly, given low school achievement, there were higher ratings of dispositional causation for the positive ($M = 5.78$) than for the negative incentives ($M = 5.21$), $F(1, 31) = 13.10$, $p < .01$, $\eta^2 = .30$. However, the effect was not as pronounced.

Effect of Incentive When no Longer Offered

An ANOVA revealed a significant main effect for Incentive Valence, $F(1, 59) = 25.68$, $p < .001$, $\eta^2 = .30$. Participants expected the child would continue to improve, given a positive ($M = +0.36$) rather than a negative incentive ($M = -0.30$). Compared to the scale midpoint, the effect for the positive incentives, $t(63) = 2.36$, $p < .05$ was significant; the effect for the negative incentives, $t(62) = -1.77$, $p = .08$, was marginally significant. In addition, the interaction between Incentive Valence and Behavior was significant, $F(1, 59) = 4.53$, $p < .05$, $\eta^2 = .07$. Given bad behavior, participants expected that the child would continue to improve, given a positive ($M = +0.49$) rather than a negative incentive ($M = -0.45$), $F(1, 29) = 23.24$, $p < .001$, $\eta^2 = .45$. Similarly, given low school achievement, participants also expected that the child would continue to improve, given a positive ($M = +0.23$) rather than a negative incentive ($M = -0.16$), $F(1, 30) = 4.84$, $p < .05$, $\eta^2 = .14$. However, the effect was not as pronounced.

To test whether perceived dispositional causation mediated the effect of Incentive Valence on continued improvement, a 2 (Incentive Valence) × 8 (Kind of Incentive) 2 (Behavior) ANCOVA, with repeated measures on the first two factors, using perceived dispositional causation for each incentive as covariates, was performed on the data. The main effect for Incentive Valence, $F(1, 58) = 1.87$, $p = .18$, $\eta^2 = .03$, was no longer significant, when controlling for dispositional causation. In contrast, the effect

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of the covariate was significant, $F(1, 58) = 38.39$, $p < .001$, $\eta^2 = .40$. Thus, perceptions of dispositional causation appeared to mediate the effect of Incentive Valence on continued improvement.

Likelihood of Offering Incentive

Participants would rather offer a positive ($M = 6.35$) than a negative incentive ($M = 4.63$), $t(64) = 4.68$, $p < .001$. However, the difference between likelihood of offering positive and negative incentives was not significantly associated with the difference between ratings of effect of incentive when no longer offered for the mean of the positive and the negative incentives, $r(65) = .11$, $p = .37$.

GENERAL DISCUSSION

The present research replicated and extended previous research (Greitemeyer & Weiner, 2003, 2006) on the asymmetrical effects of reward and punishment on dispositional attribution. Replicating the findings from previous studies, there were greater attributions to the person given rewards rather than punishments. Specifically, participants were more likely to ascribe a child's improvement to the child in situations of reward relative to punishment. Moreover, the asymmetrical effects of reward and punishment on dispositional attributions were not due to differences in perceived behavior rates. Although two of the experiments revealed significant differences between the positive and negative incentives employed in the present studies in terms of behavior rates, the effect of incentive valence on dispositional attributions remained significant when statistically controlling for behavior rates. Thus, the asymmetrical effects of reward and punishment on dispositional attribution cannot be ascribed to differences in social norms. Extending previous research, given reward rather than punishment, participants were more likely to expect that the improved behavior would sustain, when the incentive was no longer offered. This finding was mediated by perceptions of dispositional causation: Because participants were more likely to ascribe the child's improved behavior to the child given reward rather than punishment, they expected that rewards have more long-lasting outcomes than punishments. This pattern of results occurred in two of the three studies, using different vignettes and employing a college sample as well as real parents. In Study 2, the effect of incentive valence on continued improvement also disappeared when controlling for dispositional causation. However, dispositional causation was not significantly associated with continued improvement, which could be due to small sample size.

Study 3 further revealed that participants were more likely to report to induce behavioral change through reward rather than punishment. In line with this finding, educators stress the positive effects of reward relative to punishment for learning (e.g., Banks, 2002; Larsen & Tentis, 2003). In addition, various side effects of punishment have been stressed, such as anger or feelings of hostility, which could also interfere with learning. However, several studies have revealed that learning is more strongly affected by punishment than by reward (for a review, see Baumeister, Bratlavsky, Finkenauer, & Vohs, 2001). For example, in a study by Costantini and Hoving (1973), children were either instructed to win as many marbles as possible or to lose as few marbles as possible. Results showed that avoiding losing marbles resulted in more effective inhibition of responses than trying to gain marbles. Tindall and Ratliff (1974) also compared the effects of reward and punishment on performance. In the reward condition, children (either first, fourth, or eighth graders) received a token for correctly identifying figures. In the punishment condition, children were exposed to a loud noise for incorrect responses. Children performed significantly better in the punishment condition than in the reward condition. In addition, developmental stage did not show any interaction with experimental condition.

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Interestingly, recent research (Kazemi & Weiner, in preparation) revealed that parents punish more than they reward. In their study, Southern Californian parents of school-aged children were asked what they did to get their child to do better, when they had done poorly in school or when they had behaved badly in school. Parents reported offering punishment about three times more often than offering reward. Thus, it seems that, although parents' explicit attitudes toward punishment are negative, their behavior is in line with the above-described research showing that punishment is better than reward for learning. Research by Cohen, Manimala, and Blount (2000) also showed that parents' explicit attitudes and behaviors do not correspond. In their study, parents were asked to provide reports of the therapeutic behaviors they typically engage in during their children's immunizations. Then, the immunization procedure was video taped and coded. Results indicated that parents overestimated the quantity of their therapeutic behaviors and that no relationship existed between parents' reports of their behavior and their actual behavior during children's immunization.

But why do parents' explicit attitudes and behaviors not correspond? It is conceivable that people may simply lack self knowledge (Wilson & Dunn, 2004). For instance, parents might be motivated to keep their beliefs that punishment is more effective than reward outside of unconsciousness. Moreover, previous research has shown that, when people's explicit and implicit attitudes dissociate, their behavior is rather determined by their implicit than their explicit attitudes (Wilson, Lindsey, & Schooler, 2000). Thus, whereas parents' explicit attitudes toward punishment are negative, their implicit attitudes might be positive. Furthermore, a parent whose child behaves badly is likely to experience anger, which in turn is associated with aggression (Weiner, 1995). Thus, even if both explicit and implicit attitudes towards reward are more positive than towards punishment, parents might impulsively punish rather than reward. Finally, and in contrast to our expectations, the greater likelihood to induce behavioral change through rewards, rather than punishments in Study 3 was not associated with perceptions of continued improvement. That is, parents do *not* prefer to reward than punish, because they are convinced that reward has more positive long-lasting effects than punishment. It is, thus, conceivable that parents reported preferring to reward because they have been told by educators that reward is better than punishment, but parents may not be sure as to why they reward versus punish. In addition, parents may simply indicate to rather use rewards than punishments due to social desirability concerns. Hence, because their favorable attitudes toward rewarding are not grounded in strong beliefs (Petty & Krosnick, 1995), they may not practice what they preach. Future research is needed to examine these issues and other explanations for the apparent discrepancy between parents' attitudes and behaviors.

Limitations

The reader should be aware that in all three studies, a within-participants design was employed. That is, participants responded to all positive as well to all negative incentives. Thus, participants may have compared the different kinds and valence of incentives, within each study and calibrated their judgments to the incentive manipulations. Note also that participants' reported likelihood of offering incentive was not assessed spontaneously, but after various relevant questions that may have affected participants' responding. It is also worth noting that participants received only limited information about the circumstances of the inappropriate behavior of the child. Moreover, because all vignettes were hypothetical, no judgments were made by participants that involved real consequences. Hence, future research in which actual behavior is assessed would be fruitful. For instance, parents' responses to their children's behavior could be coded in terms of positive and negative incentives used, and their corresponding dispositional attributions for their children's progress examined. It is also worth noting that in all of the present studies, parents were asked how they would motivate their children to improve.

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It would be interesting to investigate whether individuals also rather induce behavioral change through reward than punishment in other relationships. Note also that Study 3 contained only a small minority of participants who were parents. Thus, most of these participants have no experience in raising children. In the present research, participants were asked to imagine that either one positive or negative incentive was used to change a child's inappropriate behavior. Note, however, that most parents rather practice trial and error and do not use systematically reward and punishment. In addition, they almost always use more than one single technique to change a child's behavior. Finally, all participants of the present studies were from Germany, which is a rather liberal country. It is conceivable that people from more traditional cultures have more favorable attitudes towards punishment.

With these limitations in mind, one may still conclude that most of the findings from the three studies were consistent and robust. In all studies, given reward relative to punishment, participants were more likely to ascribe a child's improvement to the child. As a consequence, they were more likely to expect that the improved behavior would sustain when the incentive was no longer offered, which is in line with educators' plea to use reward rather than punishment (Banks, 2002; Larsen & Tentis, 2003). However, whether it is not only assumed that reward has more positive long-term effects than punishment, but reward, in fact, is more likely to sustain improved behavior awaits further empirical evidence.

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