

Research Article

You Can't Always Get What You Want

Effortful Control and Children's Responses to Undesirable Gifts

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ABSTRACT—*This study examined individual differences in children's regulation of emotional expression after receiving desirable and undesirable gifts. Effortful control, the ability to suppress a dominant response in favor of a subdominant one, was measured using a battery of behavioral tasks. Reactions to the gifts were videotaped, and emotional expression was coded. Age predicted effortful control, but not emotional displays. Effortful control predicted similarity of children's displays of positive affect after receiving the two gifts. Specifically, children high in effortful control showed similar amounts of positive affect after receiving the desirable and undesirable gifts, whereas children low in effortful control showed less positive affect after receiving the undesirable gift than after receiving the desirable gift. Results are discussed in terms of temperament and the development of socially appropriate expressive behavior.*

In every human culture, individuals encounter events that generate conflict and frustration. Emotional responses to these events can be destructive to relationships and to group living. Consequently, all known human cultures have evolved rules for the expression and regulation of emotions, especially those tied to frustration and interpersonal conflict (Ainslie, 2001; De Waal, 1996). Specific rules may vary from culture to culture, but one of the major goals for the socialization of children is in-

struction in emotion regulation and public control over emotional displays.

Socializing emotional regulation and public display of emotion can be complicated by several factors. First, individuals appear to differ in emotional reactivity and responsiveness to frustration. Even during the early months of life, infants show differences in emotional and motor reactivity, and these early-appearing differences can be construed as temperament (for a review, see Rothbart & Bates, 1998; Shiner, 1998). Socialization should proceed more smoothly for children who are less reactive to frustration, and different strategies may be needed for more emotionally reactive children.

Second, effective socialization activities must be tailored to the age and developing abilities of the child. Many approaches to the study of temperament emphasize its developmental aspects, suggesting that the development of affective and attentional systems may influence an individual's temperament (Rothbart, Derryberry, & Posner, 1994). Children's early affective behaviors primarily reflect reactive tendencies, whereas the later-appearing voluntary attentional control over emotional behavior develops along with midline structures such as the anterior cingulate and dorsolateral prefrontal cortex (Derryberry & Rothbart, 1997). Consequently, socialization of emotion in infants is severely constrained by their limited maturity, but as children grow older and are subject to expectations for situationally appropriate emotional behavior, skills in voluntarily inhibiting or activating emotional reactions become increasingly important.

Rules dealing with the appropriateness of expressive behavior are called display rules. These rules are acquired during childhood (Saarni, 1984) and help children display behavior that is socially advantageous. Parents play an important role

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in socializing emotions (Eisenberg, Cumberland, & Spinrad, 1998). The children of more controlling parents, for example, were found to show less understanding of display rules than the children of less controlling parents (McDowell & Parke, 2000). In addition, internal developmental processes tied to the ontogeny of affective and attentional systems may influence an individual's temperament (Rothbart et al., 1994). Effortful control is a construct that describes the temperamental aspect of executive attention and is defined as the ability to suppress a dominant response in favor of a subdominant response (Rothbart & Rueda, in press). Developmental changes associated with the executive attentional network are reflected in changes in effortful control. By the age of 12 to 18 months, the executive attentional network is responsible for voluntary regulation of the attentional orienting system (Derryberry & Rothbart, 2001). In older children and adults, it is also involved in detecting errors, planning, and sustaining working memory. Executive attention can be used to follow task instructions that are in conflict with prepotent tendencies and therefore require effortful control (e.g., retracting the lever of a pinball machine game until the experimenter says "go," or saying "day" when shown a picture representing night; Rothbart, Posner, & Kieras, in press).

Effortful control includes the ability to overcome both reactive approach and inhibitory tendencies. For example, a child high in effortful control would be able to stop before chasing a ball into the street, as well as to approach a new child for friendship, overcoming temperamentally influenced shyness. Kochanska, Murray, and Harlan (2000) found that effortful control was a predictor of anger and joy modulation, as seen in children's reactions to laboratory events such as being strapped into a car seat or tickled by a stuffed rabbit.

To study the internalization of display rules as an aspect of child development, Saarni (1984) designed the disappointment paradigm (also known as the mistaken-gift paradigm). In this paradigm, which was later refined by Cole (1986), children were put in a situation in which their facial expressions could be observed as they received gifts of varying desirability. In this situation, the display rule is to smile and express appreciation for the gift, regardless of its desirability. Saarni found that the tendency to regulate behavior in accordance with this norm increased between ages 6 and 10, and that girls were more likely than boys to display positive behavior when disappointed by the gift, whereas boys were more likely than girls to display neutral behavior. Cole replicated this gender difference when she examined participants ages 3 to 9. However, Cole did not find an increase in emotion regulation across this broader age range. Interestingly, children as young as 3 to 4 years showed evidence of emotion regulation after receiving the undesirable gift.

These studies raise questions about whether some sources of individual differences in emotion regulation also contribute to age-related improvements. Saarni (1984) pointed out that awareness of the social norm (which improves with age), motivation to comply with the norm (related to gender), and ability to

comply with the norm are important factors in determining a child's expressive behaviors. Children's awareness of social norms (e.g., Cole, 1986; Saarni, 1979) and motivations for using display rules (e.g., Jones, Abbey, & Cumberland, 1998; McDowell & Parke, 2000) have been investigated. However, to our knowledge, no studies have examined the relations between effortful control and preschool children's spontaneous use of display rules.

In this study, we investigated children's use of effortful control to produce socially appropriate emotion-related behavior. Specifically, we examined the relation between children's performance on behavioral measures of effortful control and their emotional behavior after receiving desirable and undesirable gifts. Children's baseline displays of positive and negative behavior are likely to differ, depending in part on temperament, so a measure of internalization of display rules should take into account these differences. Therefore, we measured the degree of similarity in children's affective displays after they received a desirable and an undesirable gift. We expected children who scored relatively high on effortful control to show similar levels of positive and negative affect after receiving desirable and undesirable gifts, and children lower in effortful control to show more positive affect after receiving the desirable gift than after receiving the undesirable gift, and more negative affect after receiving the undesirable gift than after receiving the desirable gift.

METHOD

Participants

Participants were 62 children (28 males) between the ages of 3 and 5 years ($M = 4.47$, $SD = 0.75$) whose parents responded by telephone to fliers distributed at preschools and other children's organizations. Each child received three small toys for participating, and parents received \$20.

Procedure

Mistaken-Gift Paradigm

Each child rated and answered questions about eight toys and four pairs of books, a task that took about 20 min, and was presented with a gift-wrapped box containing his or her favorite toy, as determined by the toy-rating task. The experimenter remained silent and neutral in expression for 20 s after the child unwrapped the toy, and the child's reactions were captured on videotape.

After receiving the toy, the child rated four more pairs of books and was given another gift-wrapped box, this one containing his or her least favorite toy. The experimenter waited neutrally while the child reacted to this toy; after the child's reaction was videotaped for 20 s, the experimenter exchanged the undesirable toy for the child's second-favorite toy.

Measures of Effortful Control

Following procedures described by Kochanska, Murray, Jacques, Koenig, and Vandegest (1996) and Kochanska, Murray, and Coy (1997), we assessed effortful control using tasks that tested the ability to (a) slow down motor activity (Walk a Line, Turtle's House, Telephone Poles, Circle, and Star) and (b) suppress or initiate a motor response (Pinball Games A and B). In Walk a Line, children walked three times along a strip of ribbon (2.5 in. \times 12 ft) taped to the floor. The first trial was used as a baseline, and the second and third trials were preceded by instructions to walk as slowly as possible. In Turtle's House, children were given a pencil with a small turtle figure attached to the top and told to draw a line between two concentric circles surrounding a picture of a house. After the first (baseline) trial, they were instructed to make the turtle walk slowly around the house (by drawing slowly) for a second and third trial. In Telephone Poles, children were given a drawing of three squirrels sitting underneath two telephone poles with the wires missing. The children were asked to draw a wire for the first squirrel and then instructed to draw a wire quickly for the second squirrel and another wire slowly for the third squirrel. In Circle, children were presented with two concentric circles and asked to draw a line between them. The first (baseline) trial was followed by a fast trial, on which the child was instructed to draw quickly, and a slow trial, on which the child was asked to draw slowly. In Star, children were presented with two concentric stars and asked to draw a line in between them. The first (baseline) trial was followed by a slow trial and then a fast trial.

In Pinball Game A, children stood in front of an arcade-sized pinball machine and were instructed to pull the lever, but not to release the ball until the experimenter said "go." The amount of time before the experimenter said "go" varied between 10 and 25 s for six trials. Finally, in Pinball Game B, children stood in front of an arcade-sized pinball machine and were instructed to pull the lever and then to release the ball if the experimenter held up a green sign but not if the experimenter held up a red sign. The amount of time before a sign was held up was always 10 s, and children completed six trials.

Emotion Ratings

The 20-s segments after each child received the desirable and undesirable gifts were coded for the child's display of general positive affect, general negative affect, smiling (frequency and magnitude of smiles), surprise, disappointment, disgust, and anger. Each dimension was rated on a 5-point Likert-type scale that ranged from 1 (*no evidence of the emotion*) to 5 (*intense or continual evidence of the emotion*). Four research assistants trained in the use of the coding system coded the videotapes. One rater coded all participants, whereas the three other raters coded approximately two thirds of the sample each. As recommended by Weick (1968), interrater reliability was assessed with the interclass correlation coefficient, $M = .59$, $SD = .30$,

$p < .05$. A single set of scores for each participant was formed by averaging scores from the three raters.

RESULTS

Preliminary Analyses

Emotion Ratings

Internal consistency was assessed using Cronbach's alpha. We conducted a maximum likelihood factor analysis using oblimin rotation (Goldberg & Digman, 1994) and obtained a two-factor solution (Positive Affect and Negative Affect). We then used this solution as the framework for scoring children's emotional displays after they received the desirable and undesirable gifts. A negative-affect measure was created by summing the ratings for each child on scores loading on the Negative Affect factor: disappointment, disgust, anger, and overall negative affect. The internal consistency across these different dimensions was .73 for emotional displays after the desirable gift and .92 for emotional displays after the undesirable gift. The positive-affect measure was created by summing each child's score for emotions loading on the Positive Affect factor: general positive affect, smiling, and surprise. The internal consistency across these three dimensions was .78 for emotional displays after the desirable gift and .66 for emotional displays after the undesirable gift.

Emotion Regulation

To adjust for baseline individual differences in affective displays, we measured emotion regulation by subtracting each child's emotional-display score after the undesirable gift from his or her emotional-display score after the desirable gift. Separate emotion-regulation scores were computed for positive and negative affect.

Effortful Control

Two subscales measuring effortful control were scored separately. One subscale was based on the tasks involving slowing down motor activity. This score was calculated by subtracting each participant's time on the baseline trial of the task from his or her time on the slow trial (or average of the two slow trials). Internal consistency across tasks was .90. Scoring of the subscale for suppressing and initiating response to signals was based on the amount of time before the participant let go of the lever on the pinball tasks. Internal consistency across trials was .92. Scores for the six trials were summed to create a score for each participant on each of the two pinball tasks.

Table 1 shows the descriptive statistics and correlation matrix for the seven tasks. To create a composite effortful-control score for each participant, we calculated a z score for each of the seven tasks and then averaged these scores. Internal consistency across all tasks was .81.

TABLE 1
Descriptive Statistics and Correlations Among the Effortful-Control Tasks

Task	Mean (ms)	SD	Correlation						
			1	2	3	4	5	6	7
1. Walk a Line	3.08	9.41	—	.71*	.48*	.60*	.15	.15	-.17
2. Turtle's House	7.48	16.06		—	.81*	.88*	.55*	.21	-.01
3. Telephone Poles	3.58	10.06			—	.81*	.81*	.12	.01
4. Circle	6.17	15.31				—	.59*	.19	-.01
5. Star	3.09	19.93					—	.06	.07
6. Pinball Game A	83.50	25.65						—	.54
7. Pinball Game B	27.21	6.87							—

Note. For the first six tasks, the means presented were calculated by subtracting completion time for the baseline trial from completion time for the slow trial (or trials). For the last two tasks, the means indicate how long it took participants to release the lever after being given a signal to do so (summed across six trials).

* $p < .01$.

Main Analyses

Emotional Displays

To investigate the effects of gender and the desirability of the gift on children's positive and negative emotional displays, we conducted a repeated measures analysis of variance (ANOVA). Table 2 displays the means and standard deviations for positive and negative affect displayed after the desirable and undesirable gifts for each gender. Children displayed significantly more positive affect after receiving the desirable gift than after receiving the undesirable gift, $F(1, 61) = 42.62, p < .01, \eta^2 = .41$. They also displayed significantly less negative affect after receiving the desirable gift than after receiving the undesirable gift, $F(1, 61) = 105.25, p < .01, \eta^2 = .63$. Females showed slightly more positive affect and slightly less negative affect after the undesirable gift than males did, but these effects were not significant.

Age

We conducted a linear regression with age measured in days as the independent variable. Age predicted effortful control, $F(1, 59) = 18.84, p < .01, \eta^2 = .24$, such that older children were higher in effortful control than younger children. There was no

evidence that age significantly predicted children's displays of positive affect or negative affect after receiving the two gifts.

Effortful Control and Emotion Regulation

Using linear regression, we tested effortful control as a predictor of differences between affective displays after receiving the desirable gift and affective displays after receiving the undesirable gift. As shown in Figure 1, effortful control was a significant predictor of differences in positive displays after the desirable and undesirable gifts, $F(1, 60) = 4.21, p < .05, \eta^2 = .07$. Children with high effortful-control scores showed smaller differences in positive affect after receiving desirable and undesirable gifts than did children scoring low in effortful control. There was no evidence that effortful control was a significant predictor of differences in negative affect displayed after receiving the desirable and undesirable gifts.

To explore the possibility that the relation between effortful control and emotion regulation was due only to the relation between age and effortful control, we ran another linear regression, including age and effortful control as independent variables and emotion regulation as the dependent variable. Effortful control was marginally significant, $b = -0.27, p < .07$, but age was not

TABLE 2
Mean Emotion Ratings for Children's Emotional Displays

Affect	After desirable gift		After undesirable gift	
	Males	Females	Males	Females
General positive affect	2.87 (0.92)	2.86 (0.92)	1.68 (0.76)	2.00 (0.84)
Smiling	2.52 (0.88)	2.68 (0.87)	1.73 (0.75)	2.09 (0.87)
Surprise	2.42 (1.01)	2.47 (0.71)	2.35 (0.64)	2.39 (0.73)
Positive-affect composite (sum)	7.82 (2.38)	9.01 (2.07)	5.76 (1.65)	6.44 (1.89)
General negative affect	1.36 (0.45)	1.34 (0.47)	2.86 (0.97)	2.50 (0.95)
Disappointment	1.60 (0.62)	1.55 (0.70)	2.92 (0.87)	2.63 (0.85)
Disgust	1.06 (0.16)	1.05 (0.17)	2.39 (0.92)	1.95 (0.92)
Anger	1.04 (0.11)	1.03 (0.11)	1.35 (0.53)	1.29 (0.59)
Negative-affect composite (sum)	5.05 (1.14)	4.97 (1.33)	9.51 (3.01)	8.37 (3.00)

Note. Standard deviations are in parentheses.

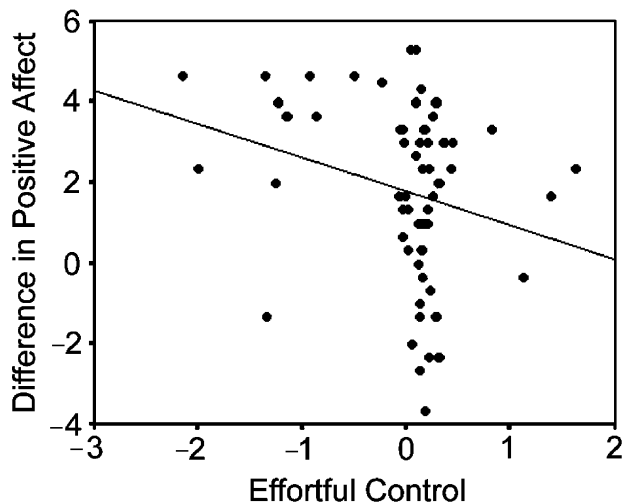


Fig. 1. Differences in positive affect displayed after the desirable and undesirable gift as a function of effortful control (z scores).

significant, $b = 0.04$. There was also no evidence that age moderated the relation between effortful control and differences in positive affect, $F(1, 57) = 1.56, p = .21, \eta^2 = .03$.

DISCUSSION

The current study examined the role of individual differences in effortful control in children's reactions to a socially important frustration situation. Specifically, we found a predicted relation between effortful control and children's compliance with a display rule: showing appreciation for an unwanted gift. Children who performed well on behavioral measures of effortful control displayed similar amounts of positive affect after receiving desirable and undesirable gifts, whereas children scoring low on effortful control showed more positive affect after receiving the desirable gift than after receiving the undesirable gift. There was no evidence of a relation between effortful control and negative affect displayed after receiving the gifts. One possible explanation for this pattern of results is that most children showed some negative emotion in response to the disappointing gift, but children scoring relatively high on effortful control were able to recover in time to display the appropriate emotional behavior.

Another possibility is that the expectations for this display rule are more specific for positive displays (e.g., smile, say "thank you") than for negative displays (e.g., avoid showing displeasure), and effortful control might be useful in situations that demand the production or inhibition of specific, rather than general, behaviors. Such an interpretation is consistent with Ahadi, Rothbart, and Ye's (1993) findings that smiling loads on the Effortful Control factor, rather than the Approach-Extraversion factor, for American and Japanese children, but not for Chinese children. Ahadi et al. suggested that in American and Japanese cultures, smiling may be more important as a social tool than as simply a reactive expression of positive affect. If

so, children in the current study who scored high on effortful control may have produced a smile or other signs of positive affect in order to communicate appreciation to the experimenter.

The lack of significant gender effects was unexpected, but could be due in part to the small sample size or young age of the participants. The gender differences observed by Saarni (1984) and Cole (1986) were found in samples that included older, school-age children. In our study, there was a trend for girls to be more positive and less negative than were boys after receiving the undesirable gift, but this trend was not statistically significant.

Effortful control is an especially important component of temperament because it allows children to override natural emotional reactions to facilitate social interaction (e.g., Jensen-Campbell & Graziano, in press). Children differ in their affective reactions to events, as well as in their ability to regulate these reactions. As a result, children who are born with emotional tendencies not conducive to social interaction (e.g., irritability) but who are high in effortful control can modify their behavior to be more socially appropriate. This versatility makes effortful control a kind of "Swiss army tool" that can be used for a variety of different situations by children with different emotional tendencies (e.g., children who are shy, as well as children who are outgoing).

Age measured in days significantly predicted effortful control. It is notable that there was considerable improvement in effortful control across even such a small age range. Past studies showed similar improvements on the tasks included in both of our effortful-control subscales, as well as on other tasks measuring executive attention (Carlson & Moses, 2001; Kochanska et al., 2000; Reed, Pien, & Rothbart, 1984). However, age did not significantly predict emotion regulation. This suggests that, at least for children of ages 3 to 5, effortful control is a better process-based predictor of emotion regulation than is age.

In summary, compared with children who scored low on behavioral measures of effortful control, those who performed well were more regulated in their expression of positive affect after receiving a gift that they did not want. This finding provides support for the idea that effortful control is an important element in the internalization of display rules, and suggests that effortful control may be particularly useful in situations in which display rules call for production of a specific motor behavior, such as a smile. This study suggests that research on the socialization of emotion, and particularly emotional display rules in social situations, would profit from an interactive approach that includes individual differences and developmental processes associated with effortful control.

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