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LEVINE, LINDA J. Young Children's Understanding of the Causes of Anger and Sadness. Child Development, 1985, 66, 697–709. This study investigated kindergarten children's understanding of the causes of anger and sadness. Previous research has shown that before 6 or 7 years of age, children have difficulty distinguishing hypothetical situations designed to evoke anger from those designed to evoke sadness. In this project, 80 kindergarten children (ages 5-1 to 6-5, M = 5-10) predicted and explained protagonists' emotional responses to a variety of hypothetical events. The results showed that intentional harm was not the feature young children used to distinguish anger from sadness. Children predicted anger most often when they believed that protagonists could change undesirable situations and reinstate their goals and when children focused on the person or conditions that brought about undesirable situations. Children predicted sadness most often when they believed that goal reinstatement was impossible and focused on the losses that would ensue as a result.

To investigate children's understanding of emotions, a number of researchers have presented children with hypothetical scenarios and asked how the protagonists would feel. The general finding in studies of this type has been that, before age 6 or 7, children have difficulty distinguishing hypothetical situations designed to evoke anger from those designed to evoke sadness (e.g., Borke, 1971; Farber & Moely, 1979; Reichenbach & Masters, 1983). One explanation for this finding is that young children lack knowledge about the distinctions between these two emotions. Cognitive approaches to the study of emotion suggest another explanation. According to this approach, it is interpretations of events, rather than events themselves, that determine emotional responses. Thus, the same event could be expected to evoke either anger or sadness depending upon the aspects of the event to which a person attends. This study investigates the aspects of events to which young children attend, and the reasoning they engage in, when deciding whether people will respond with anger or sadness. The aims are to increase our understanding of both the young child's knowledge about emotions and the cognitive processes associated with anger and sadness.

The Young Child's Knowledge about Anger and Sadness

Children begin to talk about emotions and their causes at 2–3 years of age, (e.g., "Grandma mad... I wrote on wall"). "Sad," "mad," "happy," and "scared" are among the first emotion words used (Bretherton, Fritz, Zahn-Waxler, & Ridgeway, 1986). Three-year-old children can distinguish happy situations (such as receiving a gift) from situations designed to evoke the negative emotions anger, sadness, and fear, when asked to match situations depicted in stories or films with emotion words or facial expressions (Borke, 1971; Smiley & Huttenlocher, 1989; Stein & Levine, 1989; Thompson, 1987; Trabasso, Stein, & Johnson, 1981). The situations that 3-year-olds expect to cause fear (e.g., seeing a ghost or a monster) are also quite different from those that they expect to cause anger or sadness (e.g., a broken toy) (Trabasso et al., 1981).

Young children are much less likely to ascribe different causes to anger and sadness than to these other emotions, however. The situations that 3-year-old children describe as causing anger and sadness overlap considerably (Trabasso et al., 1981). When presented with hypothetical events, children do

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not reliably identify stories designed to evoke anger (e.g., being hit by another child) until over 5 years of age (Borke, 1971; Reichenbach & Masters, 1983). Similarly, children do not consistently identify stories designed to evoke sadness (e.g., stories about losing a pet) until 6½ years of age (Gnepp, 1983; Reichenbach & Masters, 1983; for a review, see Smiley & Huttenlocher, 1989).

These findings do not necessarily indicate that young children are confused about the situations that evoke anger and sadness. Older children and adults describe both emotions as appropriate responses to failure or interpersonal conflicts (Barden, Zelko, Duncan, & Masters, 1980; Shaver, Schwartz, O'Connor, & Kirson, 1987; Stein & Levine, 1989). Which emotion people experience, and which emotion they attribute to others, may depend upon the aspects of a situation to which they attend and the inferences they make about the situation. Thus, these findings point to the need for a more detailed investigation of the reasoning young children engage in when deciding whether a person will respond with anger or sadness.

Cognitive Models of Anger and Sadness

Cognitive models of emotion can provide a starting point for such an investigation (e.g., Lazarus, 1991; Lazarus & Folkman, 1984; Mandler, 1984; Oatley & Johnson-Laird, 1987; Ortony, Clore, & Collins, 1988; Roseman, 1991; Scherer, 1984; Stein & Levine, 1987, 1990; Weiner, 1985). These models typically describe adults, but they can also be used to generate hypotheses about the knowledge children use to predict and interpret people’s emotional responses. According to most cognitive models, people’s emotions depend in part upon their assessment of how events affect their goals and values. For example, people feel happy when they attain something that they value or when they avoid something that they find unpleasant. People feel negative emotions, such as anger and sadness, when they fail to attain or maintain something that they value or fail to avoid something unpleasant. Cognitive models differ on the features that distinguish anger from sadness, with some models focusing on the intent of the agent who caused failure and others focusing on the type of negative outcome that results.

The most common hypothesis is that people get angry when they believe that someone harmed them intentionally or were negligent; they feel sad when they believe that harm was caused by circumstances outside another person’s control (e.g., Averill, 1983; Ellsworth & Smith, 1988; Ortony et al., 1988). Attribution theory makes the closely related claim that, to experience sadness, a person need only make an assessment that failure has occurred, whereas for anger to be evoked, a causal analysis must be performed tracing failure to external, controllable causes (e.g., Weiner, 1985). In support of these claims, we find that, when adults are asked to describe situations that made them angry, their accounts typically include a human agent who intentionally caused them harm (Averill, 1982; Shaver et al., 1987). Other studies have shown, however, that these conditions also generate a lot of sadness (Roseman, 1991; Smith & Ellsworth, 1985). Thus, while intent is clearly an important component of the adult concept of anger, it does not always reliably distinguish anger from sadness.

Weiner and Graham and their colleagues have examined the role that intentional harm plays in children’s understanding of anger. They have found that children older than 6 associate anger with controllable or intentional causes. Although 5- and 6-year-old children can distinguish intentional from accidental acts (e.g., Shultz, 1980; Stein & Levine, 1989; Yirmiya & Weiner, 1986), the association between anger and intent has been found less reliably in this age group (Stein & Levine, 1989; Yirmiya & Weiner, 1986) or to a lesser degree (e.g., Graham, Doubleday, & Guarino, 1984; Weiner, Graham, Stern, & Lawson, 1982). For example, although 5-year-old children could accurately distinguish controllable from uncontrollable reasons for breaking a social engagement with a friend, they did not rate the controllable reasons as more likely to evoke anger (Yirmiya & Weiner, 1986, task 2). These findings raise the question of whether young children attribute anger based upon features other than intentional harm.

A competing hypothesis is that aversive conditions evoke anger and losses evoke sadness. An aversive condition is the presence of something one dislikes (e.g., irritating cigarette smoke or uncomfortable heat). A loss is the absence of something one likes. One hint that aversive conditions might evoke anger is the finding that violent crimes increase in frequency during heat waves (Anderson & Anderson, 1984; Rotten & Frey, 1985). Berkowitz and Heimer (1989) have demonstrated that aversive conditions in laboratory settings can give rise to feel-
ings of anger and aggression, even when subjects believe that no harm is intended. In contrast, when people are asked to recall situations that made them sad, they typically describe the loss of a valued person, relationship, or object (e.g., Roseman, 1991; Shaver et al., 1987). In sum, this research shows two distinct influences on whether people respond to situations with anger or sadness: first, inferences about the intent of the agent who caused a negative outcome and, second, whether the outcome itself consists of the presence of something aversive or the loss of something desirable.

To investigate the relation between these two influences and whether they are as important to children as to adults, Stein and Levine (1989) constructed hypothetical episodes which varied both the intent of the agent and whether a negative outcome consisted of an aversive condition or a loss. Pre-school children, first-grade children, and adults were asked to predict and explain the protagonists' emotional responses. They found that the importance of the agent's intent increased with age. Adults and first-grade children chose anger more often when they thought that harm was intentional than when they thought it was accidental. But, although preschool children accurately distinguished intentional from accidental acts, they chose anger equally often in response to the two types of harm. In contrast, all age groups chose anger more frequently in response to aversive outcomes and sadness more frequently in response to losses. The reasons given for choosing anger or sadness also differed in intriguing ways. When explaining anger, all age groups were more likely to focus on either the protagonist's goal or on causes of failing to attain that goal—regardless of whether harm was caused intentionally, accidentally, or by a natural event. Explanations for sadness were more likely to dwell on the future consequences of failure and were frequently followed by plans to substitute a new goal (see also Stein & Jewett, 1986).

These findings suggest a third factor that may determine whether adults and young children respond with anger or sadness: their beliefs about whether it is possible to reinstate threatened goals. People may attribute anger to protagonists, and focus on the causes of a negative situation, when they believe that it is possible to do something to change the negative situation. They may attribute sadness, and focus on the consequences of a negative situation, when they believe that failure is permanent and no plan can be constructed to reinstate threatened goals.

The intent of the agent and the type of negative outcome (aversive conditions vs. losses) might be important because they influence people's beliefs about whether a situation can be changed. Intentional harm may evoke anger in older children and adults because they realize that events under a person's control can often be changed. People may judge aversive conditions to be temporary but believe that, once a valued object has been lost, nothing can be done to replace it. In sum, it is hypothesized that people's beliefs about whether they can reinstate threatened goals determine whether they respond to a situation with anger or sadness. Related claims have been made by Johnson-Laird and Oatley (1992), Scherer (1984), and by researchers who have characterized anger as associated with feelings of power and sadness with feelings of powerlessness (Izard, 1977; Roseman, 1991).

The present study was designed to test the hypothesis that young children distinguish between anger and sadness based upon their beliefs about whether goal reinstatement is possible or not. Children should attribute anger to protagonists when they believe that it is possible to reinstate their goals. Children should attribute sadness when they believe that a negative outcome is permanent and they are unable to construct a plan to reinstate threatened goals. To test these hypotheses, kindergarten children answered questions about hypothetical episodes in which protagonists failed to attain their goals. As in Stein and Levine's (1989) study, the episodes varied systematically with respect to the agent's intent and whether failure consisted of a loss or an aversive condition. But in this study, the protagonists' ability to reinstate their goals was also varied. Cognitive models of emotion suggest that people's emotions depend less upon actual events than upon their interpretations of those events. Therefore, questions were designed to investigate children's interpretations of the events described and the knowledge they used to decide whether an event would evoke anger or sadness.

Kindergarten children were chosen as subjects for two reasons. First, researchers have been unable to ascertain the distinctions that children aged 6 and younger make between anger and sadness. Second, one goal of this study was to investigate the rea-
sons intentional harm comes to be associated with anger. Stein and Levine (1989) found that preschool children were not influenced by the agent's intent when attributing anger or sadness to protagonists. Unlike these younger children, kindergartners may be sensitive to implications of the agent's intent (Shultz, 1980). Finally, this study made use of hypothetical episodes because they allow the experimenter to isolate and manipulate variables likely to be important in shaping emotional responses. Once the roles of factors such as the ability to reinstate goals have been clarified, an important next step will be to obtain converging evidence from real events.

Method

Subjects

Eighty kindergarten children (ages 5-1 to 6-5, \( M = 5-10 \)) participated in the study. Forty-one of the children were female and 39 were male. The children were recruited from two schools in the Hyde Park area of Chicago: the University of Chicago Laboratory school and a Chicago public school. Most children came from middle- to upper-middle-class families. None of the participating children had severe language or learning disabilities. Three children who began but did not complete the interview were replaced.

Stimulus Materials

A set of hypothetical episodes was constructed which described a child's failure to attain a goal. Three aspects of failure were varied systematically across the episodes: (a) whether failure was caused intentionally or not, (b) whether failure consisted of the loss of a valued state or the presence of an aversive state, and (c) whether it was possible or impossible for the protagonist to reinstate the goal. Varying these three aspects of failure systematically across an episode resulted in the construction of eight versions of the episode. Four episodes with distinct content were constructed, with eight versions of each episode. Thus, a total of 32 episodes was constructed.

Consider, for example, an episode in which a child suffered a loss, which was not caused intentionally, and nothing could be done to reinstate his goal:

Jimmy loves to run around outside and play games. The game he loves to play most is baseball. One day, Jimmy and a friend are walking to the park because they want to play baseball. While they are walking, Jimmy trips over a branch that is lying on the road and he falls down and hurts his leg. Jimmy goes to see the doctor. The doctor tells him that his leg is very weak. Jimmy can't play baseball for the rest of his life because his leg will never be strong enough. Jimmy thinks about how he can't play baseball for the rest of his life.

In the intentional versions of the episode, another child tripped Jimmy and made him fall down. The versions in which goal reinstatement was possible ended by suggesting a plan:

If Jimmy ever wants to play baseball again, he will have to rest his leg until it's stronger. Jimmy thinks about how he can't play baseball until his leg is stronger.

Finally, loss episodes differed from aversive episodes in two ways: Loss episodes began by describing a positive goal or value, and ended with the protagonist's being unable to attain or maintain the desired state (e.g., "Jimmy loves to play baseball," "Jimmy can't play baseball"). In contrast, aversive episodes began by establishing a negative goal or value and ended with the protagonist's being unable to avoid or escape the disliked state (e.g., "Jimmy hates to stay in the house," "Jimmy has to stay inside the house"). Losses described in other episodes consisted of a child not being able to eat a favorite food, having a new book destroyed, and being unable to get a ride to a party. Aversive outcomes consisted of having to eat a disliked food, having to read boring books, and having to walk home from school for an hour. As in the example described above, the episodes varied with respect to the type of agent causing the negative outcomes and whether the protagonists could reinstate their goals.

Design

The experiment had three between-subjects factors (Intentional/Not Intentional, Aversive/Loss Outcome, and Goal Reinstatement Possible/Not Possible), and one within-subjects factor (Episode Replication). Episode Replication refers to the inclusion of four episodes which differ completely in content. Subjects were randomly assigned to one of the eight possible combinations of experimental variables, with the restriction that a roughly equal number of males and females was assigned to each group. Thus, each subject heard four episodes with differing content but with the same combination of the experimental variables. The order in which the four episodes were presented
was counterbalanced. A between-subjects design was used to minimize the complexity of the design while giving equal weight to the three factors of theoretical importance. Four episodes were used to allow an assessment of the stability of children's responses to the independent variables across differing content.

**Procedure**

Subjects were interviewed individually. During the interview, which took about 25 min, they heard four episodes and answered a set of questions about them. Interviews were tape recorded, and written notes were also taken.

Before hearing the episodes, children were taught to use a five-point scale represented with labeled circles of increasing size. The scale was used to ask children about the probability that protagonists would be able to reinstate their goals. Children were taught to use this scale by asking them to name an activity that they “definitely won’t” do tomorrow, “probably won’t” do, “might” do, “probably will” do, and “definitely will” do. This training procedure was used both to establish rapport with the children and to ensure that they understood the interview questions and the available responses to them.

Children then heard four episodes. Each episode was read twice to promote comprehension and recall, and it was followed by a set of questions. The first question was, “How do you think Jimmy feels? Does he feel sad, or mad, or both sad and mad?” The order in which the emotions were mentioned was counterbalanced. Children were then asked to give three reasons for each emotion they chose. Children were asked to give more than one reason because the types of events that evoke sadness and anger share many common elements (Stein & Levine, 1987, 1989). Allowing children to give more than one explanation provides a more detailed account of their knowledge about the causes of emotions and increases the likelihood of distinguishing between the causes of sadness and anger.

Although half of the episodes state explicitly that failure is permanent (e.g., "Jimmy will never be able to play baseball again") and half provide a plan for reinstating the goal, children do not always accept the conclusion of episodes as given. For this reason, children were asked directly about the likelihood that the protagonist would be able to reinstate his or her goal (e.g., “Do you think Jimmy will ever get to play baseball again?”). After an unconstrained response, they were asked to respond in terms of a five-point scale that ranged from “definitely won’t” to “definitely will.”

**Coding Explanations**

Children's explanations for anger and sadness were coded while blind to information about the subject and the emotional response being explained. Explanations were coded in terms of whether they included the outcome of the episode, the goal or value of the protagonist, and the agent or conditions responsible for the outcome. Further distinctions were made between the types of outcomes, and the types of goals and values, included: Outcomes were divided into those describing losses (e.g., Jimmy can't play baseball; Jimmy won't get to see his friends) and those describing aversive conditions (e.g., Jimmy has to stay in the house; Jimmy’s leg hurts). Key words for identifying losses were “can’t, won’t be able to, doesn’t have.” Key words for identifying aversive conditions included “has to, will have to.” Goals and values were divided into positive goals and values (e.g., Jimmy wants/likes/loves to play baseball) and negative goals and values (e.g., Jimmy doesn’t want/doesn’t like/hates to stay inside the house all day). Key words for identifying positive goals and values were “wants to, wishes to, loves, favorite, best.” Key words for negative goals and values were “does not want to, does not like, hates, worst.” Two raters working independently coded 63 explanations and agreed on exactly 89% of the responses.

**Results**

Preliminary inspection of the data and analyses showed no effects of sex on children’s attributions of sadness or anger, or on their beliefs about the probability of goal reinstatement. This variable was dropped from subsequent analyses.

Three analyses of variance (ANOVA) were then carried out to determine whether children’s emotion choices were stable across the four episodes with differing content. In each analysis, the within-subjects factor was Episode Replication, and the between-subjects factors were Aversive/Loss Outcome, Intentional/Not Intentional, and Goal Reinstatement Possible/Not Possible. The dependent variable in the first analysis was the choice of sadness alone (coded as 1) versus the choice of either anger or both
emotions (coded as 0). The second analysis contrasted the choice of anger alone versus the choice of either sadness or both. The third analysis contrasted the choice of both emotions versus the choice of sadness alone or anger alone. All three analyses showed no significant main effect for Episode Replication and no significant interactions of episode replication with any other factor.

Given that children’s emotion choices did not differ significantly over the four episodes, a summary response was calculated for each child based on whether they chose sadness, anger, or both emotions in response to the majority of the episodes. This calculation showed that 65% of the children chose sadness in response to at least three of the four episodes, 11% chose anger in response to the majority of the episodes, and 24% chose either both emotions in the majority of episodes or chose sadness and anger equally often. The calculation of one summary response for each child results in independent observations. This enables the use of logistic regression analyses which, unlike the analysis of variance, are designed specifically for categorical dependent variables.

Objective Composition of the Episodes

The next analysis concerned how the objective composition of the episodes influenced children’s choices of sadness, anger, or both emotions. Multinomial logistic regression was used because it estimates the relation between a trichotomous dependent variable and either categorical or continuous independent variables (Demaris, 1992; Hosmer & Lemeshow, 1989). This analysis was carried out on children’s summary emotion choices. The independent variables were Aversive/Loss Outcome, Intentional/Not Intentional, and Goal Reinstatement Possible/Not Possible. As Table 1 shows, of the three independent variables, only Aversive/Loss Outcome was significant in predicting children’s choice of emotions. Specifically, while sadness was the most frequent response to both losses and aversive outcomes, there is a significant direct relationship where children chose anger (β = 2.57) and both emotions (β = 1.03) rather than sadness more frequently in response to aversive outcomes (anger 10%, both 15%) than losses (anger 1%, both 9%). Correspondingly, children chose sadness rather than anger or both emotions more frequently in response to losses (40%) than aversive outcomes (25%).

In the Not Intentional condition, two episodes described harm caused by a natural event (e.g., Jimmy tripped over a tree branch) and two episodes described a human being acting without intent to cause harm (e.g., mother can’t give child a ride because the car broke down). To find out if the presence of a human agent influenced children’s emotion choices, the logistic regression described above was repeated twice. The first analysis included only the two episodes contrasting intentional harm with harm caused by a natural event. The second analysis included the two episodes contrasting intentional and accidental harm. (To carry out these analyses, summary variables for emotion choice were calculated using two episodes rather than four.) The results of these two analyses showed that, irrespective of the presence of a human agent, the Intentional/Not Intentional distinction was not a significant predictor of children’s emotion choices.

Children’s Subjective Interpretations of the Episodes

Beliefs about goal reinstatement.—According to cognitive theories of emotion, it is interpretations of events, rather than events themselves, that evoke emotional responses. Similarly, attributions of emotion are thought to depend, not on the objective

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1 Several studies have shown that the F tests obtained from ANOVA give quite accurate results when dependent variables are dichotomous, except in cases where the sample size is very small (e.g., df < 20), or the splits of 0 vs. 1 data are extremely disproportionate (e.g., Hsu & Feldt, 1969; Lunney, 1970). Because the F test was not designed for use with categorical dependent variables, however, ANOVAs were conducted in this study only when the need to analyze multiple observations per subject made the use of categorical techniques unfeasible.

2 Logistic regression uses maximum likelihood to estimate the conditional log odds of falling into one of two qualitative categories as a linear function of a set of predictor variables. Modeling data using logistic regression is similar to the linear regression model or the general linear model for ANOVA except that the response is log odds rather than a metric dependent variable. Multinomial (also called “polytomous”) logistic regression is an extension of this technique for use when the dependent variable has three or more categories. Separate logistic regression equations are constructed for the log of each nonredundant category pair (e.g., the relative probability of choosing anger vs. sadness, and the relative probability of choosing both emotions vs. sadness) and parameters are estimated via maximum likelihood.
events witnessed or described, but on the inferences made about those events. Therefore, it was important to determine whether children agreed with the objective content of the episodes. During the interviews, children were asked for their subjective judgments about whether the protagonists could reinstate their goals. Children’s unconstrained responses were examined first to assess whether or not they agreed with the objective outcomes of the episodes.

The majority of children’s unconstrained responses were either positive (“yes” or “probably”) or negative (“no” or “probably not”), with some children also supplying reasons for their judgments (84%); the remaining responses fell into the categories of maybe, partially, in the distant future, don’t know, or miscellaneous. These subjective judgments were compared with the objective outcomes of the episodes, with a match defined as responding “yes” or “probably” to episodes where goal reinstatement was possible or responding “no” or “probably not” to episodes where goal reinstatement was not possible. The results showed that children agreed with the episodes only about half of the time (52%). A two-factor ANOVA showed that the likelihood of agreement did not differ significantly across episodes, or as a function of whether goal reinstatement was possible (52%) or impossible (51%). Thus, although some episodes may have been less plausible than others (particularly in cases where goal reinstatement was depicted as impossible), children’s disagreements were not systematic for particular conditions or episodes.

An analysis of the number of matches made by each child indicated that 19% of the children insisted optimistically that the protagonists could reinstate their goals in at least three out of four episodes in which goal reinstatement was described as impossible. Similarly, 19% of the children insisted pessimistically that protagonists could not reinstate their goals in three or more episodes, even when the episodes described a plan for goal reinstatement. The remaining children agreed with the objective outcomes of the episodes in at least half of the episodes.

Given that children often drew their own conclusions about whether protagonists could reinstate their goals, children’s subjective inferences were analyzed to assess whether their beliefs about goal reinstatement influenced their choices of sadness or anger. Children were asked to judge the probability of goal reinstatement on a five-point scale ranging from definitely won’t to definitely will. A multinomial logistic regression was carried out on children’s summary emotion choices. Once again, Aversive/Loss Outcome and Intentional/Not Intentional were included as independent variables. In this analysis, however, children’s mean subjective probability judg-
ments across the four episodes were substituted for the objective variable, Goal Reinstatement Possible/Not Possible.3

As can be seen in Table 2, of the three independent variables, both Aversive/Loss Outcome and children’s subjective probability judgments significantly predicted their choice of emotion. As was found in Table 1, Aversive/Loss Outcome is still directly related to emotion choice. In addition, as hypothesized, children’s judgments of the probability of goal reinstatement were directly related to emotion choice. Children chose anger more often than sadness (β = 1.17), and they chose both emotions more often than sadness (β = .45), as they judged goal reinstatement to be more likely. Correspondingly, children chose sadness more often than anger and both emotions as they judged goal reinstatement to be less likely (anger: M = 3.97, both: M = 3.37, sadness: M = 2.87).

Children’s explanations were analyzed next. Children were asked to give three reasons for choosing anger or sadness. Explanations were coded in terms of the proportion of episodes in which each child included a loss outcome, an aversive outcome, a positive goal or value, a negative goal or value, and the agent or conditions responsible for the outcome. Children often included more than one outcome, goal, or causal condition in their responses. In response to the first request for an explanation, the average number of different reasons given was 1.7 for sadness and 1.6 for anger. Thus explanations for sadness and anger did not differ in this simple measure of complexity. The likelihood of including different types of reasons was then analyzed, first, with respect to whether the episode described an aversive condition or a loss, and second, with respect to whether children were explaining anger or sadness.

Since two comparisons were made for each type of reason, the Bonferroni adjustment was used and an alpha level of .025 was adopted. In cases where the variances of the two groups were unequal, an approximate \( t \) was used (\( t' \)), and Cochran and Cox’s conservative approximation was used to compute the degrees of freedom and the probability level associated with the approximate \( t \). Analyses were carried out for the first reason given and for all three reasons cumulatively. Since the results were almost identical, the cumulative analyses are reported.

Beliefs about losses and aversive conditions.—As column A in Table 3 shows, the episodes children heard strongly influenced their descriptions of the events: When the episode described the loss of something desirable, children’s explanations typically included a loss, \( t(78) = 10.79, p < .001 \), and a positive goal or value, \( t'(39) = 6.43, p < .001 \). When the episode described the presence of something aversive, children’s explanations were more likely to include an aversive outcome, \( t(78) = -11.32, p < .001 \), and a negative goal or value, \( t'(39) = -8.52, p < .001 \).

As column B in Table 3 shows, however, regardless of the type of episode, children described losses, \( t(59) = 3.01, p < .01 \), and positive goals or values, \( t(59) = 2.36, p < .021 \), more frequently when explaining sadness than anger. In contrast, children described aversive outcomes, \( t(59) = -3.79, p < .001 \), and negative goals or values, \( t'(59) = -2.74, p < .01 \), more frequently when explaining anger than sadness. In sum, an episode was more likely to be interpreted as the loss of something desirable when describing sadness and as the presence of something aversive when describing anger.

Beliefs about the agent’s intent.—The final analyses concerned how children interpreted the intentions of the agent who caused harm. In their explanations, children were more likely to include the agent or conditions that caused harm (e.g., Jimmy’s mom won’t let him go outside) when the episode included intentional harm (\( M = .41 \)) than when the episode did not include intentional harm (\( M = .11 \), \( t'(39) = -5.92, p < .001 \). This suggests that children were sensitive to the information about the agent’s intent that was portrayed in the episodes. Children also showed a tendency to include causal information more often when they were explaining anger (\( M = .35 \)) than sadness (\( M = .19 \), \( t(46) = 1.88, p < .07 \). This was the case irrespective of whether harm was intentional (anger: \( M = .49 \), sadness: \( M = .36 \)) or not intentional (anger: \( M = .18 \), sadness: \( M = .06 \)). Thus, although the presence of intentional harm in the episodes did

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3 The mean of each child’s probability judgments across the four episodes was calculated as a summary response after a one-way ANOVA showed that children’s probability judgments did not differ significantly across episodes, \( F(3, 315) = 1.46, p < .23 \).
TABLE 2
MULTINOMIAL LOGISTIC REGRESSION PREDICTING EMOTION CHOICE FROM INTENT, OUTCOME TYPE, AND CHILDREN’S SUBJECTIVE BELIEFS ABOUT GOAL REINSTATEMENT

<table>
<thead>
<tr>
<th>Logit and Variable</th>
<th>Estimated Coefficient</th>
<th>Estimated Standard Error</th>
<th>Wald Statistic*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angry vs. sad:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intent</td>
<td>.25</td>
<td>.82</td>
<td>.10</td>
</tr>
<tr>
<td>Aversive/Loss Outcome</td>
<td>2.49</td>
<td>1.13</td>
<td>4.84**</td>
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<tr>
<td>Subjective Reinstatement</td>
<td>1.17</td>
<td>.47</td>
<td>6.05**</td>
</tr>
<tr>
<td>Constant</td>
<td>-7.60</td>
<td>2.11</td>
<td>13.03**</td>
</tr>
<tr>
<td>Both vs. sad:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intent</td>
<td>.20</td>
<td>.56</td>
<td>.14</td>
</tr>
<tr>
<td>Aversive/Loss Outcome</td>
<td>.99</td>
<td>.57</td>
<td>2.99*</td>
</tr>
<tr>
<td>Subjective Reinstatement</td>
<td>.45</td>
<td>.29</td>
<td>2.40*</td>
</tr>
<tr>
<td>Constant</td>
<td>-3.04</td>
<td>1.10</td>
<td>7.67**</td>
</tr>
</tbody>
</table>

Note.—Log-likelihood = -53.93.
* Statistic follows a standard normal distribution and tests that the estimated coefficient is significantly different from 0.
** Intentional = 1, Not Intentional = 0.
* Aversive = 1, Loss = 0.
* Reinstatement Possible = 1, Not Possible = 0.
** p < .01.
*** p < .001.

not make children more likely to choose anger, children were more likely to focus on causal information when asked to explain or justify that choice.

Discussion
Researchers have had difficulty ascertaining the distinctions young children make between anger and sadness. The results of this study demonstrated that kindergarten children differentiate anger and sadness based in part on their beliefs about whether goal reinstatement is possible or impossible. As predicted, children were more likely to attribute anger when they believed that a person’s goal could be reinstated. They were more likely to attribute sadness when they believed that goal reinstatement was impossible. Notably, it was children’s beliefs about whether goals could be reinstated, rather than the objective outcomes of the episodes, that predicted children’s emotion choices.

Children’s choices of anger or sadness were also influenced by whether an outcome consisted of an aversive condition or a loss. Anger was chosen more frequently in response to aversive conditions than losses. Sadness was chosen more frequently in response to losses than aversive conditions.

TABLE 3
TYPES OF OUTCOMES AND GOALS INCLUDED IN CHILDREN’S EXPLANATIONS FOR SADNESS AND ANGER

<table>
<thead>
<tr>
<th>Child’s Explanation</th>
<th>A. Episode Type</th>
<th>B. Emotion Choice</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Loss</td>
<td>Aversive</td>
</tr>
<tr>
<td>Loss outcome</td>
<td>.86</td>
<td>.40***</td>
</tr>
<tr>
<td>Aversive outcome</td>
<td>.12</td>
<td>.60***</td>
</tr>
<tr>
<td>Positive goal or value</td>
<td>.63</td>
<td>.23***</td>
</tr>
<tr>
<td>Negative goal or value</td>
<td>.07</td>
<td>.46***</td>
</tr>
</tbody>
</table>

Note.—The proportions do not add to 1.00 because explanations frequently included information from more than one category.
* p < .025.
** p < .01.
*** p < .001.
The tendency of aversive conditions to evoke anger, and of losses to evoke sadness, has been noted by other investigators (Berkowitz, 1988; Berkowitz & Heimer, 1989; Roseman, 1991; Shaver et al., 1987; Stein & Levine, 1989). But these conditions have been described as though they were distinct types of events occurring out in the world rather than as different ways of conceptualizing events. Comparing the objective outcomes of the episodes with children’s interpretations of these events led to an unanticipated finding: Regardless of whether an episode ended in an aversive condition or a loss, anger was more likely to be chosen than sadness when children conceptualized the situation as the presence of something aversive (e.g., Jimmy’s mad because he has to stay in the house and he doesn’t want to). Sadness was more likely to be chosen when children conceptualized the situation as the loss of something desired (e.g., Jimmy’s sad because he wants to play outside, but he can’t).

Contrary to expectations, children’s inferences about whether the protagonists could reinstate their goals did not differ significantly depending upon whether the episodes ended with a loss or an aversive outcome. This finding may support Berkowitz’s (1988) contention that aversive conditions evoke anger independent of a person’s beliefs about whether they can control those conditions. Alternatively, the assessment of children’s beliefs about goal reinstatement may not have been sensitive enough. Children’s explanations for their emotion choices revealed that one negative outcome often brings related outcomes and goals to mind. For example, hearing that a child had to stay inside the house led several children to considerations of whether the child would be able to play with his friends and whether he would be bored. When several goals are under consideration, children may make different assessments of the probability of reinstateing different goals. It thus becomes necessary to determine which goal is under consideration when children are deciding that the protagonist would feel angry or sad, and whether the same goal is being considered when children are responding to questions about whether the protagonist can reinstate his or her goal. A more conclusive statement about the relation between the type of negative outcome and beliefs about goal reinstatement must await more sensitive measures of the goals under consideration and the inferences made about them.

According to attribution theory and several other models of emotion, people get angry when they trace the cause of a negative outcome to an external agent who acted intentionally (e.g., Averill, 1983; Ellsworth & Smith, 1988; Ortony et al., 1988; Weiner, 1985). Previous research has demonstrated that, by about 7 years of age, children clearly associate anger with intentional harm (e.g., Graham et al., 1984; Weiner et al., 1982; Yirmiya & Weiner, 1986). The results of this study cast doubt, however, on the claim that intentional harm is the defining feature of anger for younger children. Although 5- and 6-year-old children can distinguish intentional or controllable acts from accidental acts (Graham, 1988; Shultz, 1980; Stein & Levine, 1987; Yirmiya & Weiner, 1986), the presence or absence of intentional harm had no effect on the frequency with which children chose anger or sadness. Similar findings have been reported with preschool children (Stein & Levine, 1989), 5-year-old children (Yirmiya & Weiner, 1986, task 2), and second-grade children (Thompson, 1987). In the present study, children were slightly more likely to describe the agent or conditions that caused harm when explaining why a person felt angry rather than sad—but this was the case irrespective of whether or not harm was intended. Since anger was associated with the belief that goal reinstatement was possible, children may have focused on causes in the service of this belief. That is, people are most likely to construct effective plans to reinstate their goals if they understand who or what caused the situation that they are trying to change.

The current study was limited by the use of a single age group. But having established the importance of beliefs about goal reinstatement in young children’s understanding of anger and sadness, future studies might profitably explore whether these beliefs underlie the increasing role that intentional harm plays in evoking anger in older children and adults. Intentional harm may come to evoke anger as children acquire a more complete understanding of the ramifications of a person’s intent. Children may learn that intentional and unintentional acts have different implications for future behavior. When people intend harm they can choose to continue causing harm or they can choose to stop and make reparations. Thus, at least one plan for reinstating a goal is available—one can try to change the agent’s intentions and behavior. This would mean that it is not the fact of intentional harm per
se that evokes anger. Rather, intentional harm may come to evoke anger because anger is people’s response to undesirable situations that they expect to be able to change.

According to attribution theory, sadness can be evoked by any negative outcome. Young children should attribute sadness more often than anger because attributions of sadness depend upon less complex appraisals of situations. In the current study, children did indeed attribute sadness more often than anger, and their explanations for sadness did focus on negative outcomes (see also Thompson, 1987). As mentioned above, however, children were especially likely to attribute sadness to people whom they believed had suffered a particular type of negative outcome—loss. Moreover, their explanations for attributing sadness were just as complex as their explanations for anger. Instead of describing the causes of negative outcomes, children explaining sadness described further losses that would ensue in addition to, or as a result of, the negative outcome described in the episode. Given that sadness was associated with the belief that goal reinstatement was impossible, one might speculate that children focus on losses in an effort to understand the implications of failure. If a person fails to attain a goal, and cannot reatistate it, it becomes important to consider other negative outcomes that may occur as a result. Children may have attributed sadness so frequently because they could easily envision the losses that would ensue as a result of the negative outcomes described in the episodes—to they losses or aversive outcomes. While this issue needs further exploration, children’s responses suggest that the thinking associated with sadness is more complex than is commonly suggested in attribution theories.

The results of this study also raise the issue of the conditions under which young children confuse their own beliefs with those of the people whose emotions they are trying to understand. Even though the possibility or impossibility of goal reinstatement was stressed twice in each episode, and each episode was read twice, children’s conclusions about the permanence of negative outcomes often differed from what was written in the episodes. While a comprehension check would have removed any ambiguity, children showed no signs of being confused by the outcomes of the episodes. Rather, they seem to have disagreed with those outcomes and to have attributed anger and sadness to protagonists based upon their own beliefs about the probability of goal reinstatement rather than the beliefs that the protagonists were portrayed as holding.

Attributing emotions accurately requires taking into account people’s goals, the outcomes of events, and people’s interpretations or beliefs about those outcomes. Three- and 4-year-old children can understand that other people may have goals that differ from their own (Flavell, Flavell, Green, & Moses, 1990), and they can imagine how a person would feel if those goals were attained or thwarted (Stein & Levine, 1989). The ability to take people’s beliefs into account seems to develop more slowly, however—especially when children disagree with those beliefs or know them to be false. For example, Harris and his colleagues introduced children to Ellie, the toy elephant, who only liked to drink milk. When a mischievous monkey offered Ellie a milk carton filled with Coke, most 4-year-olds were unable to keep Ellie’s mistaken beliefs in mind when predicting how she would react to the gift. The majority of 6-year-olds, however, correctly predicted that Ellie would feel happy before she learned of the trick (Harris, Johnson, Hutton, Andrews, & Cooke, 1989).

It may be especially difficult for children to set their own beliefs aside if the beliefs in question reflect the child’s characteristic ways of viewing events. The results of this study suggest that there may be individual differences in young children’s tendency to view failure as reversible or permanent. Some children responded optimistically and others pessimistically in spite of the objective conditions described. Similar patterns in young children’s attitudes toward failure have been reported by Smiley and Dweck (in press). Future studies might explore the extent to which these attitudes generalize across situations and are influenced by temperament and socialization.

Finally, these findings provide evidence for the utility of the cognitive approach to studying emotions. A major issue facing research on emotion is the difficulty of identifying classes of events that reliably evoke particular emotions (see Ekman, Friesen, & Simons, 1985, for a review of valiant attempts). Cognitive approaches to the study of emotion seek to identify associations between interpretations of events and emotions rather than between events and emotions. In the present study, children who
chose anger and sadness often interpreted the very same events quite differently, focusing either on the possibility of escape from aversive conditions or on the permanence of losses.

References


