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Separable Effects of Motives, Consequences, and Presentation Order on Children's Moral Judgments

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The effects of the order of presentation of motive and consequence information on the moral judgments of kindergarten, second-, and fifth-grade children were examined. Information type (motives vs. consequences) was varied factorially with presentation position (first vs. second) allowing application of recent models of source credibility. Recency effects were obtained at all three ages. Since subjects were required to repeat each story prior to judgment, verbatim memory is unlikely to be the sole cause of recency. The results also showed a developmental shift in the weights of motives and consequences. For fifth graders, evidence suggested that the weight of motives was larger than the weight of consequences, whereas for kindergartners the weight of consequences was larger than the weight of motives. These conclusions do not depend on the assumption that the scale values are developmentally static, a necessary assumption in previous research.

Following Piaget's (1965) suggestion of a developmental progression from use of consequences toward the use of motives in making moral judgments, work on children's evaluations of the deeds of others first focused on finding the age at which children are capable of considering the motives of others, or the age at which they can be trained to consider the motives of others (Bandura & McDonald, 1963; Cowan, Langer, Heavenrich, & Nathanson, 1969; Crowley, 1968). More recent work has focused on a variety of variables determining the degree to which children use motives and intentionality as opposed to consequences in evaluating the deeds of others. A number of variables have been shown to be influential; for example, verbal versus videotape presentation (Rybash, Sewall, Roodin, & Sullivan, 1975), personal injury versus property damage (Elkind & Dabek, 1977), the structure of the moral dilemmas presented (Gutkin, 1972), the valence of the consequence information (Costanzo, Coie, Grumet, & Farnill, 1973), the salience of intentionality information (Bearison & Isaacs, 1975), potential justifications for one's acts (Darley, Klosson, & Zanna, 1978; Hewitt, 1975), and the order in which motive and consequence information is presented (Austin, Ruble, & Trabasso, 1977; Feldman, Klosson, Parsons, Rholes, & Ruble, 1976; Grueneich, in press; Nummedal & Bass, 1976; Parsons, Ruble, Chereskin, Feldman, & Rholes, 1976).

A controversial topic remaining in moral judgment is whether age differences in the use of motives and consequences exist independently of the effects of order of presentation. For example, Nummedal and Bass (1976) concluded that 6–7-year-olds centered on the most recent piece of information (regardless of whether the information pertained to a motive or consequence of an act), whereas 10–11-year-olds used both pieces of information in making moral evaluations. By analyzing individual children's data, Grueneich (in press) also concluded that there is a developmental increase in the use of both cues. In contrast, Parsons et al. (1976) and Feldman et al. (1976) concluded that even kindergartners combined motive and consequence information, and that presentation order was only one variable influencing the effect of motives on moral

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judgments. Austin et al. (1977) found no differences between 6- and 8-year-olds in either the use of motives or the effects of order of presentation.

Methodological differences among the studies on order effects make the source of the inconsistent conclusions unclear. One study used story pairs (Austin et al., 1977) while other studies presented single stories (Feldman et al., 1976; Nummedal & Bass, 1976; Parsons et al., 1976), and Grueneich (in press) presented both. One study assured that the children were able to remember the stories prior to judgment (Austin et al., 1977) and another tested memory after the judgment (Feldman et al., 1976), whereas other studies apparently did not assure memory for the stimuli (Parsons et al., 1976). In summary, the research on order effects in moral judgment has conclusively shown only that the order of presentation of motives and consequences influences their relative effects on children's moral evaluations.

The present experiment was designed to address two questions. First, are there age differences in how presentation order influences the way motives and consequences are used in making moral judgments? Second, are there age changes in the use of motive and consequence information over and above the order effects? To examine these issues, children made moral judgments based on four different types of stories: motives followed by consequences, consequences followed by motives, motives followed by motives, and consequences followed by consequences. This design is unique in the moral judgment literature in that it should allow independent evaluation of the effects of the type of information (motives vs. consequences) and presentation order. The general approach in the present article is to extend recent models of source credibility effects to analyze the subjective importance of motives and consequences in moral judgment (Birnbaum, 1976; Birnbaum & Stegner, 1979, 1981; Birnbaum, Wong, & Wong, 1976; Surber, 1981).

Averaging Model Analysis

Assuming that the process of combining information in making moral judgments can be represented by a weighted averaging model (Leon, 1979; Surber, 1977) and that the contribution of information type to the weight is independent of the contribution of presentation position, it is possible to predict the effects of different weights of motives and consequences within each age group. For example, assume the weight of motives is larger than the weight of consequences for a given age group. In this case, an averaging model predicts that the effect of a motive should be *larger* when combined with a consequence than when combined with another motive. This follows from an averaging process, since increasing the importance of one piece of information should decrease the net importance of other information. Analogously, under the assumption that the weight of motives is greater than the weight of consequences, the effect of consequences when combined with motives should be less than the effect of consequences when combined with other consequences.

These qualitative predictions can also be shown formally. Assuming that the weight of a piece of information is determined by both its presentation order and whether it pertains to motives or consequences, the averaging model can be written

$$\psi = \frac{w_{T1}s_i + (w_2 + w_{T2})s_j + w_0 s_0}{w_{T1} + w_2 + w_{T2} + w_0}. \quad (1)$$

The term ψ is the psychological impression of the stimulus combination, w_2 is a weight representing the recency effect, w_{T1} and w_{T2} are weights that depend on the type of information presented (motives or consequences), s_i and s_j are the scale values of the information, and $w_0 s_0$ is the initial impression or judgment in the absence of any information.[1] The values of s_i and s_j are the scale values of either motives or consequences (depending on the particular story), and w_{T1} and w_{T2} take the values of either the weight of motives (denoted w_M) or the weight of consequences (w_C) depending on the structure of a story. For the motive–motive stories, for example, s_i and s_j would both

[1] This model can be expanded to accommodate n pieces of information by including $n - 1$ serial position weights.

be the scale values of motives and w_{T1} and w_{T2} would both take the value of w_M.

The averaging model predicts that the effect of varying the type of *first* cue can be seen in the relative weight of the *second* cue. The relative or net effective weight of the second cue is $(w_2 + w_{T2})/(w_{T1} + w_2 + w_{T2} + w_0)$. Since the weight of the first cue type (w_{T1}) appears in the denominator, the larger the weight given to the first cue type, the smaller the relative weight of the second cue, and the less will be its net impact on the judgment. For example, assume that the weight of motives (w_M) is larger than the weight of consequences (w_C). In this case, the effect of the second cue should be greatest when the first cue is a consequence. That is, replacing w_{T1} alternately by the weight of motives or consequences, $[(w_2 + w_{T2})/(w_C + w_2 + w_{T2} + w_0)] > [(w_2 + w_{T2})/(w_M + w_2 + w_{T2} + w_0)]$. Similarly, the effect of the *first* cue should be greatest when the second cue is a consequence. This analysis implies that if $w_C \neq w_M$, two interactions should be obtained in analysis of variance (ANOVA): Type of First Cue × Level of Second Cue, and Type of Second Cue × Level of First Cue. If there are age differences in the values of w_C and w_M, these two-way interactions should also interact with age.

In summary, the present study was intended to assess developmental change in the weights given to motives versus consequences independent of the effects of presentation order. This was achieved by independently varying information type (motives and consequences) and presentation position (first or second).

Method

Subjects

Thirty-one kindergarten (11 females, 20 males), 26 second-grade (14 females, 12 males), and 39 fifth-grade (23 females, 16 males) children from two local parochial schools and one private kindergarten participated with parental permission. The data from 2 other kindergarten children were discarded due to their failure to understand the instructions. The mean ages in months for the kindergarten, second-grade, and fifth-grade children were 70, 95, and 132, respectively.

Stimuli

Stories. A total of 42 stories were constructed by factorially combining or presenting alone three different motives and three different consequences. There were six types of stories: (a) motives followed by consequences, (b) consequences followed by motives, (c) motives followed by motives, (d) consequences followed by consequences, (e) motives presented alone, and (f) consequences presented alone. There were 9 stories each of types a–d and 3 stories each of types e–f.

The three motive statements varied from positive to negative: (a) "One day this little girl wanted to help set the table to make her mother happy." (b) "One day this little girl wanted to see what kinds of things were on the kitchen shelf. She thought she was allowed to climb up to look on the shelf." (c) "One day this little girl wanted to get a cookie. Her mother told her that she couldn't have a cookie."

The three consequence statements varied from neutral to negative: (a) "One day this little girl climbed up on the kitchen cupboard and even though she was careful she slipped and a dish almost fell off the cupboard and broke." (b) "One day this little girl climbed up on the kitchen cupboard and even though she was careful, she slipped and 2 dishes fell off the cupboard and broke." (c) "One day this little girl climbed up on the kitchen cupboard and even though she was careful, she slipped and 10 dishes fell off the cupboard and broke."

When the stories were in the traditional motive–consequence order, the words—"One day this little girl"—in the consequence sentence were replaced by "So she." For the consequence–motive stories, the motive sentences were modified to begin, "She climbed up on the kitchen cupboard because she," followed by the motive. For the motive–motive and consequence–consequence stories, the second sentence began "The next day" instead of "One day." For motive-only stories, the phrase—"So she climbed up on the kitchen cupboard"—was added. Thus, the motive–motive and consequence–consequence stories involved two separate actions, whereas the other stories involved only a single action. In all cases, consequences were implicitly accidental.

The 42 stories were randomly ordered with the constraint that either four or five stories from each 3 × 3 design be presented in the first half of the stimuli, with the remainder in the second half. The motive-only and consequence-only stories were divided with either two stories in the first half or two in the second half of the stimuli. A second random presentation order was simply the reverse of the first random order. By randomly assigning subjects to the two presentation orders, each story occurred approximately the same number of times in the first half of the presentation of the stimuli as in the second half. The two orderings of the stories were tape recorded by the female experimenter.

Rating scale. Four smiling faces ranging in size from 8 to 4 cm were used to represent the good portion of the rating scale. The smiling faces were labeled for the subject by the experimenter in descending order of size as "very good," "good but not very good," "a little bit better than a little bit good," and "a little bit good." A set of frowning faces alike in size to the smiling faces was used to represent the bad portion of the scale. These faces were labeled by the experimenter in descending order as "very bad," "bad but not very bad," "a little bit worse than a little bit bad," and "a little bit bad." A small face (2½ cm), neither smiling nor frowning, was labeled by the experimenter as "neither good nor

bad" and was placed with the frowning faces to the left and the smiling faces to the right. For data analysis, the numbers one to nine were used, with one corresponding to the largest frowning face and nine corresponding to the largest smiling face.

Procedure

Each child was seen individually for two sessions in a room in the child's school. A female experimenter tested three-fourths of the subjects, and a male experimenter tested one-fourth of the subjects. In each session, each subject judged three practice stories followed by 21 of the 42 stories. The two sessions occurred within 2 days of each other and lasted 20–30 minutes. The first practice story was the positive motive combined with a positive consequence ("The little girl set the table and when her mother came home she was so happy she gave the little girl a treat"). The other two practice stories were the negative motive combined with the most negative consequence, and the moderate motive combined with the moderately negative consequence (breaking two dishes).

The child was instructed by the experimenter that he or she would listen to a series of stories about little girls who were 5 years old and that each story was about a different little girl. The child was told he or she would be asked to decide how good or bad the little girl in the story was by pointing to one of the smiling or frowning faces. The scale was then explained to the child. The child was asked to repeat each story after hearing it played on the tape recorder. When necessary, the tape was rewound and the story repeated again. Systematic data were not collected on number of repetitions necessary. To hold the attention of the kindergarten and second-grade children, the experimenter asked them to repeat the story to a frog puppet so that "Froggy could hear." The judgment scale was covered between stories and the experimenter did not uncover the judgment scale until the child accurately repeated the story. At the end of each story the child was asked whether the little girl in the story was a good girl (indicating the smiling faces), a bad girl (indicating the frowning faces), or neither bad nor good (indicating the middle face).

Results

Replication of Previous Findings

The first issue is whether an increase with age in the effect of motives and a decrease in the effect of consequences is found when the order of motives and consequences is counterbalanced. Figure 1 presents the age changes in the effects of motives (left-hand panel) and consequences (right-hand panel) from the motive–consequence and consequence–motive stories, averaged over presentation order. In the left-hand panel the effect of motives is largest for the fifth graders and smallest for the kindergarten sample. Analogously, in the right-hand panel the effect of consequences is largest for the kindergartners and smallest for the fifth graders. These results replicate those of Surber (1977) very closely. Both the Age × Motives, $F(4, 186) = 16.46$, and Age × Consequences $F(4, 186) = 2.91$, interactions were significant in a 2 (order) × 3 (motives) × 3 (consequences) ANOVA.[2] Inspection of the Age × Motives and Age × Consequences effects within each presentation order showed that these effects were qualitatively similar. The Age × Order × Consequences and Age × Order × Motives interactions were both nonsignificant ($ps > .15$).

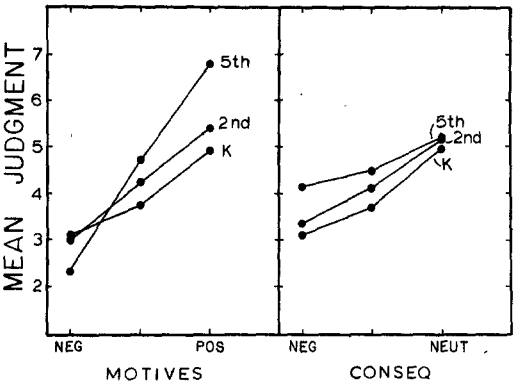

Figure 1. Mean judgments in the Order × Motives × Consequences design as a function of motives with a separate curve for each age group (left-hand panel), and as a function of consequences with a separate curve for each age group (right-hand panel). (Response scale ranged from nine [indicating "very very good,"] to one [indicating "very very bad"]. Note that the effect of motives is greatest for the fifth graders, but the effect of consequences is greatest for the kindergartners. 5th = fifth grade; 2nd = second grade; K = kindergarten. NEG = negative; POS = positive; NEUT = neutral.)

Analyses of the Order × Motives × Consequences design for each age group alone yielded significant main effects of motives $F(2, 60) = 20.47$, for kindergartners; $F(2, 50) = 33.13$ for second graders; $F(2, 76) = 213.46$ for fifth graders. There were also significant main effects of consequences, $F(2, 60) = 28.24$ for kindergartners; $F(2, 50) = 40.79$ for second graders; $F(2, 76) = 31.89$ for fifth graders. This agrees with the conclusions of previous investigators that children are capable of using both motives and consequences in their moral judgments.

[2] For all significant effects, $p < .05$.

The results in Figure 1 also show that there are age differences in the effects of motive and consequences information independent of the effects of presentation order. In an averaging model this pattern of results could be predicted in several ways. One interpretation is that of Surber (1977) that the weights of motives and consequences change with age. A second interpretation is that the range of the scale values of motives and consequences changes with age. The data of the Order × Motive × Consequence design alone cannot distinguish between these interpretations. The problem of distinguishing the weight and scale value interpretations of the data is considered below.

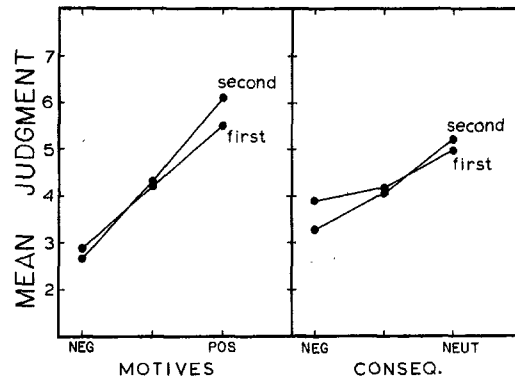

Figure 2. Mean judgments in the Order × Motives × Consequences design as a function of motives with a separate curve for each presentation position (left-hand panel), and as a function of consequences with a separate curve for each presentation position (right-hand panel). (Recency can be seen in that the curve for each cue when presented second is steeper than the curves for the cues when presented first. Response scale ranged from nine [indicating "very very good"] to one [indicating "very very bad"]. First = first presentation position; second = second presentation position. NEG = negative; POS = positive; NEUT = neutral.)

Recency Effects

At all three ages, a recency effect was obtained in the Order × Motive × Consequence design. Both motives (left-hand panel of Figure 2) and consequences (right-hand panel of Figure 2) had a larger effect when presented second than when presented first. The recency effects can be seen in that the curve for each cue when presented second is steeper than the curve for the cue when presented first. In ANOVA the recency effects were reflected in significant Order × Motives, $F(2, 186) = 10.44$ and Order × Consequences interaction, $F(2, 186) = 11.06$. Inspection of the data of each age group showed that the recency effects held across all three age groups.

Recency effects also occurred in the motive–motive and consequence–consequence designs in all age groups and were very similar to those presented in Figure 2. It is interesting that recency effects occurred at all ages even though the children accurately repeated each stimulus story before making a judgment. Austin et al. (1977) also reported recency effects in 6- and 8-year-olds in spite of accurate story repetition. Thus the recency effects appear to be somewhat independent of verbatim memory for the stimuli.

Centration Hypothesis

Piaget's (1965) hypothesis that children center on one piece of information might account for the age changes in use of motive and consequence information if there is a change in the proportion of subjects in each age group who rely totally on one cue as opposed to the other. The centration hypothesis predicts that if ANOVAs were computed for each individual, the main effect F ratios should be bimodally distributed for each variable in each of the 3 × 3 designs. This follows, since some children should rely heavily on a given cue, whereas others should ignore that cue. The ANOVAs were computed separately for each child for each design, using the mean square interaction for an error term. There was no evidence that these F ratios were bimodally distributed for any age group. A second prediction of the centration hypothesis is that for each 3 × 3 design, the Fs of the main effects should be negatively correlated. For no age group was there a negative correlation of main effect Fs approaching significance ($ps > .10$). In the present experiment, it appears reasonable to conclude that the individual children use both pieces of information.

Developmental Changes in Weight of Motives and Consequences

To examine the hypothesis that the weights of motives and consequences change

with age, the data were analyzed in a 3 (age) × 2 (type of first cue) × 3 (level of first cue) × 2 (type of second cue) × 3 (level of second cue) factorial design, with level of first cue nested within type of first cue, level of second cue nested within type of second cue, and repeated measures on all variables except age. As explained above, if the weights of motives and consequences vary with age level, the averaging model predicts two interactions: Age × Type of First Cue × Level of Second Cue and Age × Type of Second Cue × Level of First Cue.

Figure 3 presents the means of the significant Age × Level of First Cue × Type of Second Cue interaction, $F(8, 372) = 3.20$. Each age group appears on a separate panel, and the level of first cue is on the abscissa, with separate curves for the two types of second cue (motive or consequence). Looking at the fifth-grade data in the far right-hand panel, it can be seen that the effect of the level of the first cue (slope) is *less* when a motive is the second cue than when a consequence is the second cue. That is, the consequence curve is steeper than the motive curve. This can be predicted by assuming the weight of motives to be greater than the weight of consequences. For the kindergarten sample (left-hand panel) the opposite is the case: The effect of the level of the first cue is slightly *greater* when the second cue is a motive than when it is a consequence. This finding can be predicted if it is assumed that the kindergartners' weight of consequences is larger than the weight given to motives. The second-grade data (middle panel) appear to be similar to the kindergarten data, but the difference in effect of second cue type is not as large, implying that the weights of motives and consequences are closer to being equal.

Assuming that the effects of presentation order and type of information contribute independently to the total weight given to the information, then the Level of Second Cue × Type of First Cue × Age interaction should be qualitatively similar to the interaction in Figure 3. This can be shown formally as follows. Assume $w_{T1}/(w_{T1} + w_2 + w_M + w_0) > w_{T1}/(w_{T1} + w_2 + w_C + w_0)$, both when $w_{T1} = w_M$ and when $w_{T1} = w_C$. If this statement is true it implies $w_M < w_C$. If $w_M < w_C$, then $(w_2 + w_{T2})/(w_M + w_2 + w_{T2} + w_0) > (w_2 + w_{T2})/(w_C + w_2 + w_{T2} + w_0)$, for all w_{T2}.

The data of the significant interaction of Age × Level of Second Cue × Type of First Cue are plotted in Figure 4 in a way analogous to Figure 3, $F(8, 372) = 3.22$. The

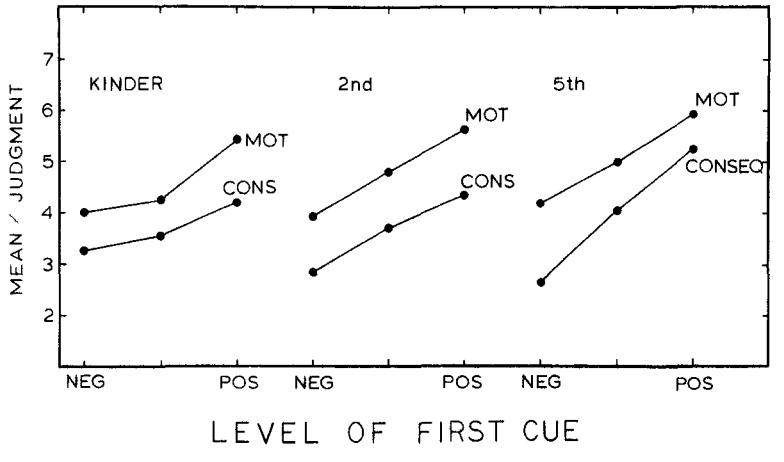

Figure 3. Mean judgments for the Age × Level of First Cue × Type of Second Cue interaction. (Each curve represents the type of second cue [motives or consequences]; the abscissa variable represents the three levels of the first cue averaged over first cue type [motives and consequences]. Each age group is in a separate panel. Response scale ranged from nine [indicating "very very good"] to one [indicating "very very bad"]. KINDER = kindergarten; 2nd = second grade; 5th = fifth grade. MOT = motives; CONS = consequences. NEG = negative; POS = positive.)

data of Figure 4 are qualitatively similar to Figure 3, as predicted. In the fifth-grade data in the right-hand panel, it can be seen that the effect of the level of second cue (abscissa variable) is somewhat larger when the first cue type is a consequence rather than a motive. This agrees with the results in Figure 3. Analogously, for the kindergartners the effect of the level of second cue is slightly larger when the first cue type is a motive rather than a consequence, as predicted by the results in Figure 3.

The pattern of results in Figures 3 and 4 points to the conclusion that there is a developmental progression in the ordering of the weights of consequences and motives. The weight of motives is greater than the weight of consequences for the fifth-graders, but for the kindergartners this relationship is reversed. In contrast to previous research (Surber, 1977), these conclusions about developmental changes in weights do not require the assumption that the scale values of motives and consequences be equal for the different age groups. The conclusion does require that the scale values of motives and consequences be assumed constant across the four types of stories *within* age group, however. The qualitative results of Figures 3 and 4 establish the relative ordering of the weights of motives and consequences within each age group and that the relative ordering of weights changes with age.

Fit of the Averaging Model

Equation 1 was fit to the mean judgments of all 42 stories of each age group. The value of w_0 was set to 1.0, and separate scale values and weights were estimated for each age group. In fitting the judgments based on consequences only or motives only the value of w_2 was included (i.e., it is assumed that the response to a single piece of information includes the recency effect). Chandler's (1969) subroutine STEPIT was used to minimize the sum of squared deviations of the model from the means. The model used a total of 30 parameters to predict 126 data points. The square root of the average squared error was .267 across the 126 means.

The estimated weights and ranges of scale values are presented in Table 1. Since the scale values were estimated separately for each age group, comparisons of the weights across ages are not really appropriate. The important feature of the parameter estimates is that the estimated weights of motives and consequences have the predicted ordering within each age group: For the fifth-graders the weight of motives is larger than the weight of consequences, whereas for

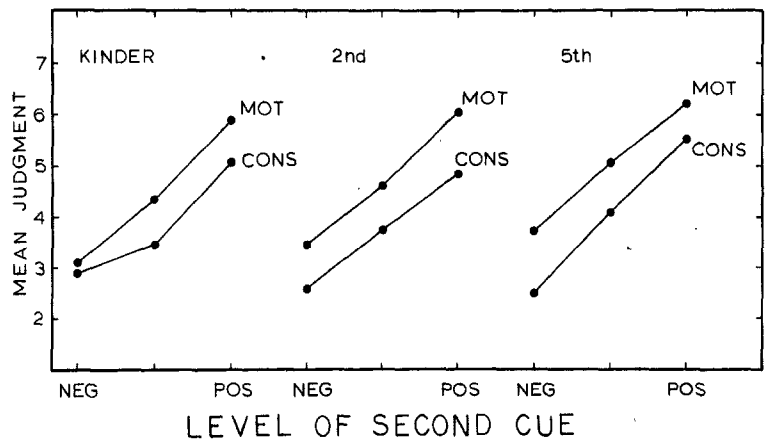

Figure 4. Mean judgments for the Age × Level of Second Cue × Type of First Cue interaction. (Each curve represents the type of first cue [motives or consequences]; the abscissa variable represents the three levels of the second cue averaged over the second cue type [motives and consequences]. Each age group is in a separate panel. Response scale ranged from nine [indicating "very very good"] to one [indicating "very very bad"]. KINDER = kindergarten; 2nd = second grade; 5th = fifth grade. MOT = motives; CONS = consequences. NEG = negative; POS = positive.)

Table 1
Estimated Parameter Values From Equation 1

Age group	w_C	w_M	w_2	Δs_M	Δs_C
Kindergarten	1.664	.598	.797	6.920	3.570
Second grade	.253	.161	.087	17.569	8.221
Fifth grade	.471	1.270	.184	9.243	4.819

Note. The value of $w_0 = 1.0$; w_2 is the weight of the recency effect; w_C and w_M are the weights of consequences and motives; Δs_M and Δs_C are the ranges of the estimated scale values of motives and consequences.

the kindergartners and second-graders the ordering is reversed.

The mean judgments for all 42 stories for the three age groups, as well as the predictions of the model, are presented in Figure 5. The solid points are the means, the solid lines are the model predictions, and the open circles are the judgments of motives only and consequences only. The variable on the abscissa in each panel is the variable presented first. Overall, the model fits the data closely. Some data points that show large deviations from the predicted values are also disordinal, suggesting that these deviations may be due to error variance rather than to a systematic effect (e.g., in the kindergarten motive–motive design, the combination of the two negative motives is judged better than the combination of the neutral motive first and negative motive second). Running the experiment in two sessions may contribute to error. It is possible, of course, that some systematic deviations from the model occur. For example, the fifth-grade data showed a significant Motive × Motive interaction in the motive–motive design, though it was not large, $F(4, 152) = 2.82$. This interaction appeared to be due to a larger effect of negative information on the judgments and is similar to findings in the person impression literature (Birnbaum, 1974).

Discussion

The major conclusion of the present study is that a developmental shift occurs in the relative importance or weight of motive and consequence information in moral judgments. This shift in weight occurs over and above the effects of presentation order. As pointed out by Trabasso and Nicolas (1979), Surber's (1977) finding of developmental changes in weights was tied to the traditional presentation order of motives followed by consequences. The present results establish that the shift in use of motive and consequence information occurs in contexts other than the traditional presentation order; the results imply that children understand that motives and consequences are distinctly different types of information.

Another important aspect of the findings of the present research is that they show that children are capable of subjectively weighting information depending on its type. This result has general implications for children's attitude and impression formation processes. It suggests, for example, that children may be capable of weighting information according to the credibility of the source. Research with adults has demonstrated the utility of collecting self-reports of the subjective importance of information for a judgment (Birnbaum & Stegner, 1981; Surber, 1981). This approach might be extended by simultaneously manipulating the credibility of information sources and attempting to get children to report directly on the relative importance of various cues in their judgments. In addition, if children are capable of considering information about source credibility in their judgments, the fact would be of great applied importance in the study of children's attitudes and impression formation processes (e.g., effects of television advertising).

The results of the present experiment, by showing effects of both order and information type, relate to recent theoretical notions about the role of memory in attitude formation processes. For example, Reyes, Thompson, and Bower (1980) recently proposed that the weight of information in judgment depends on both the availability of the information in memory and its diagnostic value or importance, and provided some correlational evidence in favor of their hypothesis. However, Riskey (1979) did not find evidence that memory directly mediates impressions. The results of the present experiment agree with those of Riskey, since recency effects occurred even when verbatim

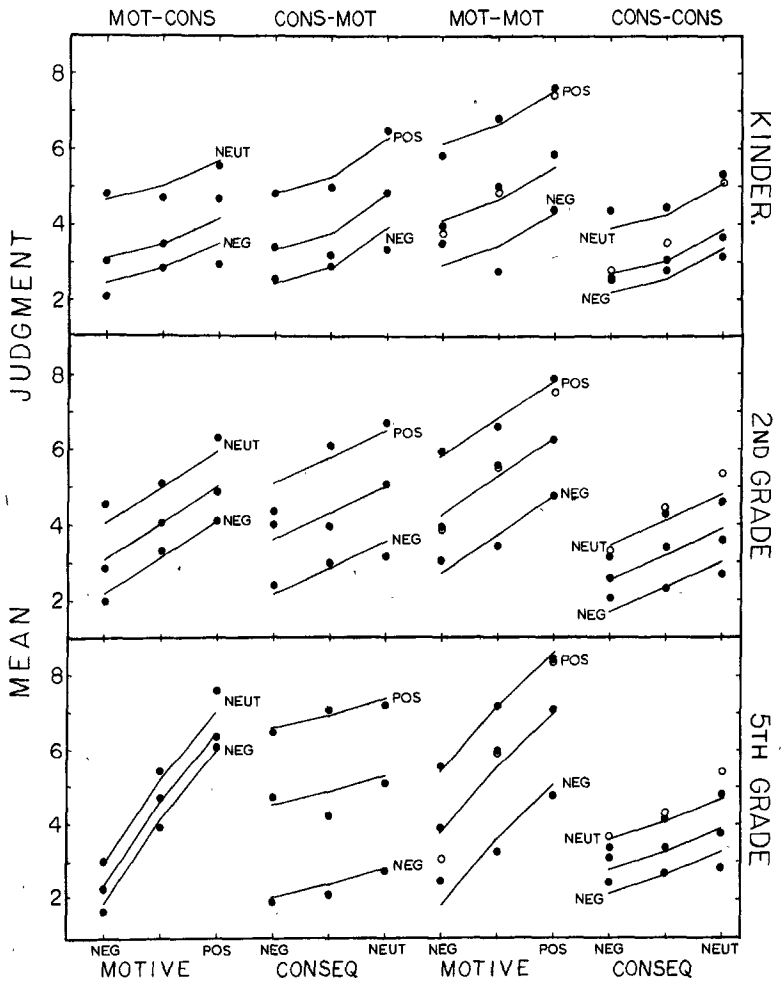

Figure 5. Mean judgments of all 42 stories as a function of age group. (Top row of panels presents kindergartners, middle row is 2nd grade, and bottom row is fifth grade. NEG = negative; POS = positive; NEUT = neutral. MOT–CONS = motives followed by consequences; CONS–MOT = consequences followed by motives; MOT–MOT = motives followed by motives; CONS–CONS = consequences followed by consequences. Solid points are the means, and solid lines are predicted values from Equation 1. Each curve represents a different level of the second cue. The means of the motive-only stimuli are the open circles in the MOT–MOT panel. The means of the consequence-only stimuli are the open circles in the CONS–CONS panel.)

recall was assured. Thus recency must influence the subjective importance of information in some way other than through availability in memory. A possibility, suggested by Anderson and Hubert (1963) and supported by Riskey's work, is that the amount of attention allocated to a piece of information varies with presentation order. This hypothesis should also be tested with children.

Although the present study found that all three age groups showed recency, future research might examine the possibility of developmental changes in recency effects in judgment tasks. The size of the recency effect appeared to decline slightly with age, though these effects were not significant (cf. Grueneich, in press). In contrast to the recency effects discussed in the moral judgment literature, Palmquist (1979) found that concrete operational children showed *primacy* effects for personality impressions,

whereas formal operational children did not show primacy. A number of methodological differences between Palmquist's study showing primacy and other studies that have found recency in children's social judgments prevents direct comparison (verbal vs. pictorial stimuli, the number of stimuli presented, ages of the children, and the manner in which responses were made). Whatever the source of the conflicting results, however, it is apparent that much further research needs to be done on order and memory effects in children's judgments and processing of social stimuli.

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