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THE EFFECTS OF STIMULUS MODALITY AND CUE SALIENCY
ON CHILDREN'S MORAL JUDGMENTS

By

MARILYN SOHN BIRKE

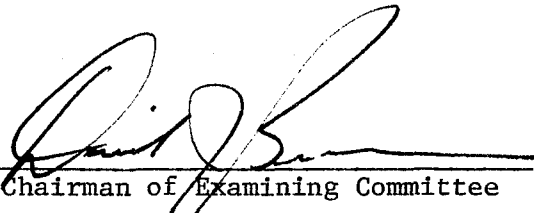
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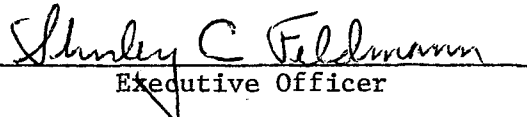
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Abstract

THE EFFECTS OF STIMULUS MODALITY
AND CUE SALIENCY ON CHILDREN'S
MORAL JUDGMENTS

by

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Adviser: Professor David Bearison

The purpose of the present study was to examine the roles of medium of stimulus presentation and cue saliency in children's moral judgments. The following three variables were manipulated: 1) medium of stimulus presentation--visual, verbal, or visual/verbal; 2) cue saliency--high or low; 3) order of information presentation--accidental first or intentional first. Grade--kindergarten, second, or fourth, was an additional variable.

Several hypotheses were tested. The first two hypotheses predicted that medium of stimulus presentation and cue saliency would affect children's moral judgments. Findings indicated that the verbal medium facilitated the production of intentionally-based judgments significantly more than the visual medium. The visual/verbal condition did not differ significantly from the other two media. The superiority of the verbal medium was true

for kindergarten pupils, but among older children, media had no effect. In addition, children in the high saliency condition produced significantly more mature moral judgments than children in the low saliency condition for all grade levels. Additional hypotheses were concerned with whether the number of mature moral judgments in the different media and cue saliency conditions were age related. Results indicated that there were developmental changes in the interpretation of verbal, visual and combined visual/verbal cues, as well as under both conditions of high and low saliency. The sixth hypothesis was concerned with whether the visual medium facilitated children's comprehension. Since the visual medium did not prove to be more effective than the verbal, the sixth hypothesis was irrelevant.

The finding that the visual medium was not superior to the verbal is contrary to some previous research in moral judgment, but is supported by other studies in the area. The finding of the superiority of the verbal medium is compatible with some findings in other areas of psychological research such as verbal learning. While the visual medium was not as effective as the verbal, the possibility remains that not all relevant variables were controlled in the present study and, consequently, the effectiveness of the visual medium may have been obscured. Two important variables in need of further study

are response mode and involvement between experimenter
and child.

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TABLE OF CONTENTS

ABSTRACT	iii
ACKNOWLEDGEMENTS	vi
INTRODUCTION	1
Chapter	
I. REVIEW OF RELATED RESEARCH	7
Developmental Trends in Social Cognition	7
Piaget's Theory of Moral Development.	11
Task Variables in Moral Judgment	16
Stimulus Modality in Social Cognition and Moral Judgment	21
Cue Saliency in Children's Moral Judgments	28
Effects of the Visual Medium on Children's Cognition	30
Comprehension	30
Redundancy of Information	35
Conclusions	37
II. HYPOTHESES	39
III. METHOD	42
Pilot Study	42
Main Investigation	46
IV. RESULTS	52
V. DISCUSSION	62
Summary of Results	62
Theoretical Implications of Results	65

Summary	76
Practical Implications of Results. . .	77
APPENDIX A (Moral Story Couplets)	79
APPENDIX B (Informational Components of Moral Stories)	81
APPENDIX C (Story Endings in Verbal- and Visual/Verbal-High Saliency Conditions)	82
APPENDIX D (Analysis of Variance Table - Medium x Cue x Grade X Order)	83
REFERENCES	84

LIST OF TABLES

Table	Page
1. Frequencies of Mature and Immature Moral Judgments by Story Pairs	54
2. Mean Number of Mature Moral Judgments by Grade, Cue Saliency, and Medium.	56
3. Mean Number of Mature Moral Judgments by Grade and Medium.	58

LIST OF FIGURES

Figure	Page
1. Mean Number of Mature Moral Judgments by Grade and Medium.	57

INTRODUCTION

In Piaget's theory, the reasoning of preoperational children is influenced by their egocentrism or their inability to assume another person's viewpoint. Preoperational thought is also highly centered (focused on a striking but superficial aspect of phenomena). Preoperational children, because of their egocentrism and highly centered thought, are unable to operate logically on relations in the physical environment as well as on self-other relations in the social environment. That is, restricted to a centered, one variable logic and imprisoned by their own perspectives, preoperational children judge moral questions on the basis of striking, superficial phenomena, such as the objective amount of damage and not in terms of underlying determinants such as motivational or intentionality constructs. The emergence from the preoperational to the concrete operational stage represents the development of perspectivism (the consideration of the other's role or viewpoint) and decentration (the consideration of several dimensions of a multivariate problem simultaneously). As a result of the development of perspectivism, which involves an understanding of another person's phenomenology, and of the development of the ability to decenter, children in the concrete operational stage become capable of structuring interpersonal events

in terms of underlying determinants. They are no longer seduced by striking, surface aspects of social events and consequently no longer make moral judgments in terms of the material result of other people's behavior but rather on the basis of other people's intentions.

The task designed by Piaget (1965) to study children's reasoning consisted of a series of story pairs. In one story in the pair the protagonist deliberately incurred minor damage while in the second story the central character inadvertently effected extensive damage. Children were asked which of the two protagonists was naughtier and why. Early studies on moral judgment generally supported the Piagetian claim that preoperational children fail to use intentional concepts because of a lack of cognitive abilities (Boehm, 1962; Crowley, 1968; Grinder, 1964; Hebble, 1971; Johnson, 1962). However, more recent investigators have argued that certain methodological and situational variables influence children's judgments and have questioned the validity of traditional findings (Berg-Cross, 1975; Costanzo, Cole, Grumet, & Farnill, 1973; Imamoglu, 1975; Parsons, Ruble, Klosson, Feldman, & Rholes, 1976). Through the use of specific task manipulations (which will be discussed in a later section) pre-schoolers and first graders have been shown to be able to ignore consequences in making moral judgments and assess guilt instead on the basis of motivational factors. In the area of moral judgment, as in other areas of develop-

ment, the distinction must be made between children's performance and their basic knowledge or competence. It appears that with modifications of the classic story pair method, preoperational children might be able to demonstrate a knowledge of morality that Piaget thought was predicated on concrete operational structures.

The finding that certain task parameters facilitate the production of intentionally-based moral responses has implications beyond the stage during which children begin to reason maturely about moral issues. Factors intrinsic to the different tasks by which children's moral reasoning is assessed may provide different kind of cues or call forth different cognitive and/or perceptual skills. For example, according to Chandler, Greenspan, and Barenboim (1973), who used videotaped story events, visual cues play a prominent role in the development of the ability to make intentional judgments. The effectiveness of tasks used in other recent studies may be related to their visual components. Visual stimuli have been included as either part of the stimulus dimension (Costanzo et al.; Imamoglu, 1975; Parsons et al.; Peterson, Peterson, & Finley, 1974) or as part of the response measure (Berg-Cross, 1975; Irwin & Moore, 1971). In addition, the failure of the task variables in earlier studies to facilitate the production of intentional judgments may be a function of their having consisted solely of verbally presented stories (Boehm, 1962;

Gutkin, 1972; Hebble, 1971; Johnson, 1962; Nass, 1964). Verbal cues may be less important than visual cues in children's acquisition of mature moral concepts. The role of modality in moral judgment, however, is unclear. Several studies (Berndt & Berndt, 1975; Gottlieb, Taylor, & Ruderman, 1977), employing other types of visual media (e.g., films, photographs) to convey story events, did not find the visual cues useful. The presence of conflicting findings indicates the need for further research in this area.

The importance of stimulus modality, or of the use of visual stimuli in the assessment of children's social understanding has been underscored by researchers in areas other than moral judgment (Farnill, 1974; Flapan, 1968; King, 1971; Shultz, 1977). The concern of investigators with media effects is based on their argument that methods which require analysis of verbally presented material unnecessarily burden children with abstract comprehension. Young children may be too immature to work abstractly with words. When the visual modality is used to transmit social information children are spared the burden of working with words. Instead, children are asked to deal with images and this may be an easier task. There are several possible reasons. One reason is that visual cues may serve a stronger cueing function than verbal ones, i.e. they may be better able to capture the attention of the viewer than verbal cues (Chandler et al.,

1973). Another possible explanation is that there is a developmental lag between reasoning about visually presented events, which are a natural depiction of children's day to day social experiences, and reasoning about verbally presented events, which are further removed from children's natural experiences. Thus, the visual cues may facilitate the child's comprehension. The latter possibility would be consistent with Bruner's developmental theory (1964) which suggests that children use a perceptual mode to acquire and process information prior to a symbolic or linguistic mode. Hence, when visual cues are used at particular age levels, there should be a better "match" between the child's ikonic or perceptual style and the perceptual features of the tasks used to present information.

As noted above, all types of visual media have not been shown to be superior in facilitating social comprehension. Those that have proven successful (Chandler et al., 1973) have relied on videotapes in which both auditory and visual input are combined. In these instances redundant information was provided and it may be the redundancy of information, rather than the particular modality, which was responsible for positive effects.

Finally, several studies have demonstrated that merely directing children's attention to intentional cues will enhance their production of intentionally-based judgments (Bearison & Isaacs, 1975; Crowley, 1968;

Glassco, Milgrim, & Youniss, 1970). Conversely, drawing children's attention to the outcome variable has produced an increase in immature, consequence-based judgments (Austin, Ruble, & Trabasso, 1977; Nummedal & Bass, 1976; Parsons et al., 1976). To date, however, no investigator has manipulated the saliency of different informational cues in conjunction with the modality in which information is presented. The manipulation of these two variables, modality and cue saliency, may help clarify not only the role of visual stimuli in children's moral reasoning but also the reason for the effectiveness of visual cues.

Based on the foregoing analysis, the present study was concerned with two variables and how they interact. One variable was medium of stimulus presentation. This referred to the method by which story events were presented to children, either visually, verbally or visually and verbally. Cue saliency was the second variable. It referred to the emphasis or lack of emphasis on the intentions which underlie the acts of the protagonists in the story events. Of particular interest was whether a visual technique was effective in inducing children to generate mature moral evaluations and, if so, why children perform better with the visual than the verbal medium.

CHAPTER I

Review of Related Research

The purpose of the literature review is to provide background material for the issues of modality effects and cue saliency in children's moral judgments. Accordingly, developmental trends in social cognition are discussed initially. An overview of Piaget's theory of moral development and the research which derives from it follows. The next two sections deal with the roles of stimulus modality and cue saliency in social cognition and moral judgment. The final two sections are concerned with the effects of a visual medium on children's social cognition. They focus specifically on children's comprehension of visual cues and on children's use of redundant information.

Developmental Trends in Social Cognition

Children's social understanding has typically been measured by the kinds of inferences they make about other people's thoughts, feelings, visual perspectives and intentions. The early work of Piaget and Inhelder (1956) indicated that children were inexorable prisoners of their own viewpoints, incapable of assuming the other's role. As a result of their egocentrism children at the preoperational level could not understand that other

people have perspectives which differed from their own. While at some point at the end of the preoperational stage children were able to appreciate that other people may have different perspectives, they had difficulty explaining how they were different. It was not until the concrete operational period that the ability to coordinate multiple perspectives was found.

More recent findings have challenged Piaget and Inhelder's view of children as prisoners of their own perspectives. Piaget and Inhelder (1956) based their findings on a study of spatial representation. They presented a landscape of three different sized mountains to children who were asked subsequently to identify the perspective of "another" (a doll) situated at various locations around the landscape. Provided with simpler tasks than the one presented by Piaget and Inhelder (1956), however, preschoolers have demonstrated rudimentary perspective coordination abilities in spatial representation tasks. Preschoolers inferred how an object appears from another's location when they encountered a single, meaningful object with readily nameable sides (Fishbein, Lewis, & Keiffer, 1972; Lewis & Fishbein, 1969). Besides the number of objects, their complexity (Brodzinsky & Jackson, 1973) and the location of the other in relation to the child, 180° or 90°, (Shantz & Watson, 1970) have been shown to have significant impact on visual perspective taking.

In the area of cognitive perspective coordination, preschoolers have demonstrated some capacity to infer their opponents' strategies and recognized that their opponents try to deduce theirs in a simple game situation (De Vries, 1970). That is, the young child has some ability to think what the other might be thinking about oneself. However, given a verbally oriented task, only a very basic ability to understand that others may have different perspectives than oneself is apparent during the preoperational period. The ability to coordinate different perspectives and the realization that one's own thoughts may be the object of another's thinking is a later development of the concrete operational stage (Chandler & Greenspan, 1972; Flavell, 1968; Selman & Byrne, 1974).

Developmental trends in the ability to predict another's feelings are less clear. Several studies (Borke, 1971; Mood, Johnson, & Shantz, 1974) have shown that by age 4, an age when children are well within the preoperational period, children can identify those situations that elicit emotions of happiness, sadness, fear and anger, particularly when the situation is familiar to the child and/or the other person is similar to the child. There are some suggestions that preschoolers rely more on situational than facial cues in inferring another's feelings (Burns & Cavey, 1957) and that verbal labels are more available for situations than for facial cues

(Deutsch, 1974). However, the ability to identify the simple emotions of another in a familiar situation may have involved no more than a projection of one's own feelings and thus, may not have reflected the coordination of self-other perspectives. Rothenberg (1970) found that when children evaluated adults involved in adult-like activities, e.g. making evening plans, even 8 1/2 year olds had difficulty identifying common emotions such as anger, happiness, anxiety, and sadness. The 10 1/2 year olds, in contrast, had no difficulty accurately perceiving the feelings of the adults. Consequently, it may not be until the middle or end of the concrete operational stage that children correctly recognize emotions of people dissimilar to themselves in unfamiliar situations.

The general finding that preschoolers and early elementary school age children might be less egocentric than was originally thought also seems to hold in tasks in which children are asked to make inferences about other people's intentions. Typically children's ability to make such inferences has been studied in the context of moral reasoning.

Studies of children's moral judgments abound. The area of moral judgment has been the most thoroughly explored domain of social cognition. Piaget's investigations of children's social understanding (1965) have generated a vast amount of research in the moral judgment area of social cognition. Since Piaget's theory of moral

reasoning also stimulated the present research, it is discussed below.

Piaget's Theory of Moral Development

Piaget (1965) postulated the existence of two moralities in childhood corresponding, in part, to shifts in various states of egocentrism. The developmentally earlier one is a morality of constraint characterized by a unilateral respect toward adults and unquestioning submission to their authority. Inasmuch as children naturally obey their parents they naturally conform, at least verbally, to their parents' rules. However, parents' rules are inevitably misunderstood because of children's failure to discriminate adequately between subjective and objective aspects of experience and their beliefs that thoughts are something real and material. In other words, a combination of unilateral respect and cognitive egocentrism results in the child's endowing moral prescriptions with an absolute quality that inheres in physical laws. Thus, rules such as "It is forbidden to lie, to steal, etc," are accorded absolute respect. Under no circumstances can the rules be changed. The commands of the adult become sacred. "They acquire the value of ritual necessities and the forbidden things take on the significance of taboos (Piaget, 1965, p. 135)." If so, children believe that any act which shows obedience to a rule or to an adult, regardless of what they command,

is good; an act that defies a rule is bad. The child is more preoccupied with the letter of the law than the spirit of the law. In addition, since children take rules literally and equate good with obedience, they will initially assess wrongdoing in terms of the degree to which it deviates from established rules and not in accordance with underlying motives. This notion of objective responsibility is pronounced because children in the stage of moral realism are incapable of making inferences about another's intentions. If they do make intentional inferences, they subsequently do not use them to mediate their moral judgments.

In the course of development the child makes the transition from a morality defined by unilateral respect toward authority, or moral realism, to a morality characterized by mutual respect between equals, or an autonomous morality. This transition occurs about the time children enter the concrete-operational years. The internal, representational cognitive actions, or operations, children now possess are applied both to their intellectual activities as well as to their social interactions. That is, with the emergence of concrete operations children's thought becomes decentered and reversible. Children can focus on transformations rather than states. Given the classic conservation of quantity problem, children no longer center on the width or height of the two columns containing equal amounts of a

liquid. Concrete-operational children, because they can attend to the transformations by which one state is changed into another, consider both dimensions of height and width simultaneously and correctly solve the problem. Similarly, in the social-affective area, concrete operational children no longer center on the surface aspects of issues they are asked to reason about. They attend to the subtleties of human interactions and make inferences regarding intentions. These inferences may then serve to mediate children's moral judgments.

The shift from the preoperational to the concrete operational stage is also marked by a lessening in egocentrism. This developmental change accounts for decreased confusion of moral and physical laws. Other factors also contribute to the transition from an immature to mature stage of moral reasoning. As youngsters mature, their encounters with their peer group intensify to offset the extensive involvement with parents and other authority figures. This occurs because children leave home to go to school. Children, consequently, make a shift from an environment of adult domination to one of peer domination. Two distinct events are associated with children's new alliance with their peers. Piaget suggests that by virtue of growing older children attain greater relative equality with their parents and older children which lessens their unilateral respect for them. Meanwhile, children's self-respect and respect for their peers

is enhanced. Increased self-confidence is related to the increasing opportunities children have to discuss matters as equals. Children begin to feel secure in participating with others in applying rules on the basis of norms of reciprocity and in making decisions regarding the modification of rules. Children's efforts to resolve the contradiction between their former conception of rules and their new understanding helps contribute to a more mature and broadened outlook (Hoffman, 1970).

Interaction with peers also entails the coordination of reciprocal roles. That is, in their peer dominated environment children must make themselves understood among other children who are equally as egocentric. This sets up new conflicts. These conflicts are the basis for children's gaining some knowledge of the perspective of their peers on a given issue. Thus, children begin to contrast their points of view with that of others. As a result of the coordination of self-other perspectives, children understand that though they may think and feel as others do in similar situations, events are seen differently when viewed from different perspectives. Mutual respect derives from this new awareness. It, in turn, fosters the development of an understanding that regulations can be bent in light of individual circumstances, simply because their existence is predicated on human need which is not constant or absolute. That is, the development of perspectivism helps sensitize the

child to the inner states that underlie human behavior.

With a growing understanding of the role of motives in the actions of self and others and of the social implications of antisocial behavior the child comes to the *raison d'etre* of morality and begins to conceive...moral action as an autonomous good, essential to the intact functioning of any social unit. With this orientation malfeasance is judged by motivational as well as objective criteria and justice, once reduced to whatever the authority commands, is now seen in terms of equality and equity (Flavell, 1963, p. 296).

In order to examine children's moral reasoning during the two stages of heteronomous and autonomous morality, Piaget (1965) presented children with a series of story pairs. In one story, the central character deliberately incurred minor damage; in the other, the central character, either accidentally or benevolently, produced more extensive damage. Subjects were then asked to choose the naughtier of the two protagonists and give reasons for their choices. An exemplary story couplet is the following:

A little boy named John is in his room. He is called to dinner. He goes into the dining room. But behind the door is a chair with a tray with 15 cups on it. John had no way of knowing that there was all this behind the door. He goes in, the door knocks against the tray, bang go the 15 cups and they all get broken!

Once there was a little boy whose name was Henry. One day when his mother was out he tried to get some jam out of the cupboard. He climbed up on to a chair and stretched out his arm. But the jam was too high up and he couldn't reach it and have any. But while he was trying to get it he knocked over a cup. The cup fell down and broke (Piaget, 1965, p. 122).

According to Piaget's theory, performance on the above task would reflect the child's competence. That is, the purpose of the story couplet task is to assess whether children make moral judgments on the basis of objective consequences or in terms of intentionality. The ability to make moral judgments on the basis of other people's intentions is a cognitive structural acquisition and structural acquisitions should not be influenced by specific task variables. However, the extensive research in moral judgment has indicated otherwise. The next section discusses empirical findings based on variations in task parameters.

Task Variables in Moral Judgment

Early studies (Boehm, 1962; Johnson, 1962; Macrae, 1954; Nass, 1964) supported Piaget's view that until the age of 8 or 9 years, children base their judgments of guilt on the material consequences of people's actions rather than on their motives. These findings were based on investigations of children's judgments of clumsiness and stealing behavior. Young children, however, appeared to be influenced by consequences even in their evaluations of physical aggression (Rule & Duker, 1973), and not only in their judgments of clumsiness and stealing.

The story-pair approach used by the majority of early studies (Boehm, 1962; Gutkin, 1972; Johnson, 1962; Lerner, 1937; Macrae, 1954; Nass, 1964) has not remained

unquestioned. The numerous problems inherent in the standard task have been discussed by several investigators (Berndt & Berndt, 1975; Chandler et., 1973; Imamoglu, 1975; Sedlak, 1973). They suggested that the paired story format confounds the two parameters of intentions and consequences, leaving it unclear as to whether young children are unable to discriminate between motivational factors, whether they can differentiate intentions but fail to make the connection between intentions and moral issues, or whether outcome is the more salient cue for them. In addition, the story couplets make it impossible to determine how youngsters arrive at their moral choices, whether they actually focus on either intentions or consequences or both. Finally, type of intent (good or bad) and responsibility for outcome (accidental or intended) are confounded. In "good intention" stories, the consequences of the protagonist's actions are always accidental. However, in "bad intention" stories, outcomes are sometimes directly intended by the child and at other times accidentally produced (as in the above example). As noted by Sedlak (1973) and Shantz (1975), if the subject decides that the damage which occurred was intended there is little confusion about forming a blame judgment. If, on the other hand, the decision is that the damage was unforeseen, the subject must first discern the protagonist's motive and then assess how acceptable that motive is. The finding that young children's moral

judgments are based largely on quantity of damage may be due to the fact that it is the only aspect of the story that is systematically varied.

Initial attempts to eliminate some of the confounding variables in the classic story pair task did not yield different results. In a study by Gutkin (1972), story couplets were constructed in which intentions (good and bad) and damage (high and low) were arranged in six different combinations. In two couplets, consequences were held constant at a particular level of intensity and intentions were varied, while in two others, intentions were held constant at a given level of causality and outcome was varied. In two others, both dimensions were varied at the same time. In a related investigation (Hebble, 1971), each of seven stories was varied in four ways, corresponding to combinations of two intent levels and two consequence levels, and presented to subjects as young as 6 years. The benevolent intentions of a protagonist were, thus, paired with high and low damage, and the bad intentions of the other central character were associated with major and minor consequences. Instead of comparing the behavior of two protagonists, subjects were asked to rate the badness of the central character in each of the stories on a four point rating scale. Stories in this experiment were presented one by one, and responses were analyzed separately for both dimensions of intentions and consequences. The findings from both these investigations indicated an increase of intent-

based judgments with age and the absence of mature judgments among 6-7 year olds.

More recent studies, which have been concerned with eliminating confounding variables in the story pair task, used other approaches in examining children's judgments. By and large these newer studies have relied on a single story format and have emphasized various aspects of the form and content of the stimulus stories or the response measure. In one investigation, stories which combined positive and negative intentions and consequences were presented to subjects (Costanzo et al., 1973). Berg-Cross (1975) constructed stories with explicitly stated intentional information. "Accident" stories clearly indicated that the act was an accident. In the "obedience" stories, a powerful adult was described as giving instructions to a child, who then complied with the demands. "Accident combined with disobedience" stories depicted a child deliberately violating a rule when an accident occurred. "Intentional" stories specifically stated that the child performed an act on purpose. The damage incurred in these stories was either large or small. In a third investigation (Imamoglu, 1975), the stimuli consisted of single stories representing various combinations of three variables, two levels of causality (intentional and accidental), outcome quality (good and bad), and affected object (human being and physical object). Subjects were given the opportunity to

evaluate the central character's actions by pressing a button that indicated what they thought about what the actor had done (i.e., "very good," "good," and "very bad"). In addition to obtaining measures of the children's evaluations of the acts, measures of the response latencies were also obtained. In contrast to the findings in earlier studies, findings in these studies have shown that preschoolers and first graders are capable of ignoring the consequences of another's actions in making moral choices. Young children can, instead, assess guilt on the basis of motivational factors underlying the other's behavior. They are particularly competent in making intentional inferences when story events have positive consequences (Costanzo et al., 1973) or when human beings are affected (Imamoglu, 1975).

Other variables which have been shown to influence young children's judgments are the use of a forced-choice single-story completion instrument (Irwin & Moore, 1971) and the presentation of moral dilemmas in which the "self," rather than another individual, must be evaluated (Keasey, 1977). In a related study, children confronted a conflict between respect for adult values and the urge to equate guilt with damage (Peterson et al., 1974). The incongruous situation was designed by opposing a well-intentioned, high-damage adult and an ill-intentioned, low-damage child. The conflict was assumed to result from the fact that the high-damage act, which moral

realists view as wrong, was that of an adult, whose actions they tend to view as always right. Provided with such a conflictual situation, preoperational children were capable of responding maturely.

Stimulus Modality in Social Cognition and Moral Judgment

The use of verbally presented stories has required subjects to analyze hypothetical material and to comprehend and work abstractly with words. The kinds of skills necessary for working effectively with this kind of material may be inordinately complex and not capable of generalization to more "life-like" situations which demand less sophisticated skills (Rybash & Roodin, 1978). Piaget (1965) acknowledged the differences between verbal thought and concrete thought, stating that

. . . verbal thought simply lags behind concrete thought, since the former has to reconstruct symbolically on a new plane operations that have already taken place on the preceding level . . . It may, therefore, very well be that in the moral sphere there is simply a time-lag between the child's concrete evaluations and his theoretical judgments of value, the latter being an adequate and progressive conscious realization of the former (p. 117).

Piaget (1965) has elaborated on this point further:

. . . if the child had witnessed the scenes we describe to him would he judge them in the same manner? We think not. In real life the child is in the presence, not of isolated acts, but of personalities that attract or repel him as a global whole. He grasps intents by direct intuition and cannot, therefore, abstract from them. He allows, more or less justly, for aggravating and attenuating circumstances . . . It may simply be the case that the

evaluations obtained from the stories that were told them lag in time behind the direct evaluations of daily life (p. 120).

One approach that has been adopted in studies concerned with children's reasoning about "life-like" situations is the presentation of social events through a visual medium. Although presenting social interactions through a visual medium is not tantamount to placing the child in a real, concrete social situation, it more closely approximates a real life setting than the verbal presentation of social events. Social encounters portrayed visually are simply more natural to the child's experiences of social reality than the same events communicated verbally. Thus, several studies have relied on films (Flapan, 1968; King, 1971) and videotape (Farnill, 1974) in order to depict social interactions.

None of the investigators cited above systematically explored the effectiveness of the verbal versus visual method of stimulus presentation. One study in which effectiveness of the two modalities was compared is a study by Shultz (1977). He used verbal stories and videotape to assess children's understanding of others' behavior, particularly their ability to apply a "scheme for multiple sufficient causes." Shultz (1977) was concerned with whether different modalities have different effects on children's ability to make causal inferences in situations in which one possible cause is known to be operative and another in which a possible cause is

definitely known to be absent. An example of an item centered on two boys fighting, either because one was initially provoked or because of no apparent provocation. Children were questioned about a possible internal cause for the fight (i.e., "Does one of the boys often pick fights with other kids or not?"). An analysis of children's responses to several such items indicated that when social situations were presented on videotape, the scheme for multiple sufficient causes was available to children as young as 5 years, but when social situations were verbally communicated, children did not use this scheme before 9 years. In other words, with videotaped items, children were able to infer social causality more often when the other cause was known to be absent than when the other cause was known to be present. However, on the verbal items, the status of the known cause did not determine inferences about the unknown cause. Thus, the visual medium had a more facilitating effect on preschoolers' ability to make social inferences than the verbal medium.

The effectiveness of a visual modality and particularly one that is "life-like" has been supported in other studies. Flerx, Fidler, and Rogers (1976) attempted to decrease sex-role stereotypes by presenting 3 and 5 year olds with models who, regardless of their sex, performed both traditional masculine and traditional feminine activities. These models were introduced either in picture books or on film. Both techniques succeeded in

reducing stereotypes, although, on a one week post-test, the film had more lasting effects than the picture book.

The research on stimulus modality in social cognition points to the facilitating effects of the visual medium for enhancing children's social understanding. The implication is that children rely primarily on visual signals for interpreting their social environment. Verbal presentation of stimuli, in contrast, do not bear a resemblance to the actual social situations children must reason about in their day-to-day lives. Therefore, verbal cues may assume a less critical role in children's social understanding.

On the basis of the above discussion, it would be expected that visual cues are an important factor in children's moral reasoning. However, the findings from studies comparing the effects of medium of stimulus presentation on children's ability to offer mature moral judgments have been ambiguous. In one study, specifically addressed to the role of visual cues in moral reasoning (Chandler et al., 1973), first grade children responded to one video-taped story couplet and one verbally presented story couplet. Results demonstrated that: a) children as young as 7 years of age could consider the intentions behind value-laden actions; and b) the focus of this judgmental process varied as a function of the medium in which story events were introduced. When required to evaluate the relative naughtiness of two story characters

whose actions were only described verbally, two-thirds of 40 subjects first tested in this condition emphasized the outcome of the characters' activities as a rationale for their judgment. However, three-quarters of the subjects who were initially presented with the same thematic materials in the form of videotaped dramatic episodes assessed culpability on the basis of the protagonists' intentions. This difference pointed to the facilitating effect of presenting the moral dilemmas in visual form.

Other studies reported discrepant findings. Berndt and Berndt (1975) presented preschool, second- and fifth-grade children with films and stories which differed in content and which portrayed an actor who accidentally injured another individual for good or bad motives. After each story or film, children were questioned in detail about their understanding of the protagonist's motives and the intentionality of his acts. Children also had to evaluate the protagonists. That is, children were asked to explain what the protagonist had done, why, and what had happened to the victim of the protagonist. From these responses, the child's understanding of motives was scored. In addition, children had to decide whether the protagonist acted on purpose (judgment of intentionality) as well as evaluate the actor (moral evaluation). The investigators found that understanding of motives was significantly better for stories than for films. With stories there was also significant improvement to

nearly perfect performance in judgments of intentionality between preschool and second grade. With films this improvement between preschool and second grade did not occur. In addition, although medium did affect children's understanding of motives and judgments of intentionality, it did not affect children's moral evaluations.

The failure of Berndt and Berndt (1975) to provide evidence consistent with previous research may be related to several factors. The investigators stated that because the films were difficult to understand on a single viewing, they had to be shown twice or even three times. Since no pilot studies were conducted to insure equal intelligibility of films and stories, it is possible that subjects were more sensitive to the nuances of social situations in verbally expressed stories simply because there was something about the filming which decreased the comprehensibility of the story events. In addition, the investigators reported that each film lasted for two minutes and each film session for 25-30 minutes. Although there are no indications about the time taken to read each story, each one apparently took less than two minutes, and an entire story session lasted 10-15 minutes. The verbal treatment required less attentiveness on the part of the children than the films. The lighter burden on the attention capacities of young children in the verbal condition may have facilitated their social understanding.

In a related experiment (Gottlieb et al., 1977),

three moral stories, consisting of good motives and bad (but accidental) outcomes, were read to 4 and 5 year old boys and girls. For one story, subjects were shown a photograph illustrating the motive information; for another, a photograph of the outcome; and for the third, no photograph. Children were then asked to evaluate the naughtiness of the protagonists and give reasons for their evaluations. Results indicated that the children did not use the information presented in the pictures. However, tacking on a photograph in the middle or end of a verbally conveyed story may not be an adequate vehicle for depicting social encounters. That is, a single photograph, illustrating only one aspect of a complex social interaction, presents children with a static experience and does not satisfactorily depict social exchanges which are dynamic events. A more fluid medium designed to capture ongoing interactions, such as film or videotape, would be better adapted for assessing the role of visual cues. The conclusion drawn by Gottlieb, Taylor, and Ruderman (1977) that imageability is unrelated to children's social cognition may be untenable, because photographs are not good images to depict social interactions. The presence of conflicting findings on the role of visual stimuli in moral judgment supports the need for further research in this area.

Cue Saliency in Children's Moral Judgments

According to Chandler, Greenspan, and Barenboim (1973), the effectiveness of the visual medium is related to its potential for capturing the attention of the viewer. "Systematically manipulating a range of good or bad intentions is of no consequence if these statements of motives or feelings are not portrayed in a way which brings them before the attention of the subject" (1973, p. 319). Chandler, Greenspan, and Barenboim (1973) argued further that the videotape highlights the saliency of intentions over damage, although why and how this occurs was not stipulated.

Other studies also have pointed to the importance of directing children's attention to intentionality as a way of inducing mature judgments. In an investigation by Bearison and Isaacs (1975), three conditions were established. In one, the intentions of the central story characters were stated explicitly; in another, subjects were questioned about the central character's intentions; in the third, subjects had to infer the story character's intentions spontaneously. Bearison and Isaacs (1975) found that, when prompted to do so, children could infer underlying motivation and use their knowledge in producing mature moral judgments. Otherwise, 6 1/2 - 7 1/2 year olds did not seem to attend spontaneously to intentional cues. Similarly, children increased the number of their mature moral judgments when story pairs

were used in which consequences were equated and intentionality varied, so that they readily discriminated between different levels of causality (Crowley, 1967; Glassco, Milgrim, & Youniss, 1970).

Cue saliency, as manipulated by order of information presentation, has also been an important factor in young children's moral reasoning (Nummedal & Bass, 1976). In two related investigations (Feldman, Klosson, Parsons, Rholes, & Ruble, 1976; Parsons, Ruble, Klosson, Feldman, & Rholes, 1976), single stories were presented with either traditional information order (intent-consequence) or reversed order (consequence-intent). It was found that when motivational information followed consequence cues, even preschoolers made intent-based judgments. Conversely, there was an increase in consequence-based judgments with stories with information in reversed order. Austin, Ruble, and Trabasso (1977) argued that order effects may or may not have influenced Piaget's findings, since the intentions and consequences appeared twice in the paired story format. Consequently, these investigators designed a study to test whether the recency finding was generalizable to the story pair format. Results replicated the finding that recency of intentions affects moral judgment.

It is reasonable to conclude from the above findings that preoperational children are competent in making intentional moral judgments. In order for their competence

to be translated into performance, however, children must attend to relevant cues. They seem to attend best when conditions are designed specifically to capture their attention. While mode of highlighting information has varied from study to study, the issue of how to capture subjects' attention best has not been investigated. Chandler et al. (1973) posited that the tendency among children to center either on intentions or damage was determined by the perceptual saliency of these dimensions within a particular presentation mode. According to these investigators, the visual medium highlights the saliency of intentions over damage, while the opposite is true for moral dilemmas presented via a verbal format. To date, there has been no empirical evidence regarding the saliency effects of the visual medium. More research, therefore, needs to be done on the question of why the visual presentation format may be superior to the verbal in facilitating mature moral judgments.

Effects of the Visual Medium on Children's Cognition

Comprehension

A visual presentation format may be more effective in capturing the viewer's attention than a verbal format. However, it is also possible that material presented visually is more comprehensible to young children than the same material presented verbally. According to Bruner (1964, 1966), 5-6 year olds are still dependent

upon a perceptual mode for understanding their world and lacking an abstract, symbolic mode, may not be able to handle stories presented only in verbal format. The course of development, as delineated by Bruner (1964, 1966), involves the evolution of different modes of symbolic representation and different problem solving strategies. In the earliest stage of development, the infant processes the recurrent regularities of the environment "enactively," i.e., by an appropriate motor response. In the second stage, children are able to represent the world to themselves by way of images, or ikonically. This kind of representation is organized around a minimal number of cues, particularly those to which the child can most readily point. In theoretical terms, the thought operations of children at the ikonic stage are dominated by rules of organization that rest upon the spatio-temporal-qualitative properties of experience. Consequently, children are easily seduced by the surface quality of things and cannot deal adequately with what is beneath the world of appearances. Bruner (1964, 1966) elaborates on many of the characteristics (egocentricity, inflexibility, instability) of ikonic thought, emphasizing its lack of economy and its inefficiency. With further development, children use language to represent the environment. Once able to use language well, it is possible for children to represent and systematically transform the regularities of experience

with far greater flexibility and power. "A symbol system represents things by design features that include remoteness and arbitrariness. A word neither points directly to its referent here and now, nor does it resemble it as a picture. . . The other property of language that is crucial is its productiveness in combination, far beyond what can be done with images or acts" (Bruner, 1964, p. 2). Hence, once children are adept with language, they should find no difficulty working with abstract, hypothetical material. Prior to the acquisition of a verbal system, however, the use of a visual medium should facilitate information processing.

Several studies have provided indirect support for Bruner's position. In a study by Hardeman (1972), children were presented with two different types of tasks. One task assessed moral reasoning and consisted of hypothetical, verbal stories; the other evaluated the ability to conserve number and continuous quantity and to classify objects in a hierarchical arrangement and consisted of tasks with visible, inanimate objects. Results indicated much greater variation in moral reasoning for children who succeeded in all the conservation tasks than for those who passed none. That is, the moral reasoning scores of conservers were distributed over a broad range, while nonconservers tended to achieve low moral reasoning scores. Hardeman (1972) concluded that ". . . the ability to give structure of an operational

kind to inanimate, visible objects may be a prerequisite to the ability to give a corresponding structure to moral situations" (p. 56). The finding that logical thinking was first applied to the physical environment and later on in the course of development to the social environment may be no more than an artifact of the tasks used to measure both cognitive and moral development. Visible, concrete tasks were used to assess cognitive development, while verbal, abstract tasks were used to measure moral reasoning. Had the moral judgment tasks used by Hardeman been presented in visible, concrete form, she may have found that mature moral reasoning and conservation emerge simultaneously.

The study by Hardeman (1972) examined the relationship between children's ability to think logically about their social and physical environments, i.e., their moral reasoning and their ability to conserve and classify. The results of several studies, which investigated the role of stimulus modality solely in children's physical cognition or in their verbal learning, also support Bruner's theory. In one investigation concerned with the role of visual and verbal methods of stimulus presentation in children's verbal concept formation (Futterman, 1971), 5, 7, and 9 year olds were presented with word or object pairs (e.g., ring and bracelet, bee and butterfly) and asked in what way they were alike. Results showed more abstract conceptualization with visual

cues and more functional conceptualization with verbal cues. This difference disappeared by age 9, when subjects were able to reason on high conceptual levels regardless of the degree of concreteness or abstractness of the stimuli. In the training of class inclusion, Kohnstamm (1963, 1967) provided 5 year olds with different classes of items either verbally or pictorially. His training procedure also included pointing out wrong answers, explaining how they were incorrect, and asking leading questions. Although effective learning was demonstrated, no attempt was made to examine which aspects of the training produced the results. Six out of 20 children trained in the verbal condition and eight out of 20 children in the picture condition learned to respond correctly to class inclusion questions (e.g., In the whole world, are there more boys or more children?). A visual method of stimulus presentation has been shown to be superior to a verbal method also in the learning of paired associates (Hill & Hecker, 1966), nonsense syllables (Lockard & Sidowski, 1960), and short verses (Menne & Menne, 1972).

In a more systematic study of the effects of stimulus modality in children's understanding of the concept of class inclusion, Wohlwill (1968) found a visual-interfering effect. Items including flowers, people, and toys, as well as utensils and musical instruments, were presented to children in pictorial or verbal form. Results indicated poorer performance in the visual conditions

due to a strong perceptual set to translate the class inclusion question into a comparison between logically subordinate subsets. The presentation of items in verbal form tended to weaken this set and allowed children to solve class inclusion problems.

In the context of Bruner's theory, findings on the role of visual cues in children's ability to think logically about the physical environment are equivocal. Even though children in the ikonic stage may represent the world to themselves by way of images, it does not imply that presenting them with information in pictorial form necessarily facilitates their comprehension. The role of visual cues in children's thinking about the physical world appears to be highly complex.

Redundancy of Information

The effectiveness of the television medium for transmitting social information may also be related to its presentation of combined, auditory and visual cues. The benefits of redundant cues for young children have been cited in the perceptual and learning literature. In a study by Mooney (1957), children and adults were shown incomplete black and white figures of heads and faces in addition to nonsensical items that were also cut up. Subjects were then asked to sort the pictures into categories - boy, old woman, etc. Results indicated less reliance on redundant information with increasing

age. The increase with age in the ability to identify incomplete pictures has been shown also in a series of experiments by Gollin (1960, 1962, 1965).

In addition, the presentation of combined cues has facilitated the discrimination of visual stimuli. Eimas (1965) gave kindergarten children a series of two-trial problems in which the cues varied in a systematic manner between the first and second trials. Performance improved on trial 2 as the number of redundant cues increased. Even though the second problem could be responded to correctly on the basis of differences in one of the components, learning was more efficient when combined cues were available.

Few studies have examined the role of redundant information in children's social understanding and moral judgments. In the only study concerned with this issue, two conditions were designed (Stephenson, Power, Kelleher, & Richardson, 1976). In one condition, only tape-recorded dialogue was used. In the second condition, redundancy of information was presented in terms of tape-recorded dialogue and slides. Stephenson et al. (1976) demonstrated that media had no effect upon the ability of third grade children to make intentional judgments. Children below 9 1/2 years were unable to discriminate between consequences and intentions regardless of the mode of presentation. The failure of the combined cues condition to produce positive effects, however, may have

been due to the type of apparatus used to present the information. Slides, like photographs, depict static experiences, unlike the social interactions they are designed to illustrate, which are dynamic events. Since no pilot study was done to ascertain the comprehensibility of the slides, it is difficult to know how they were being interpreted by the children. The slides may not have been successful in conveying information, and therefore subjects in the combined cues condition may not have processed redundant information. The results of the Stephenson et al. study (1976) are inconclusive regarding the role of combined auditory and visual cues in children's moral judgments. The lack of sufficient evidence regarding redundant information and moral judgment supports the need for further research in this area.

Conclusions

The review of the literature indicated that the efficacy of visual cues for transmitting social information to young children was uncertain.

There is a controversy concerning children's ability to understand visual cues. Children appear to profit from their presence when their function is to enhance cues presented in other modalities. However, in other instances, visual stimuli are interfering, particularly when subjects must negate what is in their visual field in order to arrive at a correct solution to a given problem (Wohlwill,

1968). In those instances when children do benefit from the presence of visual stimuli, it may be because information is being presented in a modality consistent with one children spontaneously use to interpret their world. On the other hand, children may favor a visual medium because it is best suited for capturing their attention. Once children's attention is directed to relevant cues, they have no difficulty producing intentionally-based moral judgments. Finally, children may do best in the presence of redundant cues, in a situation in which they obtain information from at least two channels.

CHAPTER II

Hypotheses

The purpose of the present study was to examine the relationship between visual and verbal cues in transmitting social information to young children. While there are some studies dealing with media effects in moral judgment (Berndt & Berndt, 1975; Chandler et al., 1973; Gottlieb et al., 1977), their results are inconclusive. The study by Chandler et al. (1973) demonstrated that visual cues have a positive effect on children's ability to produce intentional judgments while the investigations of Berndt and Berndt (1975) and Gottlieb et al. (1977) showed no significant differences between the visual and verbal media. However, the complexity of the films in the Berndt and Berndt (1975) study and the use of single still photographs as an exemplar of the visual medium in the Gottlieb et al. (1977) study made their results questionable. The lack of consistent findings supports the need for further research in this area.

An additional purpose of the present study was to ascertain how visual cues affect children's moral judgments. According to Chandler et al. (1973) a visual presentation format highlights the saliency of intentions over damage. Visual cues may, therefore, serve an attention facilitating

function because they direct children's attention to the facial and gestural cues which are relevant in making intentional inferences and mature moral judgments. It is also possible that children comprehend visual cues better than verbal cues, inasmuch as visually presented information is presented in a mode consistent with the ikonic mode children may use to process information at a given stage in their development (Bruner, 1964, 1966). It is also possible that visual cues alone do not significantly facilitate children's moral judgments, but that they are facilitative because they are typically presented in conjunction with auditory cues. Thus, children may be responsive to the redundancy of information provided by combined auditory and visual cues, and not to visual cues alone. In order to help clarify the above issues, kindergarten, second-, and fourth-grade children were given moral judgment problems in one of three conditions: visual, verbal or visual and verbal combined. For half the children in each condition intentions were highlighted. (See Chapter III for a detailed description of the method.) The following hypotheses were tested:

- 1) The modality in which information is presented will affect level of moral judgments. The mean number of mature moral judgments in the visual/verbal condition will be significantly greater than the mean number of mature moral judgments in the visual condition. The mean number of mature moral judgments in the visual condition will be significantly greater than the mean number of mature

moral judgments in the verbal condition.

2) Cue saliency will affect level of moral judgments. The mean number of mature moral judgments in the high saliency condition will be significantly greater than the mean number of mature moral judgments in the low saliency condition.

3) There will be a significant linear trend in the mean number of mature moral judgments across grades in the verbal condition. There will be no significant linear trend in the mean number of mature moral judgments across grades in the visual condition.

4) If redundancy of information is a more critical factor than modality, there will be a significant linear trend in the mean number of mature moral judgments across grades in the verbal or visual conditions. There will not be a significant linear trend in the mean number of mature moral judgments across grades in the combined visual/verbal condition.

5) There will be a significant linear trend in the mean number of mature moral judgments across grades in the low saliency condition. There will be no significant linear trend in the mean number of mature moral judgments across grades in the high saliency condition.

6) If the visual condition facilitates children's comprehension, girls in the visual-low saliency condition will produce significantly more mature moral judgments than girls in the verbal-high saliency treatment.

CHAPTER III

In order to test these six hypotheses, the following variables were manipulated: 1) medium of stimulus presentation--visual, verbal or visual/verbal, 2) cue saliency--high or low, and 3) order of stimulus presentation--accidental first or intentional first.

Pilot Study

A pilot study was conducted for the purpose of examining how well the film sequences to be used in the main study were understood by children. It was important to determine initially that the filmed episodes conveyed the same information as the verbally presented stories. This would insure that medium of stimulus presentation would not be confounded by story information in the main investigation.

Method

Subjects. Since the protagonists in the moral story pairs were females, the sample used to evaluate the protagonists' behavior was only females. Eight middle-class children were randomly selected from each of three grade levels, kindergarten, second and fourth, in several suburban schools.

Materials

Three filmed story pairs were used. One pair involved damage to pictures (picture stories). Another pair dealt with breaking dishes (dishes stories). The third was concerned with spilling paint (painting stories). In each pair, responsibility for outcome (accidental or deliberate) and type of intent (good or bad) were clearly illustrated. This was accomplished by including stories in which information was given regarding the child's obedience to or defiance of the parent as well as the child's emotive experience at the time the damage was produced. For example, in one story in which the mother gestures to her daughter not to eat before dinner, the child, seething with anger, threw a bowl on the floor and broke it. In the companion story the protagonist, while drying dishes for her mother, accidentally let go of the tray, breaking four dishes. Her facial expression was one of shock or worry. See Appendix A for complete story pairs. Further description of the films can be found in the Materials section of the main investigation.

Each scenario was shown for approximately 30 seconds with an entire pair lasting 60 seconds.

Procedure

Girls were taken individually from their classrooms by the experimenter and told:

Today you are going to see some films for

children. Watch carefully because afterwards I want you to tell me the story of the film. I want to find out whether these films are good for (kindergarten children) (second graders) (fourth graders).

Children then watched six filmed episodes. After each one they told the story of the film. Childrens' stories were recorded and then transcribed.

Results

The measure of comprehension was the number of informational components included in the children's telling of the story based on a content analysis of each story. The content analysis divided each story in the three pairs, picture, dishes and painting, into three parts. The three parts corresponded to the initial, intermediate and final actions of the central protagonist. Statements regarding the protagonists' feelings or intentions were not included in the content analysis, since it had been found previously that young children do not spontaneously make inferences about feelings and intentions that emerge in interpersonal relationships, although they may spontaneously describe others' actions or dialogues (Flapan, 1968). Therefore, comprehension was measured only on the basis of subjects' delineation of the three major actions of the protagonists. See Appendix B for a detailed division of the stories into their informational components. It was decided a priori

that a film would be considered comprehensible if 87 per cent, or seven out of eight girls, at each grade level could accurately recount each of the three central action components of a film, as described above.

Neither the dishes nor the painting stories presented any difficulties for the girls. In the dishes story in which damage was accidentally produced, 87 per cent of kindergarteners, 100 per cent of second graders, and 87 per cent of fourth graders achieved a perfect score. In the companion story in which the protagonist wilfully produced minor damage, 87 per cent of kindergarteners, 100 per cent of second graders and 100 per cent of fourth graders earned a perfect score. Eighty-seven per cent of kindergarteners, and 100 per cent of second and fourth graders provided the maximum number of informational components for the painting story in which a lot of paint was spilled accidentally, while the painting story, in which a little paint was deliberately spilled, was understood perfectly by all age groups.

In contrast, the picture stories posed some problems, particularly for kindergarten pupils. The story in which negative consequences occurred as a result of purposeful behavior was understood by 100 per cent of all three age groups. The story in which damage occurred accidentally was understood by 87 per cent of second and fourth graders but only 50 per cent of kindergarteners. Therefore, this episode was refilmed, with changes based

on the subjects' errors. These errors concerned the children's inability to discern what the maternal figure was doing. The second filming was shot from a different angle and it focused initially for five seconds on the mother's activities.

In summary, the results of the pilot study indicated that the three story pairs were comprehensible to children in kindergarten, second and fourth grades and that the method of stimulus presentation would not be confounded by story information in the main investigation.

Main Investigation

Method

Subjects. One hundred and eighty middle-class girls in kindergarten, second and fourth grades served as subjects for the main investigation (60 girls in each of the three grades).

Design

The design consisted of four between-subjects variables: 1) medium of stimulus presentation (three levels), 2) cue saliency (two levels), 3) order of stimulus presentation (two levels), and 4) grade (three levels), resulting in 36 cells of five girls each. The three levels of stimulus presentation were visual, verbal and visual/verbal combined. The two levels of cue saliency were high and low, and the two levels of order were accidental first, intentional second and intentional first, accidental

second. At each grade children were randomly assigned to the different conditions.

Materials

The stimuli used in the main investigation consisted of three story pairs (See Appendix A). In each story pair, responsibility for outcome (accidental or deliberate) and type of intent (good or bad) were clearly depicted. Cue saliency was operationally defined in terms of redundancy of intentional information. To emphasize intentionality in the film condition, the facial expressions of the protagonists (anger, annoyance, surprise or worry) were shown at the end of the sequences and they were in view for 7 seconds. In the film condition in which intentionality was not highlighted, intentional and outcome information were presented at the end of the episode simultaneously. This part of the story was shown for 3-4 seconds, the length of time that each preceding part of the story was shown. To emphasize intentionality in the verbal condition, at the end of each story a statement was added stating that the protagonist had not or had meant to produce the damage. For example, at the end of the story in which Karen helps her mother paste pictures and the coffee spills, the experimenter added, "Poor Karen hadn't meant to spill the coffee." Or, at the end of the story in which Amy is told not to have ice cream, the experimenter read, "Amy had purposely thrown the dish."

(See Appendix C for complete listing of story endings.) In the verbal treatment in which intentionality was not emphasized, both intentional and consequence information were introduced in the last sentence of each story, consistent with the presentation of cues in the parallel visual condition. No additional statements regarding the protagonists' intentions were added. The highlighting of intentional cues in the visual/verbal condition consisted of a combination of the visual and verbal types of emphasis just described. In the visual/verbal treatment in which intentional information was not emphasized, the films shown were those without the additional 7 second focus on the protagonists' facial expressions and the narratives read consisted of those without the added statements regarding the protagonists' intentions.

Procedure

Each girl was interviewed individually at her school and presented with three story pairs. Story pairs were presented either visually, verbally or visually and verbally. Within each presentation mode half of the children received stories in which intentional cues were highlighted; half the children did not. Girls in the visual condition in which intentional cues were salient (visual - high saliency) were shown two filmed sequences, each lasting approximately 30 seconds. Girls in the visual - low saliency condition, in which no cues were emphasized,

viewed two filmed sequences for approximately 50 seconds, each one lasting 25 seconds. Girls in the verbal conditions, verbal - high saliency, and verbal - low saliency, heard the experimenter read two stories successively, each lasting 25-30 seconds. In the visual/verbal conditions, girls watched the film episodes and heard the accompanying narratives at the same time. For those girls in the visual/verbal - high saliency condition, presentation of a story couplet took 60-70 seconds. For girls in the visual/verbal - low saliency condition, in which there was no emphasis on any particular cues, presentation of each pair of stories took approximately 50-60 seconds. Within the six groups, half the children were exposed first to the story in which extensive damage was accidentally produced followed by the story in which minor damage was intentionally produced (Order 1). The other half of the girls were exposed to the story couplets in the reverse order (Order 2).

Before the presentation of the story pairs girls in each condition were told:

Today you are going to see (hear) some films (stories). Watch (listen) carefully because I have some questions to ask you about the films (stories) afterwards.

The same instructions used in the verbal condition were used in the visual/verbal condition. Following the presentation of each pair of stories girls were asked

two questions:

Who is the naughtier child, the child in the first film (story) or the child in the second film (story)?

Why?

Girls were scored on the basis of their judgments, i.e., their choices of which protagonist in each story pair was the naughtier one, and the explanations for their judgments. A mature judgment consisted of the selection of the naughtier child who deliberately produced minor damage. A mature explanation included inferences about the intentions of the protagonists. Mature judgments and explanations received scores of 1. Examples of mature explanations were:

- 1) those mentioning intentionality, e.g., one child is naughtier because she acted on purpose and the other child was not so naughty because she hadn't meant to perform the act.
- 2) those specifying the protagonist's affective state, e.g., one protagonist is naughtier because "she was mean and nasty" or conversely that the other protagonist was not so naughty because "she wasn't mad or mean."
- 3) those focusing on whether the protagonist was defiant or obedient, e.g., one child

was naughtier because she didn't listen to her mother, while the other child was not so naughty because she was helping her mother.

An immature judgment was the attribution of blame to the benevolent protagonist who accidentally produced extensive damage. An immature explanation was one that weighed consequences more than intentions in the attribution of blame. Immature judgments and explanations received scores of 0. The following specific types of responses were labeled immature:

- 1) those alluding to the quantity of damage, e.g., a particular protagonist was naughtier because she spilled more paint.
- 2) those referring to the effects of damage regardless of the protagonist's intentions, e.g., the child is naughtier because she spilled the coffee or broke the dish.

CHAPTER IV

Results

Combined scores, consisting of judgment plus explanation scores, were used in the statistical analyses. The correlation of .82 ($p < .01$) between judgment and explanation scores indicated that both measures were tapping the same underlying factor. In addition, in Piagetian theory the reasoning underlying children's responses is important in scoring the validity of the response. Therefore, in the present study, the units of analysis, judgments and explanations, were considered simultaneously in scoring the response. For each story pair a girl could receive one point. When a girl gave an immature explanation, she received a score of zero. When a girl gave a mature explanation, she was scored one. There were no instances in which a girl gave a mature explanation and an incorrect judgment. Since there were three story pairs, scores for each girl ranged from zero to three.

Scorer Reliabilities

In order to measure interrater reliability, the percentage of times judges agreed on combined scores for none, one, two, or three of the story couplets was computed. This kind of measure of reliability was selected, because the dependent measure consisted of dichotomous scores. The present experimenter and a college senior, majoring in

psychology, served as raters. The college student, or second judge, was not apprised of the conditions to which children had been assigned. There were no instances in which the two judges disagreed on the scoring of all three story pairs. In 3 per cent of the cases, they agreed on only one story pair. For another 6 per cent of children, judges concurred on two out of three story pairs. They agreed on all three story pairs for 91 per cent of the children. For those cases in which there was disagreement, the conflict was resolved in favor of the second judge in order to minimize experimenter bias.

Analyses

A 3 x 2 Chi Square test of the dependence of maturity of moral judgment and story pair indicated that the two variables were unrelated, $\chi^2 (2) = 3.94, p .05$. The frequencies of mature and immature judgments by story pairs are reported in Table 1. The three story pairs (pictures, dishes, and painting) did not differentially facilitate intentional moral judgments. This finding suggests that any significant treatment effects were a function of experimental conditions and not of the content of particular story pairs. It also indicated that the scores for the three story pairs could be combined into a total score.

A 3 x 3 x 2 x 2 (medium x grade x cue saliency x order) analysis of variance was performed on the combined

Table 1
Frequencies of Mature and Immature Moral
Judgments by Story Pairs (N = 180)

Judgment Scores	Stories		
	Picture	Dishes	Painting
Mature	137	152	144
Immature	43	28	36

scores. Appendix D contains the analysis of variance table. The means for 18 groups (medium x cue saliency x grade) are reported in Table 2. A significant main effect for modality, $F(2, 144) = 3.61, p < .03$, indicated that the type of medium produced different results. In order to determine which specific groups significantly differed from each other, Tukey tests were conducted. A significance level of $p < .05$ was chosen as the alpha level for the Tukey tests. The results of the Tukey tests indicated that subjects in the verbal condition performed significantly better than those in the visual condition. However, there was no difference in performance between children in the following groups: visual and visual/verbal, verbal and visual/verbal.

There was a significant medium by grade interaction, $F(4, 144) = 3.13, p < .02$. This interaction is presented in Figure 1. The mean scores are reported in Table 3. Tukey tests of this interaction revealed that medium did not significantly affect the moral evaluations of second and fourth graders. These two groups performed similarly, at a high level regardless of the modality in which they received social cues. There were media differences, however, among the kindergarten girls. With verbally presented stories, there were no differences between kindergarten and the two older groups. In contrast, with films, kindergarten girls produced significantly more consequence-based judgments than with verbally presented stories.

Table 2
 Mean Number of Mature Moral Judgments
 by Grade, Cue Saliency, and Medium

Grade	Medium					
	Visual (N=60)		Verbal (N=60)		Visual/Verbal (N=60)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Kindergarten						
High Saliency	1.2	1.32	2.1	1.10	2.3	1.06
Low Saliency	1.0	0.94	2.4	0.97	1.4	1.26
Second						
High Saliency	2.7	0.67	3.0	0.00	2.6	0.97
Low Saliency	2.3	1.06	2.2	1.14	2.0	1.41
Fourth						
High Saliency	3.0	0.00	3.0	0.00	2.9	0.32
Low Saliency	3.0	0.00	3.0	0.00	2.8	0.42

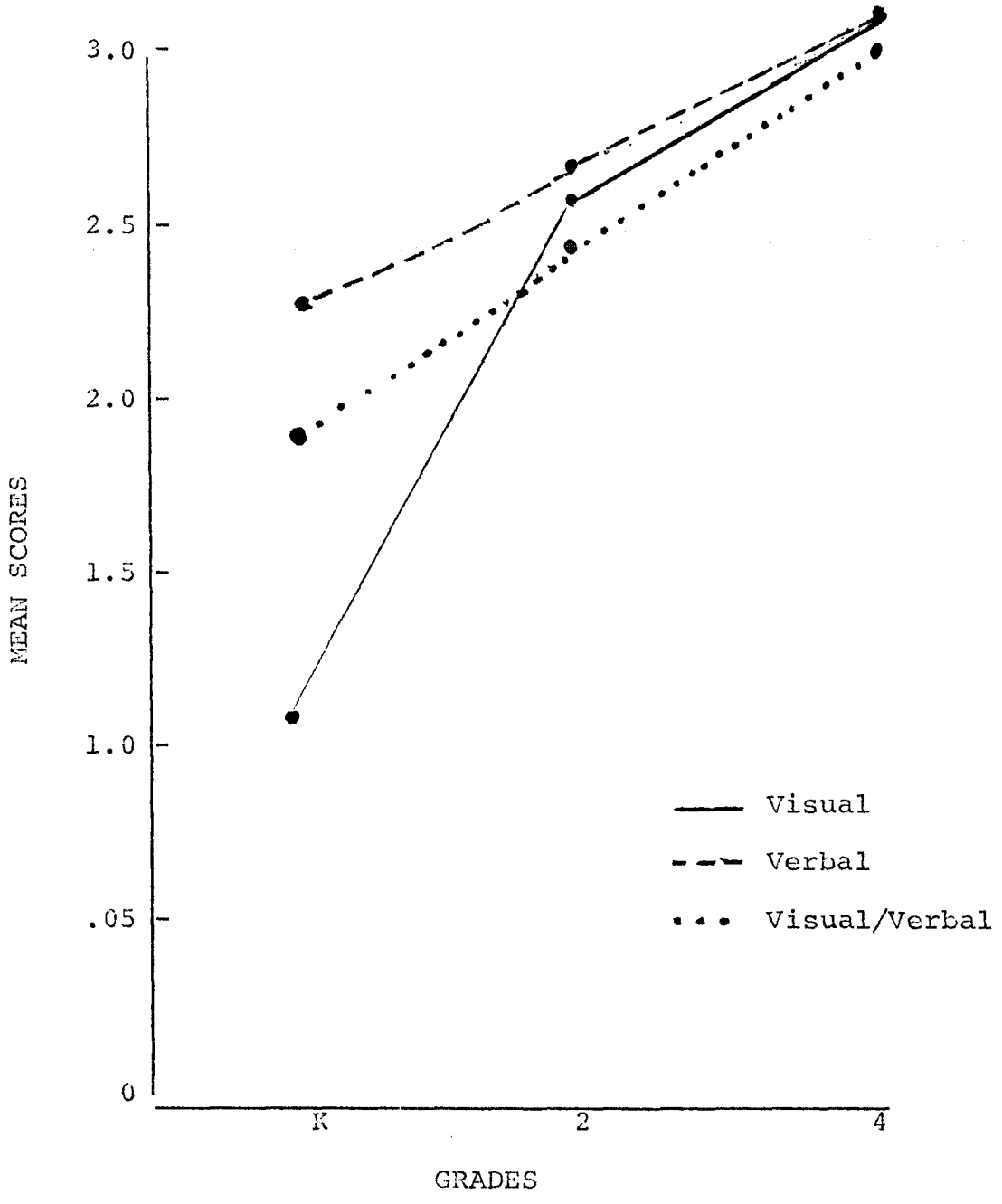


Fig. 1. - Mean number of mature moral judgments by grade and medium.

Table 3
 Mean Number of Mature Moral Judgments
 by Grade and Medium

Grade	Medium					
	Visual (N=30)		Verbal (N=30)		Visual/Verbal (N=30)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Kindergarten	1.10	1.12	2.25	1.02	1.85	1.23
Second	2.50	0.89	2.60	0.88	2.30	1.22
Fourth	3.00	0.00	3.00	0.00	2.85	0.37

The performance of this group improved with combined films and stories, but not significantly so. While kindergarten children in the combined treatment were not significantly less mature than those in the verbal condition, they did generate a significantly greater number of immature judgments than the oldest group in each experimental treatment.

There was a significant main effect for cue saliency indicating that subjects in the high saliency condition generated significantly more mature moral judgments than subjects in the low saliency condition, $F(1,144) = 5.38$, $p < .02$. Thus, all children, regardless of age, were able to use intentional information to mediate their moral judgments if that information was emphasized. The particular method of emphasis, visual, verbal, or visual and verbal, did not interact with cue saliency.

Several linear trend analyses were performed to test several hypotheses. Linear trend components of the main effects of cue saliency and medium of stimulus presentation were studied. In addition, a t test was conducted to examine differences between two subgroups.

The number of mature moral responses increased significantly with grade for girls who were presented moral story events in the verbal format, $F(1,144) = 7.50$, $p < .01$. This finding indicated that there were developmental changes in the interpretation of verbal cues. Similarly, there was a significant linear trend between grade and the number of mature responses for girls in the visual

condition, $F(1, 144) = 48.10, p < .01$. This indicated that there were developmental changes in the interpretation of visual cues. By presenting story events on film, the performance differences between kindergarten, second-, and fourth-grade girls were not eliminated. Thus, hypothesis three was only partially confirmed.

The presentation of redundant information did not enhance the production of intentional responses among the youngest subjects. Instead, there was a significant linear trend with grade in the number of mature moral responses for girls in the combined visual/verbal condition, $F(1,144) = 13.33, p < .01$. The findings of developmental changes in the interpretation of redundant stimulus cues, as well as in the understanding of verbal or visual cues, presented singularly indicated that the visual cues were not sufficiently effective to allow the kindergarten children to perform as well as the two older groups.

Although the emphasis of intentional cues enhanced performance, it was not sufficient in helping the youngest group perform at the highest level. There was a significant linear trend in the number of mature responses for girls in the high saliency condition, $F(1,144) = 22.8, p < .01$. Without the emphasis of intentional cues, the youngest girls were also unable to perform as well as the oldest girls. As predicted in hypothesis five, there was a significant linear trend across grades in the number of intentional responses for girls in the low saliency condition,

$F(1,144) = 35.6, p < .01.$

The overall finding of significantly more mature responses in the verbal condition than in the visual condition was also evident in a comparison of subgroups in these conditions. Girls in the verbal-high saliency condition had significantly more intentional-based responses than girls in the visual-low saliency condition, $t = 2.39, p < .03.$ Thus, the sixth hypothesis was not supported.

CHAPTER V

Discussion

The present study was concerned with the effects of stimulus modality and cue saliency on children's moral judgments. It brought together several practical and theoretical issues in the development of intentional judgments. Before discussing these issues, however, the results will be summarized.

Summary of Results

Findings of the present study included significant main effects for medium of stimulus presentation and cue saliency, as well as a significant grade by medium interaction. Significant linear trends across grades in mean number of mature moral judgments were found for girls in all of the experimental conditions. There was also a significant difference in the performance of girls in the verbal-high saliency condition and girls in the visual-low saliency condition.

Hypothesis One

The first hypothesis predicted that the most effective medium would be the visual/verbal, followed by the visual; the verbal would be the least effective.

Results indicated that girls in the verbal condition performed significantly better than girls in the visual condition. Girls in the visual/verbal condition performed at an intermediate level, but did not differ significantly from girls in the other two conditions. The difference between the verbal and visual conditions was significant only for kindergarten pupils. Thus, the presentation of combined, visual and verbal cues did not enhance children's ability to produce intentionally-based moral judgments. Visual cues only had a negative effect. Hypothesis one was not confirmed.

Hypothesis Two

This hypothesis stated that girls in the high saliency condition would perform significantly better than girls in the low saliency condition.

The data supported the second hypothesis. Highlighting intentional cues facilitated the production of mature moral judgments, regardless of age and the method by which the cues were emphasized.

Hypothesis Three

This hypothesis predicted a significant linear trend in the mean number of mature moral judgments across grades in the verbal condition, and no linear trend across grades in the visual condition.

The findings of significant linear trends across

grades in both the visual and verbal conditions indicated that there were developmental changes, not only in the comprehension of intentionality based on verbal cues, but also in the comprehension of intentionality based on visual cues. Thus, the third hypothesis was only partially confirmed.

Hypothesis Four

This hypothesis predicted a significant linear trend in mean number of mature moral judgments across grades in the verbal and visual conditions and no significant linear trend across grades in the combined visual/verbal condition.

The findings of a significant linear trend across grades in the visual/verbal condition indicated that there were developmental changes in the comprehension of intentionality based on combined cues, as there were in the comprehension of intentionality based on single channel cues. While the compounding of signals may facilitate learning under certain conditions, it did not seem to benefit young children in the present study. Neither visual cues alone nor in combination with auditory cues enhanced children's production of mature moral judgments.

Hypothesis Five

This hypothesis predicted a significant linear trend in the mean number of mature moral judgments across grades in the low saliency condition, and no significant linear trend across grades in the high saliency condition.

This hypothesis was partially supported by the data. There were developmental changes in the production of mature moral judgments under both conditions of high and low saliency. While highlighting intentional information facilitated children's social understanding, it did not allow the kindergarten pupils to perform at the level of the fourth graders.

Hypothesis Six

This hypothesis stated that if the visual medium had a comprehension facilitating effect, girls in the visual-low saliency treatment would perform significantly better than girls in the verbal-high saliency group.

The previously established superiority of the verbal cues in enhancing children's production of mature moral judgments was sustained in this comparison. Since the premise underlying hypothesis four, i.e. that the visual medium was more effective than the verbal medium, proved to be invalid, any question based on that premise became irrelevant. Thus, hypothesis six was not confirmed.

Theoretical Implications of Results

The results of the present study indicated that children, 5 to 5 1/2 years of age, can mediate judgments on the basis of intentionality. When verbally presented with story pairs preschoolers readily produced intentional judgments. This finding supported the research on moral reasoning which showed that preschoolers and

children beginning elementary school produce mature judgments under certain experimental conditions (Costanzo et al., 1973; Imamoglu, 1975; Irwin & Moore, 1971; Parsons et al., 1976). In the present study, some of the confusion typically encountered in the Piagetian story couplets was eliminated. Specifically, in "bad intention" stories the damage was always wilfully produced while in "good intention" stories the damage was always incurred accidentally. This is a modification of the classic story pairs in which outcomes accompanying "bad intentions" are sometimes directly intended by the child and at other times unforeseen. The lack of confusion in the present stories may have enabled the youngest children to perform at a level similar to that of subjects in the second grade. However, the present study also found no significant differences in the performance of kindergarten pupils and fourth graders who were verbally presented story pairs. With the exception of three subjects, all the fourth graders obtained perfect scores. Thus, there was a ceiling effect at the fourth grade. Fourth graders may have an even greater capacity to infer human motives than what was reflected in their performance in the present study and may be significantly better in this capacity than second graders.

Preschoolers in the visual condition produced significantly fewer moral judgments than preschoolers in the verbal condition. Preschoolers in the combined, visual

and verbal condition performed at an intermediate level, but did not differ significantly from kindergarten pupils in the other two conditions. Five to five and a half year olds were not adept at reading visual cues. This deficiency interfered with their ability to use visual cues to read others' intentions which could serve as a mediator for their judgments. In contrast, second and fourth graders interpreted visual and verbal and bimodal signals equally well. They subsequently had no difficulty using their knowledge of intentionality in producing mature moral judgments.

These findings do not lend support to Bruner's theory (1964) that young children should have greater facility with visual information than with information presented in a verbal mode. These findings also fail to replicate those of other investigators (Chandler et al., 1973; Shultz, 1977) who showed that the visual medium facilitated social understanding. They are, however, in partial agreement with the findings of two other studies. Gottlieb et al. (1977) demonstrated that children did not use information presented in pictures in their moral reasoning. In the study by Berndt and Berndt (1975) media did not affect the comprehension or moral evaluations of preschoolers, although verbally presented stories, in contrast to films, had a positive effect on the performance of pupils in second grade.

While the finding that verbally presented stimuli

is superior to visually presented stimuli may be unusual in children's moral reasoning, it is not unusual in other areas of psychological research. In studies of verbal learning, a visual presentation format typically consists of printed words, and an auditory presentation format consists of spoken words. Although the kind of visual stimuli employed in the verbal learning studies differed from that employed in the present study (materials in the present study consisted of films rather than printed words), an examination of the verbal learning literature is useful since investigators studying verbal learning have made extensive comparisons of the effectiveness of visual and verbal modalities. While some verbal learning studies demonstrated a superiority for the visual method of stimulus presentation in the learning of paired associates (Hill & Hecker, 1966), nonsense syllables (Lockard & Sidowski, 1960), and short verses (Menne & Menne, 1972), other studies showed the reverse (Erickson & King, 1917; Russell, 1938). In a more recent investigation the learning of meaningful word pairs was greater with aural than visual presentation for 7 and 8 year olds (Budoff & Quinlan, 1964). In addition, the auditory presentation of paired associates has been shown to have a greater facilitation effect upon subsequent visual learning than the visual presentation upon subsequent auditory learning (Pinsleur & Bonkowski, 1961). In a review of research

dealing with single and multiple channel communication, Hartman (1961) concluded that auditory presentation is superior to a visual presentation for the learning of nonsense syllables, meaningful words and meaningful prose. This seems to be true for young children and for the learning of simple material, such as common words. With increasing age and increasing complexity of material the trend is reversed; printed words are better than spoken words. The weight of these studies, however, incorporating pictorial presentation of stimuli as opposed to print favored the visual over the auditory. The superiority of picture stimuli as opposed to oral stimuli for immediate memory and learning of words has been shown also in a study of modality functioning and reading achievement in disadvantaged children (Katz & Deutsch, 1964). However, these investigations found that the effectiveness of different modalities was task dependent. That is, children were not equally proficient with regard to both auditorally and visually presented stimuli in all perceptual skills. With relatively simple stimuli the auditory channel had the advantage, while the use of complex stimuli favored the visual channel.

In summary, the finding of a verbal advantage in the present study is inconsistent with the results of some studies in social cognition and moral judgment, although it is in partial agreement with the findings of other studies in the area. An auditory advantage is found in

the verbal learning literature for young children and for the learning of simple material. The superiority of auditory stimuli over visual stimuli in verbal learning may not be sustained when visual stimuli consist of pictures rather than printed words. However, the type of visual or auditory technique may be less important than the interaction of the different modes with different tasks. That is, the effectiveness of different modalities may be task dependent.

In the present study, combined auditory and visual cues did not elicit better performance than the presentation of signals via a single channel. This finding is in disagreement with the results of studies of discrimination learning and recognition of incomplete pictures cited earlier which supported the superiority of redundant information. In the learning of simple four-line verses (Menne & Menne, 1972), and in the recall of material about animals and dwellings by different cultural groups (Jahoda, Cheyne, Deregowski, Sinha, & Collingbourne, 1976) redundant information influenced learning to a greater degree than stimuli presented in a single modality. Summarizing much of the literature on the auditory and visual presentation of material, Hartman (1961) concluded that simultaneous auditory-visual presentation was superior to auditory or visual presentation alone. This position, however, has been contested. According to Hsia (1971), there are more arguments favoring single-channel informa-

tion processing than multiple-channel information processing. One such argument is that if auditory and visual stimuli arrive simultaneously, information jamming may occur. Menne and Menne (1972) used a similar argument. They stated that while combined cues may be the most efficient under certain learning conditions, they are not effective for all types of learning tasks. Specifically, when comprehension or abstraction of concepts is called for a single mode presentation may be favored. Although Menne and Menne (1972) did not state why a single mode presentation may be favored precisely when abstraction of concepts is called for, they suggested, more generally, that under bimodal conditions children have to relate stimuli from two channels to one another. This may cause an overload on the attention span. The overload may not affect children's performance when they are given a simple task, such as memorizing uncomplicated, four-line verses (Menne & Menne, 1972). However, an overload on the attention span may have an interfering effect when the task is complex. The moral reasoning task included in the present investigation initially required children to make inferences about motivation and then use those inferences to mediate their moral judgments. The high level of performance of the kindergarten subjects exposed to verbally presented stories indicated that preschoolers are capable of abstracting intentionality information and applying it in their moral judgments. In the redundant information condition, preschoolers may have had diffi-

culty attending simultaneously to the films and the stories read by the examiner, which would have limited their ability to produce intentionally-based judgments. The failure of combined cues to elicit more mature responses than single channel cues has been supported in a study of media effects and moral judgment that was discussed in the review of the literature on page 36 (Stephenson et al., 1976).

The finding that the visual medium and the combined visual and verbal medium did not elicit more mature moral judgments from preschoolers than verbally presented stories warrants further explanation. It may be that the visual medium does have positive effects on children's moral judgments but that the present study obscured its effectiveness because it did not control for all relevant variables. One such variable is the response mode. In the present study only a verbal response mode was employed. That is, regardless of the medium in which story pairs were presented to children, verbal responses were required. Response modes were not consistent with presentation modes, i.e., visual with visual and visual/verbal with visual/verbal, and this may have handicapped the performance of the youngest group who, perhaps, depend on the uniformity of input-output channels in order to display their knowledge. It is possible that preschoolers experienced the least difficulty in the verbal treatment because in

that treatment the input-output combination, auditory-verbal, involved the same channel. The intermediate level of difficulty of the visual/verbal treatment might also be explained by the fact that the verbal response mode included some of the signals in the presentation mode, but not all.

Several investigators (Hinz, 1969; Magne & Parknas, 1962) suggested that at the early elementary school level there might be a substantial relationship between the mode in which stimuli are presented and testing mode. They argued that if age is important in the effectiveness of the presentation, in that auditory stimuli are superior to visual-print stimuli in young children's verbal learning and vice versa for older children, then it is reasonable to suspect that age may be a factor in the relationship between response mode and presentation mode. However, findings with respect to response mode and medium of stimulus presentation are conflicting. Randhawa (1971) demonstrated that for elementary school children asked to reproduce a series of designs, a visual-reconstruction input-output combination was the least difficult whereas auditory (verbally encoded messages)-verbal description was the most difficult. Tasks involving cross modal transfer auditory-reconstruction and visual-verbal description were of intermediate difficulty. Among African, Indian and Scottish adolescents, a more mature sample, Jahoda et al. (1976) also found that recoding information from pictorial to verbal response modes or vice versa was

not a problem. In contrast, results of a study on the retention of information about plants (Magne & Parknas, 1962) indicated that for 13 year olds there was a higher degree of retention when tests consistent with the mode of presentation (picture-picture or words-words) were used than when the tests differed from the information type. Similarly, Lefkowitz (1955) demonstrated that a line drawing presentation led to better learning than a still picture presentation on a line drawing test and that still pictures, in turn, surpassed line drawings when the results were measured by a still picture test. In explaining these findings Hartman (1961) applied stimulus generalization theory:

If the two situations in which information is a) presented for learning and b) then presented again for testing are looked upon as two complex but similar sets of stimuli, the learning demonstrated in the second or testing situation may be expected to increase as the testing situation becomes more like the original situation in which the information was learned (p. 246) .

Another variable that was not controlled for in the present study and that may have influenced the findings is the interaction between the adult experimenter and child subjects. It may be that there was an affective rapport between experimenter and girls established in the verbal condition which was essential to the superior performance of preschoolers in that condition. In contrast, in the visual condition the experimenter told the girls that they were about to watch some films and inter-

acted with them only by questioning them after the films were shown. The role of the experimenter in this condition could easily be seen by the children as uninvolved. Due to the lack of adult involvement, preschoolers in the visual condition may have produced primarily immature, objective judgments. According to the "affective rapport" interpretation of the data, it would follow that girls in the combined presentation would perform at an intermediate level. These preschoolers had the benefit of some involvement with the adult, which was less intense than girls who were read stories, but more intense than girls who watched the films. Although in this treatment the experimenter read the narratives accompanying the films to the girls, the emphasis was not on the adult-child relationship but rather on the child viewing the films. That is, girls in this condition were told to watch the films. They listened to the experimenter while their attention was on the screen. In an article concerned with child-adult relationships and different media, Wells (1974) stated: "Children undoubtedly derive benefits from both mediums, but, unfortunately television provides the adult with an easy, uninvolved role. It virtually usurps the adult's role in the student-teacher relationship and minds the child as well. In contrast, reading books with a prereading child demands an active part from the adult (p. 96)."

Several studies have supported the importance of

adult involvement particularly for children's cognitive development. "High" verbal females as compared to "low" verbal females have been shown to come from homes in which the mothers provided much verbal stimulation and fathers spent considerable time reading to them (Bing, 1963). Milner (1951) reported that high scorers on a reading and a language factors examination, compared to low scorers, indicated that their parents spent significantly more time reading to them and possessed a significantly greater number of books. Similarly, where there was a personal involvement, with interest in and acceptance of the pupil in the context of the classroom, children appeared to demonstrate more creativity (Sears, 1963; Spaulding, 1963).

In conclusion, future research in moral judgment may need to consider factors related to social interactions between children and experimenters which may influence the effectiveness of the experimental manipulations. Specifically, in order to examine the role of media in moral judgment, it may be fruitful to develop purer conditions.

Summary

The outcomes of the hypotheses of the present study have implications for theory and research in moral judgment. The findings of Chandler et al. (1973), that the visual presentation of story pairs favored the pro-

duction of mature moral judgments, have yet to be replicated. The question of which channel is the most effective for communicating social events and why it is the most effective is still unanswered. Some major research questions suggested by these findings which require more extensive study are: Is consistency of response mode and presentation mode crucial for children's moral reasoning? How does response mode interact with developmental level in moral judgment? How do factors pertaining to the social interactions between children and experimenters influence children's responses, particularly when the responses pertain to social questions?

Practical Implications of Results

Aside from theoretical value, the research on the effects of media and cue saliency on children's moral judgments has implications for education. In the learning of social concepts, like those taught in social studies curricula, the mode in which information is presented to pupils in second and fourth grade appears to be irrelevant. Providing the material to be learned is simple and brief, children of 7 to 7 1/2 and 9 to 9 1/2 years of age perform equally well with information presented via single or multiple channels. However, the present findings appear to suggest that at the preschool level children might do best if they were just required to listen to stories. While kindergarten pupils seem to have no difficulty understanding the

basic content of simple, visually presented material, they are unaware of some of the subtleties of human interactions which are solely depicted visually and, therefore, may not be able to reason maturely about what they see.

The importance of emphasizing critical aspects of social situations as a means of facilitating social understanding has also been underscored by the present findings. Highlighting affective cues seems to be beneficial to young children regardless of the mode in which material is presented.

APPENDIX A

Moral Story Couplets

Picture Stories

1. Karen wanted to help her mother paste some pictures in the photograph book. Karen's mother said "Sure, you may help!" Together they worked very hard. But just as Karen was pasting a picture, her hand bumped over the coffee her mother had been drinking. Without meaning to, Karen spilled the coffee and many pictures got ruined.

2. Susan was playing with her mother's scarf. Her mother walked in and scolded her for taking the scarf. Then she folded it and put it back in her drawer. She reminded Susan not to go to her drawers and left the room. But Susan didn't like that one bit. So when her mother walked out, Susan, who was mad, took one of her mother's pictures that was hanging on a mirror and ripped it up into many pieces.

Dishes Stories

1. Mimi was helping her mother one day by drying the dishes. Her mother was going out and she kissed Mimi good-bye. Mimi continued to dry the dishes which she then placed on the counter. Soon she put the dishes on a tray so she could carry them over to the closet and put them away. But as she lifted the tray she slipped and before she could do anything the tray and dishes fell and three of the dishes broke.

2. One afternoon Amy came in from the yard and took a dish from the cupboard. She wanted some ice cream from the refrigerator. But her mother said "No, it's too close to dinner," and she took the ice cream and put it back in the refrigerator. Amy got mad at her mother for this and when her mother left she took the dish, threw it on the floor and smashed it.

Painting Stories

1. Rhonda's mother is painting a lampshade for Rhonda. She has to work with great care as it is a difficult job. Rhonda wants to paint also. Her mother agrees and gives Rhonda a brush and apron so she won't get dirty. Rhonda starts to paint along with her mother. Suddenly, not realizing what was happening, her hand knocks against the can of paint and a whole lot of paint spills all over the floor.

2. Stephanie's mother is in the midst of painting the basement wall. She is standing on a ladder, working very hard. Stephanie asks her mother if she can help, but her mother says "Painting is for grownups, not for children." Stephanie is annoyed at her mother for this and when her mother isn't looking she kicks over the can of paint and spills a little bit.

APPENDIX B

Informational Components of Moral Stories

Picture Stories

- 1) a. Girl's mother is pasting picture.
b. Girl helps mother paste pictures.
c. Girl spills coffee over the pictures.
- 2) a. Girl is trying on mother's scarf.
b. Mother takes scarf away.
c. Girl rips up picture.

Dishes Stories

- 1) a. Girl is drying dishes.
b. Mother kisses girl and leaves.
c. After putting dishes on a tray girl drops the dishes.
- 2) a. Girl goes to the refrigerator for ice cream.
b. Mother says "No."
c. Girl throws dish on floor and breaks it.

Painting Stories

- 1) a. Girl's mother is painting a lampshade.
b. Mother says girl can help her paint.
c. Girl's hand bumps against can of paint and it spills.
- 2) a. Girl's mother is painting wall.
b. Mother says girl cannot help paint.
c. Girl kicks over can of paint.

APPENDIX C

Story Endings in Verbal- and Visual/Verbal-
High Saliency Conditions

Picture Stories

- 1) Poor Karen hadn't meant to spill the coffee.
- 2) Susan ripped up the picture on purpose.

Dishes Stories

- 1) It was unfortunate, but Mimi hadn't intended to break the dishes.
- 2) Amy had purposely thrown the dish.

Painting Stories

- 1) Poor Rhonda accidentally spilled the paint.
- 2) Stephanie really meant to spill the paint.

APPENDIX D

Analysis of Variance Source Table for
 Medium of Stimulus Presentation,
 Cue Saliency, Grade, and
 Order of Stimulus Presentation

Source of Variance	df	\underline{f}	$p <$
Medium	2	3.61	.03
Cue	1	5.38	.02
Order	1	0.01	
Grade	2	29.92	.00
Medium x Cue	2	0.82	ns
Medium x Order	2	1.82	ns
Medium x Grade	4	3.13	.02
Cue x Order	1	0.01	ns
Cue x Grade	2	1.62	ns
Order x Grade	2	0.80	ns
Medium x Cue x Order	2	0.98	ns
Medium x Cue x Grade	4	0.94	ns
Medium x Order x Grade	4	1.13	ns
Cue x Order x Grade	2	1.82	ns
Medium x Cue x Grade x Order	4	0.71	ns

a ns = not significant

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