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MORAL AND COGNITIVE DEVELOPMENT: AN EXAMINATION OF THEIR RELATIONSHIP

DISSertation

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By

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The Ohio State University

1975

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CHAPTER I

INTRODUCTION

Problem Statement

The purpose of this research is experimentally to investigate the relationship between cognitive and moral development. Research has easily demonstrated a concomitant growth in these two areas; however, the nature of the relationship between the cognitive and moral domains might best be understood by producing changes in cognitive structures and observing predicted changes in moral judgments. Perhaps the most convincing type of change to induce is one that is regressive in nature, going "against the natural flow" of development.

There appears to be at least two promising methods available for inducing such cognitive regression. The first would be the use of hypnotic age-regression as described by Parrish, Lundy, and Leibovitz (1968). The value of hypnosis for experimentally inducing changes has previously been established (e.g., Hokeach, 1968). The second, doubtless more easily administered and amenable to laboratory procedures, would be the use of frustration or stress (Barker, Dembo, and Lewin, 1943). The effectiveness of frustration in producing cognitive regression has been previously established by Larcom (1972), demonstrating that: (1) children at a higher level of cognitive or concrete reasoning ability (as measured by Piaget-type conservation
tasks adopted from Smedslund, 1954) regressed less after exposed to frustration than those at the lower level; (2) children in transition (between Piaget’s pre-operational and concrete operational stages) regressed more than those who were not; and (3) children who had been frustrated responded more primitives (as measured by their concrete reasoning). It is this latter procedure which has been adopted for the present investigation.

The basic tenet of the Piaget/Kohlberg cognitive-developmental approach to moral development is the dependence of the development of moral judgments upon structural/cognitive development. Cognitive development can be seen as providing “rungs of a ladder” by which an individual can “climb” to higher levels of morality. This “ladder” provides a necessary (but not necessarily sufficient) structural support for higher moral development. Thus a developmental decalage may exist wherein attaining a higher cognitive structure does not of necessity result in a higher moral structure.

The ladder analogue carries with it an interesting deduction. If the analogy is an appropriate one, it is reasonable to believe that if the supporting cognitive structures were suddenly removed or lowered (i.e., the ladder pulled away), the result would necessarily be an immediate drop in the level of moral judgments. In brief, if one can show that induced regression in the cognitive domain necessarily results in regression in the moral domain, this could be interpreted as support for the tenet of “dependence” within the cognitive-developmental approach. The present investigation is an attempt to demonstrate this.
Review of the Related Literature

The cognitive-developmental approach to the development of morality was first made explicit by Piaget (1965) in his *The Moral Judgment of the Child*. To reiterate, the essence of this approach is that development in the moral domain is of necessity dependent upon prerequisite development in the cognitive domain. Piaget contends that the child progresses from a stage of moral realism (characterised by several attributes including seeing rules as sacred or unalterable and judging rightness of an act on the basis of the magnitude of its consequences) to a stage of autonomous morality (characterised by viewing rules as social agreements that are modifiable and judging an act on the basis of intentions). Much research has focused primarily upon the consequences/intentions attribute.

A number of investigators (Armsby, 1971; Bandura and McDonald, 1963; Buchanan and Thompson, 1973; Crowley, 1969; Gutkin, 1972; Hobble, 1971; King, 1971), using numerous variations of Piaget's original moral judgment story pairs, have demonstrated support for Piaget's contention that young children do base their moral judgments on the consequences of actions rather than the intentions which precipitated these actions. Many have found a gradual shift from using consequences to using intentions, but this is not to deny that young children can and do utilise the latter, with various results depending upon type of story pairs presented (e.g., Buchanan and Thompson, 1973), amount of damage done and accidental vs. purposive behavior (e.g., Hobble, 1971; Armsby, 1971), and finally even the medium (verbal vs. videotape) in which the presentation of moral dilemmas
are made (Chandler, Greenspan, and Barenboim, 1973).

A host of studies have been concerned with inducing changes in moral judgments. However, most have followed the lead of Bandura and McDonald (1963) in using Piaget-type story pairs to assess the effectiveness of various training and modeling procedures on children's objective (based on consequences) and subjective (based on intentions) moral judgments. All have essentially replicated the Bandura and McDonald results (Cowan et al., 1969; Crowley, 1968; Dorr and Fey, 1974; Glassco et al., 1970; Jensen and Hares, 1973; Le Furgey and Woloshin, 1969; Schlaifer and Douglas, 1973) demonstrating dramatic changes in the direction of training, whether developmentally "up" (training "objectively" classified children to make subjective judgments) or "down". However, the results have been interpreted differently depending on the perspective of the investigator. Some claim these changes throw doubt on the validity of Piaget's proposed invariant sequence of stages (Bandura and McDonald, 1963; Bandura, 1969); others that they are not generalized and long-lasting changes and therefore represent superficial response changes instead of true change in underlying cognitive structures (Turiel, 1968); others that training affects primarily the decentering process which typically involves failure to focus on intention when a competing cue (size of damage) is introduced (Crowley, 1968; Glassco, Milgram, and Younis, 1970); still others that the changes are generalized and persistent if the direction is developmentally "up" but not if "down" (Le Furgey and Woloshin, 1969; Dorr and Fey, 1974) while the amount of change depends on the developmental level of the child (Cowan, Langer,
Heavenrick, and Nathanson, 1969; Schleifer and Douglas, 1973). The net result has been a semantic debate between the social-learning theorists and cognitive-developmentalists reminiscent of the Krain-Smedalund controversy several years ago concerning what conservation was, when and how it was attained.

In recent years, the cognitive developmental position has been aptly applied to the realm of moral development by Kohlberg, Turiel, and others. Briefly, this position holds that changes in moral judgments follow an invariant universal sequence of six stages, ranging from judgments based on obedience and avoidance of punishment to decisions based on ethical principles of conscience. More advanced stages are not simply added onto less advanced but represent qualitatively different reorganizations of the less advanced levels. Movement from one stage to the next is seen as largely a result of cognitive development. Cultural influences may accelerate or retard movement through the stages but the sequence remains invariant.

Evidence for the cultural universality of the sequence stems from (1) studies conducted in Great Britain, Mexico, Taiwan, Turkey, and the United States (Kohlberg, 1966a, 1966b, 1969, Kohlberg and Turiel, 1971), including various social classes in these cultures displaying only variations in developmental pace and not sequence, (2) the finding of a "Guttman quasi-simplex" correlational pattern between the stages (Kohlberg, 1958), and (3) longitudinal studies showing ordered sequential change and substantial correlations of moral maturity scores from preadolescence to adulthood (Kramer, 1968; LaCrosse and Kohlberg, 1969; Kohlberg and Kramer, 1969).
Evidence relating Kohlberg's stages of moral development to behavior and attitudes is mounting. Studies of cheating behavior have demonstrated that subjects at high levels of moral development are less likely to cheat than those at lower levels (Schwartz, Feldman, Brown, and Heingartner, 1969; Krebs, 1967; Lehrer, 1967). Kohlberg (1968) found those subjects who refused to administer electric shocks in the Milgram (1963) study tended to be at stage 6 while those complying tended to be at lower stages. Using a similar design with seventh- and eighth-graders, Turkel and Rothman (1972) found that behavioral choice to continue or stop punishing a "learner" was related differentially (although in a complex fashion) to stage of moral development. Anchor and Cross (1974) found a relationship between level of moral reasoning and maladaptive aggression in a version of the Prisoner's Dilemma game. ("Maladaptive" referred to aggression against another with no apparent self benefit from the aggression. Players were each given $200 in play money to begin the game. At the conclusion of the game, $10 could be exchanged for every play dollar won. The players were told that they were not in competition with each other; they were to win as much money as they could. One player was a confederate of the experimenter. After every ten moves in the game, the naive subject was given an option of "zapping" the other player, i.e., giving up $2 so that the other player would lose $10. Both populations of psychiatric patients and college students zapped their partners, with the former group zapping more than the latter; however, subjects in both groups at high levels of moral reasoning zapped less than those at lower levels.)
Level of moral reasoning has also been found to be closely related to participation in an act of civil disobedience in the 1964 Berkeley Free Speech Movement (Haan, Smith, and Block, 1968), as well as to rejection of conservative political slogans (Fishkin, Keniston, and Mackinnon, 1973). In the university, administrators, Rightists, and neutral scientists were found to employ more law and order reasoning (stage 4) than faculty, Leftists, and those in the social sciences and humanities (Fontana and Noel, 1973).

A number of studies have focused upon inducing changes in level of moral judgments by exposing subjects to reasoning above or below their dominant stage of reasoning (Blatt, 1969; Keasey, 1973; Maitland and Goldman, 1974; Rest, Turiel, and Kohlberg, 1969; Tracy and Cross, 1973; Turiel, 1966; Turiel and Rothman, 1972). Although generalizations are difficult to make, the research has demonstrated (1) changes induced are small rather than large (Blatt, 1969; Keasey, 1973; Maitland and Goldman, 1974; Rest, et al., 1969; Turiel, 1966; Turiel and Rothman, 1972), and (2) the amount of change that can be induced depends on the subject's initial stage of development, specifically: (a) more change is induced for lower than higher level subjects, for example, stage 1 and 2 subjects show more change than stage 3 and 4 subjects (Blatt, 1969; Keasey, 1973; Tracy and Cross, 1973), and (b) change seems most easily induced immediately "upward", that is, more change is found when reasoning is presented one stage above (+ 1) the subject's than no treatment (Tracy and Cross, 1973), same stage (0) reasoning (Keasey, 1973), reasoning one stage below (- 1) the subjects (Rest, et al., 1969; Turiel, 1966; Turiel and Rothman, 1972), or
reasoning two stages (+ 2) above the subject's (Hast, et al., 1969; Turiel, 1966).

The preceding research has been interpreted as validating Kohlberg's propositions concerning the universality and the invariance of his stages. Further studies lend support to the basic cognitive-developmental proposition that moral development is necessarily tied to cognitive development. Correlational studies have found significant associations between level of moral judgment and role-taking tasks. Selman (1971) found subjects at a preconventional level (Kohlberg's stages 1 and 2) scored at lower ("nonreciprocal") categories on two role-taking tasks developed by Flavell et al., (1968), while subjects at the conventional level (stages 3 and 4) scored at a higher ("reciprocal") category. Moir (1974) found that a significant proportion of the variance in moral maturity scores could be accounted for by measures of nonmoral role taking. Although the former concludes, "the development of the ability to understand the reciprocal nature of interpersonal relations is a necessary but not sufficient condition for the development of conventional moral thought" (1971, p. 79), the latter notes that a clear statement of relationship between role taking and moral-judgment maturity cannot be made because "...more mature moral judgments are defined in part by the forms of role taking" (1974, p. 300). He thus avoids the question of causality by maintaining "...that it cannot be reduced simply to asking whether role taking causes or precedes more mature responses..." and observing that "...a structure d'ensemble interpretation would favor the view that development in these two spheres of role taking is
simultaneous or nearly so..." (1974, p. 304).

Still further evidence for the central role of cognitive development in resolving moral dilemmas comes from studies showing high correlations between the stages of cognitive development and moral development (Toalinson-Keasey and Keasey, 1974; Lee, 1971).

Toalinson-Keasey and Keasey (1974) found support for the hypotheses (a) that there is a substantial and predictable relationship between formal operations and principled (stages 5 and 6) moral reasoning, (b) that formal operations are a necessary condition for the development of principled moral reasoning, (c) that there is a decalage between the attainment of formal operations and its application to the area of moral reasoning, and (d) that formal operations are not a sufficient condition for the emergence of principled moral reasoning. Evidence for their conclusion that "...sophisticated cognitive operations are a prerequisite to advanced moral judgments" (1974, p. 291) also comes from studies inducing changes that seem to indicate formal operations may be necessary for principled morality (Blatt, 1969; Tracy and Cross, 1973).

Research on the structural nature of the stages has been carried out by Rest (1973) and Rest, Turial, and Kohlberg (1969), who present evidence that the stages are hierarchically related, with each stage an advance over the preceding stage in being a more differentiated and integrated structure. Rest et al. (1969) found that (1) stages of thinking above the subject's predominant stage were preferred to those below (advice of stages above was described as "best", "smart" and "good" while advice below was termed "worst"), (2) stages above
the subject's were increasingly more difficult to understand than those below and could not be reproduced as correctly as stages below (a scalogram analysis revealed cumulativity of comprehension, i.e., if a subject comprehended a given stage he also comprehended all of the lower stages), (3) the preference and increasing difficulty interact such that subjects assimilate "into their own thinking moral reasoning one stage above their dominant stage...more readily than thinking that is either one stage below or two stages above their own" (1969, p. 237), and (4) the order of preference, comprehension, assimilation, and spontaneous production form a "developmental decalage", (i.e., children "prefer and comprehend a higher mode of thinking in advance of their capacity to assimilate it and assimilate it in advance of their capacity to use it spontaneously in new situations", 1969, p. 246). In addition, Rest (1973) clarified an ambiguity in the Rest et al. study concerning preference for higher stages (it had not been determined whether subjects preferred +1 or +2 statements to one another). He found that a subject's preference "...tends to be for statements at least as high as they can comprehend and possibly even for stages higher than this" (1973, p. 106).

The process by which transition from one stage to the next occurs has received theoretical and empirical examination by Turiel (1966, 1969, 1973, 1974). The basic cognitive-developmental approach holds that existing structures influence how the world is experienced and the interaction of structure and experience leads to reorganization of the structure. The "effectiveness" of the environment in producing change depends upon the "match" between the experiences and the level
of the present structure. Development is "directed toward increasing equilibrium, and each stage is a more equilibrated state of functioning than the previous one" (1974, p. 15); that is, the higher stages have greater structural stability since each is more "equilibrated and adaptive" than the previous stages. If one considers the amount of stage mixture as an indicator of transition and potential restructuring, support is provided for these propositions by data showing mixture decreases as higher stages stabilize (Turiel, 1969).

Turiel suggests that White's competence motivation (i.e., "organism-environment interactions are directed toward a more effective understanding of the environment") is an aid in understanding how "developmental progress is caused by attempts at more adaptive assimilation of environmental events" (1969, p. 102). Disequilibrium (similar to Smedalund's concept of "cognitive conflict") causes developmental change in structural reorganization to occur. Conflict prevents the individual from "passively accepting content through distortion of structure and motivate(s) him to actively deal with the structural elements" (1969, p. 131). Thus change occurs "...when the inability to completely assimilate events to the existing structure leads to disequilibrium that motivates attempts to achieve a new equilibrium. This more highly equilibrated stage allows better assimilation of the new experience" (1969, p. 126). These propositions receive support from the many cross-cultural studies cited earlier that show accelerated progression through the sequence of stages is found for urban (or more "complex") societies, since the amount of conflict that the environment presents should play a role and as Turiel
(1969) points out, "A complex heterogeneous environment that presents a variety of contradictions is more likely to facilitate the equilibration process than a more homogeneous environment" (1969, p. 130).

A relevant question that arises concerns the possibility of regressive change. Kohlberg and Kramer (1969) and Kramer (1968) presented longitudinal data that seemed to indicate a temporary "regression" to stage 2 reasoning by some people (who have previously passed through stages 3 and 4) during their early college experiences. These people then returned to higher stages of moral reasoning after college. The regression presumably was due to the pressures of their college experience, since non-college populations did not "regress".

On the other hand, Turiel argues that Kohlberg and Kramer erred in regarding responses which do not clearly fit into a developmental framework as regressive. He cautions that responses resembling earlier modes of thought do not necessarily reflect use of those earlier modes (i.e., structurally). His intense analysis of the transition from stage 4 to stage 5 reasoning reveals a period of inconsistency, vacillation, and internal contradiction in these individual's responses with aspects that resemble stage 2 reasoning; it was these responses that Kohlberg and Kramer incorrectly scored as stage 2 reasoning. Kohlberg (1973) now concurs with Turiel's interpretation of the data and concludes the "regressed" subjects were stage 4½ (in transition between stage 4 and stage 5).

Support for Turiel's claims stems from several sources. First, Sutton (1972) reasoned that regressive use of lower stages would result
if a subject believed his own stage of reasoning resulted in inadequate solutions to moral dilemmas; instead, however, he found a slight *increase* in level of moral reasoning. In addition, attempts to induce structural changes to lower levels of reasoning have been generally unsuccessful, that is, "regression" has been difficult to obtain. Finally, studies by Sullivan and Quarter (1972, and Haan, Stroud, and Holstein (1973) lend additional support in that both identify types of moral structures not easily placed within Kohlberg's original six stages. Sullivan and Quarter found two "hybrid" types (principled absolutist and instrumental relativist) that appear to antedate a stage 5 orientation (yet having moved beyond stage 4) while Haan et al. found that their population of "hippies" seemed to match Turiel's (1973) description of those subjects in transition from stage 4 to stage 5 reasoning, having "abandoned conventional modes... while...still groping for socially-cohesive moral principles" (1973, p. 607). Subjects in both studies were similar to those scored as "regressed" stage 2 subjects by Kohlberg and Kramer (1969).

In attempting to answer the previously posed question concerning regression, the accessibility of earlier modes of thought has to be made clear. Turiel (1974) notes two types of development. The first he refers to as a "layer-cake" view in which earlier stages remain unchanged as each new stage is added on. This view is expressed in the following passage by Werner and Kaplan (1963, p. 8):

...At least with regard to humans it must be maintained that with the attachment of higher levels, lower levels of functioning are not lost. Under normal circumstances, such lower levels of
functioning (both in terms of means and of ends) are subordinated to more advanced levels of functioning; they may come to the fore again under special internal or external conditions, for example, in dream states, in pathological states, under intoxication by certain drugs, or under various experimental conditions. They also, and characteristic ally may come to the fore when the organism is confronted with especially difficult and novel tasks...

A second view of development that Turiet opts for is a "transformational" view in which earlier stages are modified or transformed by the assimilation of higher stages. This view he expressed as follows (1974, p.17):

...Movement to the next stage involves corrections and regulations, which necessitate a transformation of the existing structure. Again, we see that with every transition there is modification of the preceding stage such that it becomes not a stored layer to be retrieved but, instead, is integrated, in transformed fashion, into the next stage. Therefore, lower stages would not be uninfluenced by the emergence of higher stages. On the contrary, we would expect that the construction of a higher stage would alter the content of the earlier stage.

This view is consistent with Langer's (1969) view that regression consists of change to an earlier mode as it exists at the present in the individual's functioning, not to a structure as it existed earlier. As can be seen, neither of the two views precludes the possibility of regressive change in moral development; what remains to be demonstrated is that (1) it can occur, and (2) it is theoretically a result of concurrent regression in the cognitive domain. These are the central contentions of the present study.

The formal hypotheses of this study are the following:

H1: A mildly frustrating experience will induce transitory
cognitive regression (Larcom, 1972) which will in turn produce lower scores on Kohlberg's (1958) moral-judgment measure.

$H_2$: As exposure to a frustrating situation is repeated, frustration will increase, resulting in more cognitive regression and hence lower moral judgment scores.
CHAPTER II

METHODOLOGY

Subjects

Fifty-six sixth-, seventh-, and eighth grade boys, ranging in age from 11 years 8 months to 14 years 10 months, were selected randomly from a middle-class suburban school.

The rationale for selecting this age range was: (1) the previously mentioned finding (Larcom, 1972) that children in transition (cognitively) regress more when frustrated than those who are not; children ages 11-14 years should be transitional, i.e., moving from Piaget's concrete operations to formal operations; (2) Kohlberg's interview has been used successfully with this age range (e.g., Tracy and Cross, 1973) and Blatt and Kohlberg report, "During the period from age ten to fourteen, children are typically moving from pre-conventional (Stage 1 and 2) to conventional (Stage 3 and 4) morality" (1974, p.7); hence, subjects in this age range will have "room" to regress to lower stages. Therefore, if regression in moral development can indeed be induced, the age range selected would seem to be the most appropriate for its detection.

Measures

Each subject's level of moral development was assessed by using Kohlberg's moral judgment interview (Kohlberg, 1958). The interview
consists of a series of hypothetical dilemmas of moral conflict and standard probe questions (see Appendix A for the rationale behind the use of Kohlberg's moral judgment interview). A subset of four stories was used to estimate moral judgment level of experimental and control subjects in the initial phase of the study, while a subset of three stories (two different dilemmas and one repeat) was used in a follow-up phase.

The use of a subset of four dilemmas as an estimate of moral judgment level seems justified since several studies (e.g., Schwartz, Feldman, Brown, and Heingartner, 1969; Tracy and Cross, 1973) have employed this number of stories (additionally, the latter authors based their use of four stories on a personal communication from Kohlberg, 1970, indicating that level of moral judgment could be reliably scored from a series of four dilemmas). The specific series of stories used in the present study (stories I, III, IV, and VIII) was based on evidence that these stories are appropriate for the age range presently employed (e.g., Blatt and Kohlberg, 1973; Campagna and Harter, 1975).

Subjects were interviewed by the author in both phases of the study. Stories were read aloud, followed by the appropriate probe questions. The stories, questions, and the children's responses were tape recorded (with each child's consent). The tapes were then transcribed and all protocols were scored blindly by the author.

The issue scoring method (Kohlberg, 1971, 1975) was used to score subject's responses. Scoring is based on two issues per story for a standardized set of stories; issues include life, punishment,
conscience, etc., (see Appendix B). Each issue receives either a "pure" or "mixed" stage score. A pure stage score represents moral reasoning at one of the six stages of development and is designated by numbers 1 through 6. A mixed stage score represents transitional reasoning and is designated by two numbers, for example, 2 (3). The first number represents "major" or dominant stage 2 usage with less usage of stage 3 (the minor stage within the parentheses).

A conversion of stage scores to moral maturity scores (Blatt and Kohlberg, 1973) is accomplished in the following way as described by Campagna and Harter (1975):

...transitional scores were weighted 2 for the major stage, 1 for the less dominant stage, and the sum divided by 3, the total number of weights; pure stage scores were unweighted. All scores were then multiplied by 100 and rounded to convert them to an integer scale from 100 to 600. Moral maturity score equivalents for stage 1, 1 (2), 2 (1), and 2 are 100, 133, 167, and 200, respectively; for Stages 2 (3), 3 (2), and 3, they are 233, 267, 300, etc. up through Stage 6.

Twenty standardized 3-story sets (totaling 60 stories and comprising 15% of all stories) were scored by a Kohlberg-trained rater to establish scoring reliability. The twenty protocols were selected at random with ten from the experimental condition and ten from the control condition. The Pearson product-moment correlation obtained for the mean moral maturity scores of Form A (10 protocols) was $r = .40$, while Form B (10 protocols) yielded a correlation of .65, the average being a rather disappointing .53 (see Appendix B).

Two measures of anxiety were employed to ascertain the validity of an alternative interpretation of the data (to be discussed later).
The Sarason et al. (1950) Test Anxiety Scale for Children (TASC) and General Anxiety Scale for Children (GASC) were selected for use in the present study since they are appropriate for children in grades one to nine and both measures are strongly correlated with each other.

**Design and Procedure**

After initial selection, subjects were randomly assigned to either an experimental or a control condition. In the first phase of the study, the experimental group was presented with a frustrating task (a puzzle consisting of several pieces of tile to be assembled in the shape of a letter that was represented as easy while in reality being very difficult, adapted from Larcom, 1972; see Appendix C) followed by one moral dilemma, a return to the task for three minutes again followed by another story, repeating this procedure until four stories had been administered. The control group received an easy rather than a difficult task (utilizing similar materials but easily solved, see Appendix D) preceding each story. The sequence of story presentation was in a Latin square design, with both experimental and control subjects spending equal amounts of time in solving the puzzles to avoid differential effects due to spacing, etc., (see Table 1).

A debriefing procedure previously used and demonstrated to be effective (Larcom, 1972) followed the first phase. This involved the experimenter trying to solve the puzzle, feigning difficulty, and commenting that the puzzle was much more difficult to solve than he had believed it was. After finally solving the puzzle with the subject looking on, the experimenter minimally scrambled the puzzle
### TABLE 1

SEQUENCE OF STORIES PRESENTED

<table>
<thead>
<tr>
<th>Group</th>
<th>Phase I</th>
<th>Phase II</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Experimental</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>F/I F/III F/IV F/VIII</td>
<td>VII II VIII</td>
</tr>
<tr>
<td>2</td>
<td>F/I F/III F/VIII F/IV</td>
<td>II VII IV</td>
</tr>
<tr>
<td>3</td>
<td>F/IV F/I F/VIII F/III</td>
<td>VII II III</td>
</tr>
<tr>
<td>4</td>
<td>F/VIII F/IV F/III F/I</td>
<td>II VII I</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>E/I E/III E/IV E/VIII</td>
<td>VII II VIII</td>
</tr>
<tr>
<td>2</td>
<td>E/III E/VIII E/I E/IV</td>
<td>II VII IV</td>
</tr>
<tr>
<td>3</td>
<td>F/IV E/I E/VIII E/III</td>
<td>VII II III</td>
</tr>
<tr>
<td>4</td>
<td>F/VIII E/IV E/III F/I</td>
<td>II VII I</td>
</tr>
</tbody>
</table>

F = frustrating task  
E = easy task  
Roman numerals = number of Kohlberg story
and allowed the subject to solve it and win a prize. This should have avoided any repercussions related to a subject's doubts about his own ability that may have been raised. (See Appendix E for instructions, post-interview questions, and debriefing procedures used for experimental and control subjects in both phases of the study.)

The second phase consisted of a follow-up (one week later) involving presentation of three moral dilemmas. This included two new stories and one repeat from the first phase. The repeated story was always the last story of the sequence given in the first phase. This was followed by administration of the TASS, then the GASC.
CHAPTER III

RESULTS

Analyses of Moral Maturity Scores

Preliminary analyses consisted of: (1) a one way analysis of variance (repeated measures) for the control group over seven moral dilemmas (four in phase I, three in phase II), and (2) a one way analysis of variance (repeated measures) for the experimental group over four moral dilemmas (four in phase I).

Results of the first analysis were not significant, $F(6, 152) = 0.90, n.s.$, indicating all dilemmas were comparable and presumably measuring roughly the same thing.

Results of the second analysis were also not significant, $F(3, 81) = 1.55, n.s.$, indicating a comparison of means following the F-test, employing a post mortem analysis (e.g., the Newman-Keuls method) is not called for.

The main analyses of the study consisted of: (1) paired $t$-tests of the mean moral maturity scores of experimental subjects between phase I and phase II and control subjects between phase I and phase II, and (2) two-sample $t$-tests of the mean moral maturity scores between experimental (phase I) and control (phase I) subjects as well as between experimental (phase II) and control (phase II) subjects.
Table 2 presents the results of the analyses. In comparing the control subjects' scores in phase I to their scores in phase II, no significant difference was observed ($t = .53$, ns.); however, a highly significant difference was obtained comparing experimental subjects' scores in phase I to scores in phase II ($t = 3.11$, $p = .02$). Comparison of phase II experimental subjects with phase II controls yielded no significant difference ($t = 0.56$, ns.), but a comparison of phase I experimental subjects with controls did reveal a significant difference ($t = 2.33$, $p = .02$).

Analyses of Other Measures

A correlational analysis was performed on TASC and GASC scores, and mean moral maturity scores. In addition, t-tests were carried out comparing means of experimental and control groups on the TASC and GASC.

Results of the correlational analysis are presented in Table 3. While the correlation between TASC and GASC was substantial and significant ($r = .67$, of the same magnitude reported by Sarson et al., 1960), all other correlations were rather small and nonsignificant.

Table 4 presents results of the t-tests between experimental and control groups on TASC and GASC means. No difference was observed between the groups for TASC means ($t = 1.25$, ns.); however, a difference for GASC means does approach significance ($t = 1.72$, $p = .09$). This latter finding is somewhat puzzling and will be discussed later in this paper.
### Table 2

Mean Moral Maturity Scores, Standard Deviations, t Values and Corresponding Probabilities for Various Comparisons

<table>
<thead>
<tr>
<th>Comparison</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Experimental group</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>phase I</td>
<td>28</td>
<td>210.57</td>
<td>22.90</td>
<td></td>
</tr>
<tr>
<td>phase II</td>
<td>28</td>
<td>227.57</td>
<td>34.47</td>
<td>3.11 (p = .004)</td>
</tr>
<tr>
<td><strong>Control group</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>phase I</td>
<td>28</td>
<td>229.00</td>
<td>34.94</td>
<td></td>
</tr>
<tr>
<td>phase II</td>
<td>28</td>
<td>232.82</td>
<td>36.12</td>
<td>0.55 (ns.)</td>
</tr>
<tr>
<td><strong>Phase I</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>experimental</td>
<td>28</td>
<td>210.57</td>
<td>22.90</td>
<td></td>
</tr>
<tr>
<td>control</td>
<td>28</td>
<td>229.00</td>
<td>34.94</td>
<td>2.33 (p = .023)</td>
</tr>
<tr>
<td><strong>Phase II</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>experimental</td>
<td>28</td>
<td>227.57</td>
<td>34.47</td>
<td></td>
</tr>
<tr>
<td>control</td>
<td>28</td>
<td>232.82</td>
<td>36.12</td>
<td>0.56 (ns.)</td>
</tr>
</tbody>
</table>
CORRELATIONS OF ANXIETY MEASURES AND MEAN MORAL MATURITY SCORES

<table>
<thead>
<tr>
<th></th>
<th>TASC</th>
<th>GASC</th>
</tr>
</thead>
<tbody>
<tr>
<td>GASC</td>
<td>.67*</td>
<td>----</td>
</tr>
<tr>
<td>Ex1</td>
<td>-.07</td>
<td>-.05</td>
</tr>
<tr>
<td>Ex2</td>
<td>-.01</td>
<td>.18</td>
</tr>
<tr>
<td>Cx1</td>
<td>-.07</td>
<td>.02</td>
</tr>
<tr>
<td>Cx2</td>
<td>.19</td>
<td>.25</td>
</tr>
</tbody>
</table>

*p < .005

Ex1 = experimental (phase I)
Ex2 = experimental (phase II)
Cx1 = control (phase I)
Cx2 = control (phase II)
**TABLE 4**

T-TESTS BETWEEN EXPERIMENTAL AND CONTROL GROUPS FOR MEANS OF TASC AND GASC

<table>
<thead>
<tr>
<th></th>
<th>TASC</th>
<th>GASC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Experimental</td>
<td>Control</td>
</tr>
<tr>
<td></td>
<td>(n = 28)</td>
<td>(n = 28)</td>
</tr>
<tr>
<td>Standard Deviations</td>
<td>5.488</td>
<td>4.502</td>
</tr>
<tr>
<td>$t$</td>
<td>1.28 (ns.)</td>
<td></td>
</tr>
<tr>
<td>df</td>
<td>54</td>
<td></td>
</tr>
</tbody>
</table>

*Excludes one subject with a high score on the GASC lie scale.*
CHAPTER IV

DISCUSSION

The discussion will center on three topic areas. First, the positive findings of the study and their implications for a better understanding of the relationship between cognitive and moral development. Second, the negative findings and their interpretation. Finally, consideration of an alternative explication of the major findings and further results of the present study relating to it.

Discussion of the Positive Findings

The t-tests (see Table 2) comparing experimental and controls (i.e., between-group comparisons) in both phases of the study lend considerable support to Hypothesis 1. If the experimental manipulation had succeeded in producing cognitive regression and in turn regression in moral judgments, one would expect the moral maturity score of experimental in Phase I (Ex1) to be significantly lower than that of the controls in the same phase (Cx1). This was in fact the case with \( \overline{Ex_1} = 210.57 \) and \( \overline{Cx_1} = 229.00 \) (\( t = 2.33, p = .023 \)). This is a meaningful comparison since both groups were given the same set of four Kohlberg stories (if one assumes unbiased random sampling would produce two more or less equivalent groups of subjects on moral maturity score).
Another comparison of value is that between the same two groups in the second phase of the study ($E\bar{x}_1$ and $C\bar{x}_2$). Cognitive regression that has been induced by the procedure employed in the present study has been shown to be rather temporary in nature (Larcom, 1972). Therefore, one might expect that after a one-week interval, any regressive effects that had been induced would have dissipated, the subject returning to his pre-frustration level of cognitive functioning. Hence, one would expect to find no substantial differences between the experimental and controls in phase II and this again was as expected ($E\bar{x}_2 = 227.57$ and $C\bar{x}_2 = 232.82; t = 0.56, ns.$).

Two further comparisons are also useful and lend additional support to Hypothesis 1. Both involve comparing moral maturity scores of the same subjects in the two phases of the study (i.e., within-group comparisons). In accord with the reasoning above, one would expect a significant increase in the experimental group mean from phase I to phase II ($E\bar{x}_1$ and $E\bar{x}_2$) since there has been ample time for subjects to "bounce back" from regressed levels. At the same time, there is little reason to believe that the control group mean should change appreciably from phase I to phase II. (This does assume, however, that the measures used in the two phases are roughly equivalent. Since one less story was administered in phase II, and two of the stories used were different than those in the first phase, it is conceivable that this assumption could be questioned. Despite these differences, it seems reasonable to believe that the assumption has some validity given an obtained correlation of $+.49, p < .005$ between means of both phases for all subjects.)
The first comparison confirms the expectation that the experimental group mean would show a significant increase from phase I to phase II ($\bar{E}_1 = 210.57$ and $\bar{E}_2 = 227.57$, $t = 3.11$, $p = .004$). The second comparison shows the control group mean does not change significantly from phase I to phase II ($\bar{C}_1 = 229.00$ and $\bar{C}_2 = 232.82$, $t = .55$, ns.). This enhances the value of the former comparison considerably and lends further support to Hypothesis 1.

The results of the four comparisons above, taken together, support the contention that frustration (in puzzle-building) can induce regression in moral judgments. The fact that puzzle-building and making moral judgments seem hardly related to each other and different in a qualitative sense suggests that cognitive regression was the mediating link as Hypothesis 1 states. Perhaps the strongest support comes from the $\bar{E}_1$ and $\bar{C}_1$ comparison since the major difference between the two groups lay in the relative difficulty of the puzzles.

**Discussion of the Negative Findings**

Results of the analysis of variance performed on the experimental group over the four stories in phase I were not significant ($F = 1.55$, df = 4/5, ns.) and therefore do not support hypothesis 2. Since Hypothesis 1 did find support, one is led to conclude that while frustration vs. non-frustration was an important factor, the actual "level of frustration" (1 - 4 frustrating experiences) apparently was not.

Why didn't a "snowballing" of frustration effects occur? There seems to be two plausible explanations. First, it is conceivable that
due to the necessity of reading a story to the subjects (generally requiring about one minute) after each three-minute frustration interval, the subjects may already have begun to return to their previous cognitive levels (a phenomenon discussed earlier) before the probing questions were able to assess their moral judgments. In addition, the children may well "bounce back" at differential rates; in any event, the first (or both together) would tend to obscure any "snowballing" effect.

A second and equally plausible possibility involves the variety of reactions displayed by children as a result of frustration. The mediating variables used to explain differences in reaction to frustration are many and shall not be discussed here. It will suffice to say that there are numerous possible reactions to what would be defined as a frustrating situation (e.g., aggression, withdrawal, etc.) and the present author did note differences among the children as they attempted to solve the difficult puzzle. (For example, one child seemed to "give up" easily, withdraw and appeared depressed while another child seemed to rationalize his difficulty away by saying, "I've never been any good at forms anyway".)

The reasoning is simply this: the experimental manipulation in all probability was not as successful at inducing frustration in some children as it was in others. This would also tend to obliterate a "snowballing" effect. This was supported by an analysis of variance excluding five subjects who indicated they were not very frustrated (in answer to the post-interview questions) resulting in a larger,
although not significant, F-value (F = 2.35, df = 3/66).

**Consideration of an Alternative Interpretation**

The use of frustration as a means of inducing regression in the present study is not without shortcomings. It does leave the door ajar for equally plausible alternative interpretations of the results.

One reasonable interpretation, although not as popular today as it once was, would be a Hullian view as espoused by Taylor (1950). This view predicts an interaction between drive level and task complexity—a prediction that has been well established in past research. In this case, drive level has been operationally defined as anxiety level (e.g., a subject's score on the Manifest Anxiety Scale). High anxiety presumably results in better performance on simple tasks (than does low anxiety) but impaired performance on complex tasks. This is so because "...the possibility exists that under a high-drive level new competing responses with very weak habit strengths may be brought over the threshold value of K (excitatory potential) with the consequence that the probability of occurrence of the correct response is lowered relative to that in a low-drive condition" (1950, p. 305). Thus, it could be argued not only that the use of frustration in the present experiment involves an increase in anxiety level by eliciting test-like cues, but also that making moral judgments about hypothetical conflict situations may itself be somewhat anxiety arousing as well as being a complex task by its very nature. The net result might be an increase in evocation of old schemas (i.e., "responses with very weak habit strengths") that would be interpreted in the context of the
present study as regression.

It could be argued that anxious children will become more frustrated in the experimental condition and this may lead to more "regression" (i.e., impaired performance on a complex task).

To check the reasoning above, the TASC and GASC were employed as measures of anxiety. As was seen in Table 4, means between experimental and controls on the former measure were not significantly different ($t = 1.29$, ns.), while the difference on the latter measure approached significance ($t = 1.72$, $p = 0.93$).

The finding of major interest to this discussion concerns the correlations that were obtained between scores on the TASC, GASC, and mean moral maturity scores for experimental subjects in phase I. Following the line of reasoning above, one would expect a large negative correlation between the anxiety measures and moral maturity.

1This finding is somewhat puzzling and may have been due to simply sampling error or possibly to some sort of experimental effects (e.g., eliciting a "defensive reaction") that were carried over into the administration of the GASC and interacted in some fashion with it, depressing the GASC scores of experimental relative to controls. A problem does remain since this fails to explain why TASC scores were not depressed.

The problem becomes even more complex when one considers that Sarason et al. (1960) report a "position effect" in which the test administered last shows a depressed score (in the present study this was the GASC, since it was always given last). This means the GASC scores for experimental would appear to be depressed even more than is normally the case, since there is little reason to assume the GASC scores for controls would not be depressed as expected.
scores (anxious children should "regress" more than the less anxious). However, the correlations were -.07 and -.05 for the TASC and GASC respectively. Although these are in the right direction, they are small and not significant. In fact, correlations for both groups and all moral maturity means are all rather small (ranging from -.07 to +.25, Table 3) and cannot be regarded as support for the interpretation under consideration. This is not altogether a surprising finding since anxiety (as measured by the TASC) has previously proved to be a poor predictor of frustrative regression (Larcom, 1972).
The purpose of this study was to examine the relationship between cognitive and moral development by means of inducing cognitive regression (employing frustration) and observing expected concomitant changes in moral judgments. Previous research has raised the possibility of regression in moral development (Kohlberg and Kramer, 1969) but since the data are open to alternative interpretations (Turow, 1974), the issue remains an open one. The present study was an attempt to demonstrate that it can occur as a result of regression in the cognitive domain.

In addition, it was reasoned that repeated frustration would result in further cognitive regression and in turn moral regression. The following hypotheses were formulated:

H1: A mildly frustrating experience will induce transitory cognitive regression (Larcom, 1972) which will in turn produce lower scores on Kohlberg's (1963) moral-judgment measure.

H2: As exposure to a frustrating situation is repeated, frustration will increase, resulting in more cognitive regression and hence lower moral judgment scores.

Fifty-six boys ranging in age from 11 years 8 months to 14 years 10 months were drawn from a white middle-class suburban school and
assigned to an experimental or control condition. The former condition involved instructing subjects to solve a puzzle (represented as easy but in reality very difficult) for a three-minute period, then a Kohlberg moral dilemma was presented with accompanying probe questions, a return to the puzzle task for another three-minute frustration period followed by another dilemma, repeating this sequence until 4 stories had been given. A follow-up phase one week later involved presentation of two new stories and one repeat, followed by administration of the TASC and GASC. The control condition involved the same procedure with one exception: subjects were given a much easier task to perform using similar materials.

Analyses of variance were performed on mean scores for individual stories and t-tests were carried out on mean moral maturity scores (average for each set of stories) for both groups in both phases. Finally, Pearson product-moment correlations were obtained between the anxiety measures and mean moral maturity scores.

Results supported Hypothesis 1 but did not support Hypothesis 2. The results were discussed in terms of the positive findings supporting the first hypothesis, as well as the negative findings and methodological difficulties potentially responsible for the failure to confirm the second hypothesis. In addition, an alternative interpretation of the results and relevant data were discussed.
APPENDIX A

RATIONALE FOR USING KOHLBERG'S MORAL JUDGMENT INTERVIEW

There are several possible measures of moral reasoning which this study could have utilized. Among these are: (1) Kohlberg's (1958) moral-judgment interview, (2) a paper-and-pencil version developed by Kaan et al. (1966), or (3) a scale developed by Maitland and Goldman (1974).

The present study employed Kohlberg's (1958) scale for several reasons, although each measure has both advantages and disadvantages. The main advantage in the Kohlberg scale lies in its wide use and consequent comparability of findings; other measures (e.g., Moir, 1974; Rest, 1975; etc.) lack this feature. In addition, acceptable interrater reliabilities have been well established, although as Kurtines and Greif (1974) note, measures of temporal stability (e.g., test-retest reliability), consistency (e.g., Kuder-Richardson coefficient; split-half reliability), and standard error of measurement are not readily available. A major disadvantage lies in the lengthy procedural requirements of administering the entire interview composed of nine stories (requiring approximately two hours). It is for this reason a shorter interview (fewer stories) has been adopted for the present study. These stories are available in the Standardized Scoring Manual (Kohlberg, 1971), and can be obtained from the Center
for Moral Education, Harvard University.

The Kaan et al. (1968) version is shorter (composed of five stories) with acceptable scoring reliabilities, but has yet to be validated with the range of ages to be examined at present.

The Maitland and Goldman (1974) measure is also less time consuming (being composed of 15 vignettes, each followed by a question and a choice of six alternatives representing characteristic modes of reasoning at each of Kohlberg's six stages) and has acceptable test-retest and split-half reliabilities. However, the scale has yet to be validated in a parallel form fashion with Kohlberg's scale using the same subjects. In addition, it is difficult to determine the possible effect of a difference between the Maitland and Goldman vignettes (which require subjects to make judgments on a personal level, i.e., "...on situations in which they themselves are involved", 1974, p. 700) and the Kohlberg vignettes (which are impersonal, i.e., require subjects to judge the behavior of a third party). Perhaps future research will specify this relationship.

Finally, in offering subjects alternatives, the procedure may be tapping a preference for stage reasoning (as described previously, e.g., Rest, 1971) rather than the subject's actual stage of reasoning.
APPENDIX B

KOHLBERG’S SIX STAGES OF MORAL DEVELOPMENT
AND ISSUE SCORING METHOD

The following are abbreviated definitions of the stages as
described by Turiel (1974):

Stage 1: Obedience and punishment orientation. Egocentric
deferece to superior power or prestige, or a trouble-
avoiding set. Objective responsibility.

Stage 2: Naively egoistic orientation. Right action is that
instrumentally satisfying the self’s needs and occasionally
those of others.

Stage 3: Good-boy orientation. Orientation to approval and to
pleasing and helping others.

Stage 4: Authority and social-order-maintaining orientation.
Orientation toward authority, fixed rules, and the mainte-
nance of the social order. Right behavior consists of
doing one’s duty.

Stage 5: Contractual legalistic orientation. Right action is defined
in terms of individual rights and of standards which have
been initially examined and agreed upon by the whole society.
Emphasis is upon procedural rules for reaching consensus
and ensuring general welfare.

Stage 6: The universal-ethical-principle orientation. Right is
defined by the decision of conscience in accord with self-
chosen ethical principles appealing to logical
comprehensiveness, universality, and consistency.
The Standard Scoring Manual (1971) consists of two forms (A and B) with three stories each. The standardized issue scoring involves orientation to an issue on each story with a total of six issue scores derived from three stories in each form. Below is a list of the stories included in each form along with the issues that are scored.

**Stories-Form A**

<table>
<thead>
<tr>
<th>Stories</th>
<th>Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>III. The Heinz Story</td>
<td>Life</td>
</tr>
<tr>
<td>(Drug Stealing)</td>
<td>Punishment</td>
</tr>
<tr>
<td>I. Joe and his Father</td>
<td>Father-Son Relationship</td>
</tr>
<tr>
<td>(Refusing Father)</td>
<td>Contract</td>
</tr>
<tr>
<td>VII. The Brothers Karl and Bob</td>
<td>Property-Trust</td>
</tr>
<tr>
<td>(Cheating or stealing)</td>
<td>Conscience</td>
</tr>
</tbody>
</table>

**Stories-Form B**

<table>
<thead>
<tr>
<th>Stories</th>
<th>Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV. Mercy-killing</td>
<td>Life</td>
</tr>
<tr>
<td>(Euthanasia)</td>
<td>Punishment</td>
</tr>
<tr>
<td>II. Judy and Louise</td>
<td>Mother-daughter</td>
</tr>
<tr>
<td>(Keeping Sister's Confidence)</td>
<td>Contract</td>
</tr>
<tr>
<td>VIII. The Valjean Story</td>
<td>Citizen's Role</td>
</tr>
<tr>
<td>(Returning convict to Prison)</td>
<td>Punishment</td>
</tr>
</tbody>
</table>

The relatively low scoring reliability obtained between the present author and a Kohlberg-trained rater is probably due to one or more of the following: (1) recent changes made in updating the Standard Scoring Manual; (2) scoring ambiguities within the manual itself; (3) use of only the probe questions contained in the manual by the present author.
APPENDIX C

THE PUZZLE USED IN THE EXPERIMENTAL CONDITION
APPENDIX D

DIAGRAMS USED IN THE CONTROL CONDITION

The diagrams used in the control condition (a page containing one diagram was presented one at a time) are shown below and on the following two pages:
APPENDIX E

INSTRUCTIONS, POST-INTERVIEW QUESTIONS, AND DEBRIEFING PROCEDURES

PHASE I

Instructions

Experimental and control subjects were greeted by the experimenter as follows:

Has anyone else told you about what we'll be doing today? I'd like to have you put some puzzles together today, and also I'd like to get your opinions on some stories of people having troubles. Then I'd like to talk with you again next week. Now to get your opinions, rather than trying to write them down, I'll just tape them—do you mind? Okay, first we will begin with the puzzles.

Experimental subjects were then told:

I've got some puzzle pieces here and a very easy puzzle for you to assemble—first make a capital letter "H" using all the pieces. You can flip them over if you want and move them around in any way. You'll have 3 minutes to complete it, but you probably won't need all the time, so as soon as you finish I'll have another letter for you to assemble and so on. Ready, begin! (Three minutes elapses.) Times up. Now I want to get your opinions on a story, so listen carefully; you can finish the puzzle later. Here's the story. (First story given.) Okay, you may go back to the puzzle to finish it—you have another 3 minutes, are you ready? Begin! (Three minutes elapses.) I'm afraid time's up again—I want your opinions on another story before you work on that some more, so listen carefully. (Second story given.) Are you still on the first letter? Okay, you'll have another three minutes. Ready, Begin! (Three more
minutes.) I'm afraid time's up again! Here's another story. (Third story given.) Okay, we'll go back to the puzzle. You are in the grade aren't you? Okay. Ready, begin. (Three more minutes.) Time's up. Here's another story. (Fourth story given.)

Control subjects were told:

I've got some puzzle pieces here and I'd like you to assemble some letters using all the pieces just like the picture I show you. You can flip them over if you want, move them around in any way. Okay? Here's the letter "C", make it using the pieces... (here's another, an "E", etc.) That's good. We'll come back to do more letters later, but first I'd like to get your opinions on a story, so listen carefully, okay? Here's the first story. (First story given.) Okay, now let's go back to the puzzles--do the letter __. (More letters presented.) Now here's another story--listen carefully. Repeated two more 3-minute periods and two more stories.)

Post-Interview Questions

Experimental subjects were asked questions and debriefed as follows:

I have a few questions I'd like to ask you about the puzzle. Do you think it would make a good game--good enough to be sold in a store? You seemed to be having a lot of trouble putting the puzzle together, is that right? Were you getting a bit frustrated or mad because you were having difficulty solving it? Have you ever put together picture-puzzles with lots of pieces?

I can't understand why you had so much difficulty putting the puzzle together--it's not supposed to be hard, let me show you. (Experimenter has difficulty.) Well I guess it was a lot harder than I thought, there, that's how. Now I'll bet if I scramble them you could put them together yourself.

Controls were asked the following:

I have a few questions I'd like to ask you about the puzzles. Do you think it would make a good game--good enough to be sold in a store? Did
you feel the puzzles were easy to put together? Have you ever put together picture-puzzles with lots of pieces?

The experimenter then told both experimental and control subjects the following:

Okay, that's all for today but I'd like to see you again next week for awhile—I'll give you a prize later for participating in my research project if you promise me you won't tell any other students or friends about the puzzle or stories even if they ask—for a couple of months, okay? I'll see you next week.

PHASE II

Instructions

Both experimental and control subjects were instructed as follows:

This time there aren't any puzzles but I'd like your opinions on a couple more stories, okay? (Two new stories given.)

Now there's one more here that you had earlier, but you don't have to say the same thing or try to remember what you said before, just tell me what you think. (Repeat story given.)

New I've got some more questions to ask you; here's an answer sheet and pencil. (Experimenter read instructions and administered TASC and GASC.)

Okay, that's all. I want to give you a prize for helping me out. It's a certificate for a hamburger and Coke—I'll put your name down and you'll get it when I'm finished in this school. I can't give them out now because I want to keep it a secret. Okay?
BIBLIOGRAPHY


