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COGNITIVE-DEVELOPMENTAL DIFFERENCES
IN REACTIONS TO FRUSTRATION
IN A DYADIC PROBLEM-SOLVING TASK

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
1977

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To Diana and Rachel
I wish to thank the members of my committee, Professors George G. Thompson and Philip M. Clark, and particularly, my adviser, Professor John E. Horrocks, for his support at needed times during my graduate career.

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## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>iii</td>
</tr>
<tr>
<td>VITA</td>
<td>iv</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>ix</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>x</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Chapter</td>
<td></td>
</tr>
<tr>
<td>I. REVIEW OF THE RELEVANT LITERATURE</td>
<td>4</td>
</tr>
<tr>
<td>Frustration Theory</td>
<td></td>
</tr>
<tr>
<td>Rosenzweig's Theory</td>
<td>5</td>
</tr>
<tr>
<td>Frustration-Aggression</td>
<td>7</td>
</tr>
<tr>
<td>Frustration-Regression</td>
<td>13</td>
</tr>
<tr>
<td>Frustration-Fixation</td>
<td>16</td>
</tr>
<tr>
<td>Integration With Behavior Theory</td>
<td>21</td>
</tr>
<tr>
<td>Definitions of Frustration</td>
<td>23</td>
</tr>
<tr>
<td>Frustrative Nonreward</td>
<td>29</td>
</tr>
<tr>
<td>Independent and Dependent Variables in Frustration Research</td>
<td>32</td>
</tr>
<tr>
<td>Piagetian Theory Applied to Social Development</td>
<td>34</td>
</tr>
<tr>
<td>Physical Versus Social Scheme Construction</td>
<td>35</td>
</tr>
<tr>
<td>Variants, Invariants, and Cues in Social Encounters</td>
<td>38</td>
</tr>
<tr>
<td>Imitation and Play</td>
<td>44</td>
</tr>
<tr>
<td>Egocentrism</td>
<td>46</td>
</tr>
<tr>
<td>Role-Taking</td>
<td>51</td>
</tr>
<tr>
<td>Developmental Differences in Reactions to Frustration</td>
<td>62</td>
</tr>
<tr>
<td>Differentiation and Integration</td>
<td>62</td>
</tr>
<tr>
<td>Frustration Tolerance</td>
<td>67</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

1. Features of social encounters .................. 39
2. Egocentric communication ....................... 53
3. Nonegocentric communication .................. 53
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Overall design of the study</td>
<td>97</td>
</tr>
<tr>
<td>2.</td>
<td>Total number of subjects choosing each alternative by age, condition, and age X condition combination</td>
<td>109</td>
</tr>
<tr>
<td>3.</td>
<td>Number of pilots and navigators choosing each alternative across all ages and conditions</td>
<td>110</td>
</tr>
<tr>
<td>4.</td>
<td>Number of subjects choosing each alternative by age level</td>
<td>112</td>
</tr>
<tr>
<td>5.</td>
<td>Number of subjects choosing each alternative by condition</td>
<td>114</td>
</tr>
<tr>
<td>6.</td>
<td>Number of subjects choosing each alternative by condition at the 8-9 year level</td>
<td>116</td>
</tr>
<tr>
<td>7.</td>
<td>Number of subjects choosing each alternative by condition at the 11-12 year level</td>
<td>117</td>
</tr>
<tr>
<td>8.</td>
<td>Number of subjects choosing each alternative by condition at the 15-16 year level</td>
<td>118</td>
</tr>
<tr>
<td>9.</td>
<td>Mean responses by condition to &quot;How difficult do you think this task was?&quot;...</td>
<td>121</td>
</tr>
<tr>
<td>10.</td>
<td>Summary of analysis of variance for &quot;How difficult do you think this task was?&quot;...</td>
<td>121</td>
</tr>
<tr>
<td>11.</td>
<td>Mean responses by condition to &quot;How frustrating was this task to you?&quot; ...</td>
<td>123</td>
</tr>
<tr>
<td>12.</td>
<td>Summary of analysis of variance for &quot;How frustrating was this task to you?&quot; ...</td>
<td>123</td>
</tr>
<tr>
<td>13.</td>
<td>Mean responses by condition to &quot;How did you like working with your partner?&quot;</td>
<td>124</td>
</tr>
</tbody>
</table>
14. Summary of analysis of variance for "How did you like working with your partner?" 124

15. Interscorer reliability coefficients for Situation Exercise material .................. 126
INTRODUCTION

Psychologists have long subscribed to the proposition that some experience of conflict and frustration is necessary for normal development. Stage theorists have particularly stressed this notion. Freud's psychosexual and Erickson's psychosocial stages describe the processes whereby personality develops through resolution of crises. Piaget's cognitive stages delineate processes through which knowledge of the properties of the physical world is acquired by resolution of conflicts between objective and subjective realities.

Unfortunately, the notion that people need conflict to develop properly is not always obvious or reassuring to one experiencing conflict. Frequently, people's long or short term ways of coping with frustration and conflict are not very adaptive.

One of the best-studied reactions to frustration has been aggression. Given the shrinking globe, understanding and controlling aggressive phenomena is perhaps more necessary now than ever before. Feshbach (1970)
concluded his extensive review of the research on aggression in children with the observation that more precise data are needed on the factors mediating and modifying responses to frustration. Currently, more attention is being paid to alternatives to aggression controls other than punishment and substitute outlets. Feshbach also saw a need for an integration of the developmental data on aggression with more general developmental theories, suggesting that both the stimulus and response patterns of aggressive behavior may follow the developmental sequence of cognitive stages.

The present study was designed to investigate the proposition that reactions to frustration and their modifiability are subject to cognitive-developmental types of parameters such as are inherent in Piagetian theory. It was felt that one's social development runs parallel to his cognitive development. As the child is accommodating and assimilating properties of physical relationships, he undoubtedly is doing likewise for social relationships.

The experimental procedure used to test these propositions consisted of a dyadic problem-solving task in which pairs of children at three different age levels attempted to work together for mutual benefit. In addition, four different experimental conditions were studied.
Of primary interest were the choices subjects made in response to the investigator's attempt to frustrate them. A secondary consideration was the relationship of behaviors in this situation to verbal responses given by the subjects on a story completion test.

Chapter I consists of a detailed review of the literature deemed relevant to this investigation. Frustration theory and its history are first reviewed, followed by the application of Piagetian concepts to social development. Then, an effort is made to integrate these areas.

Chapter II describes the method employed in the present study, and Chapter III documents the results obtained. Finally, Chapter IV summarizes, discusses, and draws conclusions.
CHAPTER II

REVIEW OF THE RELEVANT LITERATURE

Frustration Theory

The term "frustration" has broad usage in everyday parlance and usually presents no great semantic problem. Generally, people understand intuitively what is meant by sentences such as: "He was frustrated by his continual lack of success." Scientific psychology, however, has often been frustrated by its inability to squeeze the looseness out of the term. Frustration has been dealt with in numerous ways, depending upon the orientation of the psychologist and the context in which the term has been used. Lawson (1965, pp. 6-9) notes three different treatments of it: (1) frustration as a state of the organism's "inner processes" or private phenomenology, (2) frustration as a concept in applied clinical psychology, and (3) frustration as a hypothetical construct. The vernacular usage of the term has provided rich research hypotheses but has also confused
the issues in many respects. At one time frustration was accepted at face value as an independent psychological entity, and as a result, various global theories of frustration were formulated. More recently, however, the tendency in psychology has been to abandon this, to use the concept in a more differentiated fashion, and to incorporate it into broader, more basic theories of behavior.

Much of the traditional research in this area has concentrated on the consequences of frustration. Four "classical" approaches to frustration have been the theory of Rosenzweig, and the frustration-aggression, frustration-regression, and frustration-fixation theories.

Rosenzweig's Theory

Rosenzweig (1938, 1944) was interested in rather broad aspects of personality and dealt more with theoretical discussions than with empirical investigations of frustration. His major contribution was a comprehensive schematic classification of types of reactions to frustration. Of these, the three that have proven most popular in the literature are: (1) extrapunitive reactions, in which the individual aggressively attributes the
frustration to external persons or things, (2) intrapunitive reactions, in which the individual aggressively attributes the frustration to himself, and (3) impunitive reactions, which avoid blame. In extrapunitive reactions, the individual tends to feel anger and hostility and defends his ego with the psychoanalytic mechanism of projection. Clinically, the paranoid epitomizes this response. In intropunitive reactions, the individual is more likely to feel remorse and guilt and to employ the defense mechanisms of displacement, isolation, and undoing. Classical examples of this response are the obsessional and compulsive neurotics. Finally, impunitive reactions, according to Rosenzweig, are characterized by conciliation and the defense mechanisms of repression and self-deception. Supposedly, this type of response is found most frequently among hysterics. Rosenzweig also discussed adequate-inadequate, direct-indirect, defensive-perseverative, and specific-non-specific dimensions of reactions to frustration. He eventually developed a projective test known as the Picture-Frustration Study to measure these and other dimensions. Most of the research using this instrument has not been concerned with the direct manipulation of specific independent variables. Instead, the test has
been used primarily as a personality measure in which correlational data have been generated.

**Frustration-Aggression**

Dollard, Doob, Miller, Mowrer, and Sears (1939) concentrated on aggression as a consequence of frustration. This, the frustration-aggression hypothesis, is perhaps the best-known theoretical treatment of frustration and has generated vast amounts of empirical research. It has provided a significant bridge between psychoanalytic and behavioristic formulations. The authors proposed that frustration always leads to aggression and that all aggressive behavior is prima facie evidence of the prior existence of frustration. They further proposed that the strength of instigation to aggression varies directly with: (1) the strength of instigation to the frustrated response, (2) the degree of interference with the frustrated response, and (3) the number of frustrated response-sequences. Dollard et al. also dealt with the concept of aggression-anxiety. They felt that the organism's impulse to respond aggressively in the face of frustration is frequently punished owing to aggression's potentially destructive social effects. Punishment, then,
tends to inhibit the expression of aggression, and the extent to which aggression in a particular situation will be expressed -- at least overtly -- is a function of the amount of punishment expected. From this, Dollard et al. assumed that these positive and negative tendencies toward aggression summated to determine whether frustration would lead to overt aggression. When direct aggression is strongly inhibited, indirect forms will occur, and aggression will be displaced onto "safer" targets. Thus, under conditions of anxiety, changes in both the form and object of aggression supposedly occur. The theory concluded with the implication that the successful occurrence of aggression is reinforcing and that successful aggression results in "catharsis" and a temporary reduction in the tendency to aggress. As one form of aggression is inhibited, others are supposedly strengthened; when one form occurs, others are weakened. Studies by Thibaut and Coules (1952), Feshbach (1955), and Feshbach and Singer (1970) lend support to the notion that catharsis lowers the subsequent propensity to aggress. Moreover, this idea enjoys great popularity in lay psychology. Learning theory refutes it, however, suggesting that the successful consequences of aggression, because they are reinforcing, render future aggression more likely. The studies of Kenny (1952), DeCharms and Wilkins (1963), Mallick and
McCandless (1966), and Frodi (1973), among others, support this latter point of view. In each, aggressive acting-out enhanced hostility and future aggressive behaviors. Thus, the experimental literature is ambiguous, although most investigators favor the conclusion that catharsis does not reduce aggression in the long run.

The cognitive support hypothesis proposed by Feshbach and Singer (1970) postulates that exposure to aggressive fantasy or media may serve to modulate or control the expression of aggressive impulses in children who are lacking in certain cognitive resources, such as the ability to ideate, imagine, and fantasize by enabling them to discharge vicariously impulses that might otherwise be enacted overtly. According to this theory, then, exposure to aggressive content in the media may provide the cognitively immature child with the ideation and stimulation to fantasy activity which he does not have readily available within himself. However, the research of Bandura and his associates (1963, 1973) has indicated clearly that aggressive responses can be acquired quite readily through exposure to aggressive models, even when the observer himself is not directly reinforced. Also, Walters and Brown (1963) have shown that not only can aggressive behaviors be increased by direct training, but aggressive responses acquired through reinforcement in a
noninterpersonal situation may generalize to new situations involving interpersonal interaction.

The quasi-vernacular terminology of the frustration-aggression theory has been appealing, and its formalized though loosely constructed principles have made it especially heuristic. At the present time the theory is still alive, yet its staunch advocates are few. Most critics have questioned the sweeping one-to-one relationship between frustration and aggression stated by the authors. As Larsen (1976) notes, the theory attempts to be too global and does not cover all possible cases. Determinants other than frustration may result in aggression, and aggression is not the sole response to frustration. Attempts to define all determinants of aggression as frustration lead to a tautology in which the hypothesis becomes circular. If the theory concedes to these exceptions, much of its rigor is lost.

Yates (1962), in detailing the various criticisms leveled against the theory, states one other objection: Is there a unitary aspect of behavior we can call "aggression?" With regard to this, it must be recognized that psychologists are far from agreed on the definition of aggression. Kaufmann (1970, p. 3) notes that any or all of the following may be considered as instances of it, depending upon one's point of view:
1. A spider eats a fly.
2. Two wolves fight for leadership of the pack.
3. A soldier shoots his enemy at the frontline.
4. The warden of a prison executes a convicted criminal.
5. A woman, while cleaning a window, knocks over a flowerpot, which in falling, injures a pedestrian.
6. A boy kicks a wastebasket.
7. A man kicks a cat.
8. Mrs. X, a notorious gossip, speaks disparagingly of many persons of her acquaintance.
9. Mr. Y, known for his cutting tongue, verbally tears his subordinates to shreds.
10. Mr. X, far more subtly, speaks with barely detectable, yet cutting, sarcasm to others.
11. One man attacks another in a barroom.
12. A boy has a dream in which violence is committed either by him or against him, or in which he witnesses violence among others.
13. An enraged boy tries with all his might to inflict injury on his antagonist, a bigger boy, but he is not successful. His efforts merely amuse the other boy.

Clearly, problems of definition are inherent here. Dollard et al.'s definition of aggression is "a response having for its goal the injury of a living organism" (p. 11). Buss (1961, p. 3) feels that this implies purpose or intent and therefore is not behavioral. He prefers "a response that delivers noxious stimuli to another
Similarly, Cahoon (1972) attempts a behavioristic definition of aggression in terms of a combination of antecedents, responses, and response-contingent consequences, all to exclude the construct of "intention." As is obvious, each of these definitions would classify as aggressive somewhat different items in the above list. For instance, #5 would be aggression to Buss but not to Dollard et al. For Kaufmann (1970), purpose and intent are necessary components of aggression, but he excludes "fantasy," i.e., dreams, TAT interpretations, adjective check lists, etc. Feshbach (1964) speaks of three different types of aggression, namely, instrumental aggression, which is directed toward the achievement of nonaggressive goals; hostile aggression, for which the goal response is injury to some object; and expressive aggression, which represents a desire for a particular form of responding (e.g., "cathartic" activities in psychotherapy). Buss and Durkee (1957) have developed a scale to measure seven types of aggression, including assault, indirect hostility, irritability, negativism, resentment, suspicion, and verbal hostility. Others distinguish between prosocial, antisocial, and self-aggression (e.g., Sears, 1961). Still others view aggression as a personality construct (cf. Larsen, 1976, pp. 77-100). Megargee (1966), for example, suggested two types of aggressive personalities,
the undercontrolled and the overcontrolled. The former tends to have a constant level of generalized hostility which is released freely toward many targets but at rather low levels of violence. The latter, on the other hand, may be potentially more dangerous inasmuch as he tends to be an inhibited, long-suffering individual with rigid controls who may finally explode. Viewing aggression in this fashion leads to problems encountered in personality theory in general. For instance, one current controversy concerns whether behavior is determined primarily by personality traits or by the demands of the situation (see Mischel, 1973, for one discussion of this problem). Schott (1971) offers a cogent and comprehensive summary of the various problems involved in defining aggression.

Frustration-Regression

Freud advanced the proposition that frustration could cause an individual to revert to behaviors characteristic of an earlier developmental stage. This, the frustration-regression hypothesis, was formulated more objectively by Barker (1938) and Barker, Dembo, and Lewin (1941).
The frustration-regression hypothesis assumes a developmental picture of the manner in which certain patterns of behavior change with maturation, namely, increasing differentiation coupled with hierarchical organization. In the experimental paradigm of the above researchers, young children served as subjects, and their behavior in a play situation was observed. First, the children's "constructiveness of play" was rated with respect to a standard set of toys. A developmental scale of constructiveness was then generated from these ratings, after which the children were given the opportunity of playing with a much more interesting set of toys in the same room. Finally, they were removed from these toys and allowed to play with the initial set once more. During this period, the more desirable toys were still visible behind a screen. It was found that the constructiveness of play with the standard toys decreased following removal from the more attractive toys, suggesting regression.

In evaluating this theory, Lawson (1965) states that there is some hedging with respect to the inevitability of this reaction and to the inclusiveness of this response category. As with the frustration-aggression hypothesis, it is unclear here whether regression is the sole reaction to frustration, whether it is just one of many possible responses, or whether it is conceived to
be the most prominent feature of differing responses. For instance, Barker, Dembo, and Lewin stated that in frustration there is an increase in motor restlessness, hypertension, and aggression. They seem to imply that these reactions are characteristic of and subsumed by the category entitled regression. Among others, the frustration-aggression theorists probably would have objected to this apparent attempt to render aggression a subset of regression. Furthermore, questions may be raised as to whether there is a general class of responses that can be called regressive, whether one frustrating situation is equivalent to any other with respect to the fostering of regression, and what specific circumstances lead to alternative reactions. Finally, Yates (1962) criticized the Barker, Dembo, and Lewin experiment on methodological grounds. First of all, he questioned whether their scale of constructiveness of play would necessarily generalize to a larger or different population of children. Secondly, the observations and ratings of play and other behavior throughout the study were done by people who knew the purpose of the experiment, thus introducing the contaminating element of experimenter bias.
The frustration-regression hypothesis has failed to generate as much controversy or research as the frustration-aggression hypothesis. However, it has been confirmed in large part by such researchers as Wright (1942, 1943), Block and Martin (1955), and Larcom (1972) and has been influential in presenting another perspective in reactions to frustration.

**Frustration-Fixation**

The frustration-fixation hypothesis of Maier and his co-workers (1949, 1956) was also heavily influenced by a common-sense appraisal of frustration and its effects. However, contrary to the previous two theories discussed, Maier felt that the behavior arising out of true frustration could not be explained in terms of conventional principles of learning and motivation. Maier asserted that the basic characteristic of behavior under conditions of frustration was that it became "fixated," that this fixation did not arise because of ordinary reinforcement or motivational factors, and that it could not be changed by the therapeutic application of these.

These rather extreme statements derived from the experimental procedure Maier utilized. His research was
performed with rats, using the Lashley jumping apparatus. He first allowed the animal to be reinforced consistently with food for "correct jumping." It was then put into an insoluble problem situation in which no approach response could be consistently rewarded and in which the rat also was punished by a sharp rap on the tail if it refused to jump. Maier observed that rats subjected to this treatment developed stereotyped patterns of response. Approximately 80% began to jump always to one side regardless of what card was displayed, while the remainder always jumped toward a particular card regardless of the side it occupied. After this stereotypy was established, Maier and his colleagues blocked the stereotyped response, i.e., they locked the window at which the rat had been jumping and unlocked the other. Results showed that a large number of the rats would not deviate from their original stereotyped response even after 200 trials and despite the fact that reward was waiting for them behind the alternative window.

This was called "fixation" by Maier and was considered by him to be the characteristic result of severe frustration. As reviewed by Lawson (1965, pp. 24-25), the chief characteristics of such frustrated responses are the following: (1) There seems to be an all-or-none
quality to their development. Rats exposed to the frustrating situation and then to the soluble problem split into a bimodal distribution with regard to ability to learn the solution. (2) Fixations such as these can apparently be broken only by the technique of "guidance," which consists of gently forcing the rat to jump opposite to its fixated preference. More standard learning methods were not found to be effective by Maier. (3) Fixations are highly specific to the situation and to the response involved during the frustration period. Fixation in the jumping stand situation did not transfer to a maze situation for example.

Maier held that a frustrating situation could not be defined independently of the results of such. Whether a situation was frustrating or not for a given subject could be determined only by observing whether or not fixated behavior occurred. As in the case of the frustration-aggression and frustration-regression hypotheses, this represents a circularity in which the behavior supposedly being explained is used to define the existence of variables that explain the behavior.

Among others, psychologists interested in psycho-pathology have attacked Maier's viewpoints, chiefly because his insistence that fixated behavior did not
follow conventional principles of learning and reinforcement appears to run counter to the accepted notion that even maladaptive behavior is lawfully determined. Maier did offer a therapeutic technique for ameliorating fixation, namely guidance, but the translation of this from the animal laboratory into the human realm is not self-evident. In any case, Maier’s definition of what constitutes a frustrating situation is rather severe, narrow, and confined to the operations performed in his laboratory. Subsequently, he modified his ideas on frustration somewhat. When referring to his own data, Maier stood firmly behind the proposition that fixation of response was the criterion of frustration, but when he turned to more real-life, vernacular discussions of frustration, he conceded that fixation, aggression, and regression are all possible responses.

Investigators who have applied Maier’s ideas to human subjects include Marquart (1948), Jones (1952), and Moghni (1954). Using college students, Marquart studied the pattern of punishment and its relation to abnormal fixation. In a preliminary experiment subjects had to learn a complex discrimination habit, were exposed to an insoluble situation, and finally were required to learn a simple position-habit. In the main experiment
the original learning situation was omitted, and errors
were punished with electric shocks. Results were inter-
preted as confirming Maier's contention that frustration-
instigated behavior is qualitatively different from goal-
motivated behavior. Marquart also found evidence of
fixation in her subjects. Jones also employed an in-
soluble problem situation to produce frustration in an
attempt to study its effect on learning. He found that
an immediate disorganization of behavior occurred as a
consequence of the frustration. However, under prolonged
conditions of such, a point was reached after which fur-
there frustration did not lead to a further increase in
the time taken to learn the subsequent problem or in
the degree of stereotypy. Moghni, using an insoluble
problem situation with 12- to 14-year-old children,
attempted to study the effect of duration of exposure to
stress and the length of time for recovery from its effect.
He found no significant effect of the stress on subse-
quently behavior. No significant differences were found
by varying the duration from 10, 50, 100, and 150 trials
on the insoluble task and the length of time for recovery
from 10 seconds to two, four, and six minutes.
Integration with Behavior Theory

As outlined by Lawson (1965, p. 27), the next stage in the development of frustration theory was marked by four distinguishing characteristics:

(1) An increasing emphasis on a wide variety of experimental work as the basis for theorizing, as opposed to a reliance on everyday examples of frustration and its effects.

(2) An attempt to demonstrate an integral relationship between frustration and more general behavioral concepts.

(3) A reconceptualization of the frustrating situation itself in terms of many already well-known independent variables rather than in terms of a unique generic model encompassing all situations.

(4) The suggestion that response outcomes of frustrating situations could be manifested in many specific ways rather than in simply one.

Representative of this approach was the work of Child and Waterhouse (1953), who used as a point of departure the frustration-regression hypothesis of Barker, Dembo, and Lewin. Child and Waterhouse argued that to consider "regression," or lowered constructiveness of play, as the primary outcome of frustration was oversimplification. Instead, they suggested that quality of performance with respect to specific behaviors be treated
as the major dependent variable. Frustration, then, was not regarded as generating unique behavior but only changes in specific actions in the context of the particular situation at hand. The mechanisms of behavior change following frustration were not considered to be unique either. Child and Waterhouse identified two fundamental mechanisms which had been examined by psychologists previously without any particular reference to frustration: (1) interfering responses aroused by the frustrating situation or its emotional consequences, and (2) changes in drive or motivation. In short, Child and Waterhouse argued that when goal-directed behavior is in some way interfered with -- the traditional definition of frustration -- motivation is changed and alternative responses are more likely to occur. In this framework, there exists no one mode of reaction to frustration. Moreover, in contrast to the writings of the classical frustration theorists previously discussed, Child and Waterhouse admitted the possibility that frustration may lead to an enhanced as well as to a deteriorated quality of performance. For example, frustration may alter the situation in such a way as to make the achievement of a goal possible only through acts of higher intellectual quality than were previously possible or appropriate. The history of scientific discovery as well as virtually
Definitions of Frustration

For the most part, the theorists discussed heretofore have accepted the definition of frustration as an interference, thwarting, or obstruction of some goal-response. However, some have been quite liberal in their application of this definition, whereas others have been considerably more restrictive.

Rosezweig (1938), as a representative of the first group, described three broad classes of frustration: (1) privations, (2) deprivations, and (3) conflicts. Each of these may be bifurcated further as having its source without or within the individual. Thus, external privation would exist when the individual needs or wants something which is ordinarily available in the external world but which is currently lacking. Rosezweig gives the example of a man on a desert island who is hungry but can find no food. Internal privation is a type of frustration in which the individual suffers not because something is lacking in the external world but rather in himself. The example given here is the man who has insufficient attractiveness for the satisfaction of his mating
drive. Deprivations are characterized more by specific losses than by a general lack. Hence, external deprivation is the loss of something to which strong attachments have been formed. For example, a man is deprived by death of the woman he loves. By contrast, internal deprivation involves the loss of some attribute formerly possessed by the individual and inextricably interwoven with his lifestyle. For instance, Sampson's hair is shorn and he loses his great strength. Finally, there are conflicts, which are characterized by the presence of something instead of its absence. In the external conflict, the thing which is thwarting is present in the external world. For example, suffering from unsatisfied sexual cravings, a man meets an attractive woman, only to discover that she is the faithful wife of someone else. On the other hand, an internal conflict involves an obstacle which is present in the individual's own personality. The example Rosenzweig gives of this is the man who is sexually attracted to a woman but who cannot find sexual satisfaction with her because she is associated in his mind with his mother. Similar to all of these are the approach-approach, approach-avoidance, and avoidance-avoidance conflicts described in the topological theory of Lewin (1936).
On the other extreme are Maier and his co-workers, whose definition of frustration is considerably more clear-cut than the above but also considerably more restrictive. It is to be noted that to their way of thinking an organism that confronts an insurmountable barrier and consequently chooses a secondary goal is not, strictly speaking, in a frustration situation. Only when escape or substitution is impossible is the organism truly frustrated.

Brown and Farber (1951), attempting to reconcile frustration theory with the general behavioristic approach of Hull (1943), spoke of four types of frustration: (1) physical barriers, (2) delays between the initiation and completion of a response sequence, (3) omission or reduction of a customary reward, and (4) the eliciting of a response tendency incompatible with an ongoing one. Brown and Farber argued that emotions in general, and frustration in particular, could be regarded as higher order hypothetical constructs. Their use of the term frustration referred to a defined state or condition of an organism. They wished to distinguish it from a "frustrating event," such as the blocking or nonrewarding of a response as listed above, objecting to the tendency to use it to mean either the state, the event, or both. As long as clear relationships between behavioral
antecedents and behavioral consequents could be described, Brown and Farber did not object to the use of the term "frustration" as a generic label for all such relationships. Thus, they sought to give frustration similar status to that of "drive," "habit strength," and other Hullian concepts. Their reasoning was not unlike that of Child and Waterhouse in that they asserted that when the tendency to perform a particular response meets interference, other tendencies to respond are aroused. The effects of this interference are also not unlike those posited by Child and Waterhouse. One effect discussed by Brown and Farber is an increase in the drive and total motivation of the organism, strengthening whatever response tendencies are already likely in the situation. A second effect is the fostering of "internal stimuli" (which could be called "emotional"). These, in turn may be related to other responses not already present in the immediate situation. For example, anger could be generated, and the individual in question may have developed a habit previously of responding to such anger with violence.

Along these lines, Jost (1941) examined physiological changes during frustration with 18 emotionally unstable and 20 stable children (ages not given) during several experimental situations. Of 52 measures taken,
the ten that were most significant in differentiating the above two groups were: (1) initial GSR, (2) percent change of resistance during frustration, (3) percent change of level of resistance during learning, (4) equation of galvanic responses at attention and sensory stimulation, (5) hand tremor before frustration, (6) hand tremor after frustration, (7) blood pressure change at sensory stimulation, (8) dominance of alpha rhythm in EEG, (9) standard deviation of amplitudes of respiratory movements, and (10) change in heart rate after frustration. The experimental group showed an exaggerated physiological pattern as well as a slower return to the pre-stimulation level. Psychotic and adjusted groups presented the most stable physiological patterns, whereas the pre-psychotic and neurotic subjects presented the most unstable.

A theoretical approach which helps to explain physiological concomitants of stress and which has implications for the study of psychosomatic manifestations is the General Adaptation Syndrome developed by the endocrinologist Selye (1956). According to Selye, the body's responses to stress consist of three major phases:

1. The alarm reaction comprises the physiological changes which are the organism's first
defense to the application of a stressor. These consist of various bodily and biochemical changes (e.g., secretion of adrenalin, decrease of blood volume) which usually have the same general characteristics regardless of the exact nature of the stressor, be it inadequate food, bodily injury, loss of love, or severe frustration.

(2) During the stage of resistance, the organism seems to develop a resistance to the particular stressor that provoked the alarm reaction, and the symptoms that occurred then diminish, even though the disturbing stimulation continues. The physiological processes disturbed during the alarm reaction appear to resume normal functioning at this stage. The increased activity of the pituitary and the adrenal cortex help the organism to adjust.

(3) If exposure to the injurious stressor continues too long, a point is reached when the organism can no longer maintain its resistance. It thereupon enters the stage of exhaustion. The anterior pituitary and adrenal cortex are unable to continue secreting hormones at the increased rate. Many of the physiological functions which originally appeared during the alarm reaction begin to reappear. If the stressor continues to act upon the organism after this time, death will occur. Severe stress
is usually relieved, however, before the stage of exhaustion is reached.

Lachman (1963), after reviewing the work of Selye and others, summed up the situation as follows:

Perhaps emotional reactions are basically constructive -- defensive and adaptive. However, if emotional activity or reactivity is sufficiently frequent or prolonged or intense, it becomes maladaptive or destructive, leading to physiological aberration or structural damage to the organism, and even to death. Thus, an organism may be injured or destroyed by its own defenses. (p. 247)

Frustrative Nonreward

The frustrative nonreward theory of Amsel (1958, 1962) utilized the hypothetical construct approach to frustration proposed by Brown and Farber but added the "fractional anticipatory response" model of later Hullian theory. Hull had subscribed to the notion that some unobservable components of responses to a goal could be conditioned to other stimuli in the environment. These fractional goal responses could then serve as stimuli or sources of motivation for the observed behavior. All in all, this was intended to introduce a reward expectancy
variable into an otherwise behavioristic system. Amsel believed that nonreward following a history of reward could cause a "frustration reaction" and that "fractional anticipatory frustration," as a component of this, could affect the observable behavior of the organism. Frustration, then, was defined only with respect to nonrewarded trials interspersed with, or following, rewarded trials. An anticipatory frustration reaction may be conditioned to the environmental situation, and in turn, affects behavior by: (i) increasing drive strength and motivating immediately subsequent behavior, (2) serving as a drive stimulus whose reduction may be reinforcing, and (3) inhibiting overt behavior.

Unlike previous frustration theorists, Amsel was not concerned with the vernacular usage of the term. His interest lay in using a modified form of Hullian theory to solve some traditional problems in learning, such as the observation that extinction is faster following continuous than following partial reinforcement. Despite this, Amsel's frustrative nonreward approach is probably surpassed in its subsequent stimulus for research only by the frustration-aggression hypothesis.

In a particularly interesting article, Ryan and Watson (1968) have applied Amsel's theory to children's behavior. Performance in noncontinuous reward situations
was found to be more vigorous as compared with continuous reward. These data and the results of studies dealing with discrimination learning and differential conditioning tend to provide cross-species support for the frustrative nonreward theory. The effects of nonreward were also reviewed in relation to chronological age, mental age, personality, social factors, and success-failure manipulations. With respect to chronological age, Ryan and Watson's literature scan revealed a greater tendency for older subjects to change or vary their responses following nonreinforcement as compared with younger subjects, chiefly because older children seem to have a higher expectancy for success. Ryan and Watson suggest that this shows nonreward to be possibly more frustrating for older individuals. Their review also indicated that following failure or nonreward retardates increase performance to a lesser extent than normals, but they note that these findings are equivocal and would seem to depend largely on individual differences. A study by Bialer and Cromwell (1965) which separated retardates into "failure avoiders" and "success strivers" suggested that following failure or nonreward normal subjects as well as success strivers show a greater increase in performance than retarded subjects and failure avoiders, respectively. Ryan and Watson note that the literature on locus
of control, intellectual achievement responsibility, and chance versus skill instructions (e.g., Butterfield, 1964; Crandall, Katkovsky, and Crandall, 1965) could provide another source of individual difference hypotheses in this area.

Independent and Dependent Variables in Frustration Research

Lawson (1965, pp. 41-51), in a list condensed from a more technical review (Lawson and Marx, 1958), summarizes the principle classes of independent and dependent variables that have been manipulated in experiments purporting to deal with frustration. Principle independent variables, or operations, include:

(1) Nonreinforcement after a history of reinforcement.
(2) Preventing completion of a reinforced response sequence.
(3) Preventing a response aroused by goal stimuli.
(4) Delayed reinforcement.
(5) Decreasing the incentive value of reinforcement.
(6) Failure to achieve a standard of success or attain another secondary reinforcer.
(7) Punishing or creating conflict.

(8) Posing hypothetical frustrating situations (e.g., as in the Rosenzweig Picture-Frustration Study).

Principle dependent variables include:

(1) Changes in the frustrated response itself.

(2) Effects on the resumption, memory, and attractiveness of the frustrated behavior.

(3) Effects on nonfrustrated behavior (e.g., subsequent problem-solving).

(4) "Emotionality."

(5) Fantasy behavior following frustration.

Lawson concludes that the apparently straightforward questions "What is frustration?" and "What are people's reactions to frustration?" are not straightforward at all.
Piagetian Theory Applied to Social Development

Piaget, by now, is a name which is familiar to both professionals and laymen. His genetic epistemological approach to the development of the child's conception of the physical world and its properties has had a major impact upon developmental psychology and education. Once novel, the major portion of his theory has now gained wide acceptance, although some portions have become bastardized and misinterpreted. More recently, attempts have been made to apply Piaget's basic concept of the cognitive stage to the child's social development. It may be argued that the child's cognitive structure has no less an effect here than in the physical world. As the child is accommodating and assimilating properties of physical relationships, he undoubtedly is doing likewise for social relationships. As he is becoming more aware and competent in the former realm, he undoubtedly is progressing similarly in the latter realm. Since social encounters inevitably involve such processes as decision-making, problem-solving, information-processing, and role-taking, it is apparent that cognition plays an important part in these. Indeed, the development of knowledge about the physical world and about the social world may
be parallel processes, and the cognitive structures mediating the first may be expected to mediate the second.

**Physical Versus Social Scheme Construction**

In this context, Lee (1975) discusses commonalities and differences in physical and social scheme construction. He proposes that in the child's acquisition of knowledge of the world, be it physical or social, he constructs schemes consisting of three components — the intellective, the affective, and the enactive. Moreover, Lee points out that the process of scheme construction in both the physical and social worlds always entails adaptation of the individual's existing schemes through assimilation and accommodation of variant and invariant properties.

However, the construction of schemes in the physical world involves manipulation of objects that are relatively stable and that provide relatively constant feedback across time and space, whereas objects in the social world are not nearly so stable or reliable. The simplest of all social encounters, the dyadic interaction, is a case in point. As Lee illustrates, when
two adults meet for the first time, each assesses the other on various dimensions (e.g., physical characteristics, emotional state, role relationships, setting, etc.). Through this assessment, each attributes certain characteristics to the social other (intellective component). Based on past experiences of these assessments, certain feelings are evoked (affective component), and each individual acts accordingly (enactive component). During the interactive process, each individual attempts to assimilate new information that may or may not coincide with his preconceptions. If it does not coincide, and if he wishes to continue the interchange, he must adjust his conceptions and actions appropriately, or accommodate. During subsequent encounters, each person will possess a specific scheme of the other, yet new assessments will continue to be made. Although the physical characteristics of the other may have endured, the emotional characteristics may have changed radically. In addition, if the setting for this meeting is sufficiently different from the last, or if this encounter involves a third social partner, the role relationship may change also. In short, the intellective, affective, and enactive components can vary from one encounter to another in the social world to a much greater extent than in the pure
physical world. Adults can find interpersonal competence to be quite an accomplishment. Clearly, such competence is considerably more difficult for children.

Lee emphasizes the quality of a child's thought as a baseline for understanding his social scheme construction. He points out that the transformation from sensory-motor to operational thought requires two main processes. First, the child must be able to coordinate rapidly and simultaneously in order to unify discrete independent experiences, a feat beyond his capabilities during the sensory-motor stage. Second, he must become conscious of the nature of his own thought processes rather than simply the results he wishes to obtain.

During the preoperational period (roughly ages 2 through 7), the child begins to acquire the ability to represent events that are not immediately present to his senses. At the same time language begins to emerge to facilitate this. Also, there is emerging in the child a sense of his own causality -- he is discovering that "he can make things happen." Despite these developing mental abilities, however, the preoperational child is primarily egocentric and cannot see objects or events from another's point of view. Moreover, he attends to end-states rather than to transitions and transformations of these states.
Furthermore, he has not mastered the operation of reversibility. As the child matures and gains knowledge through interactions with the external environment, his actions gradually become interiorized and reversible. External motor reactions are no longer essential prerequisites for assimilating information into a scheme. With operative thinking, schemes increase in their range of potential application and are no longer centered on any one dimension or on the child himself. The child knows that he is an independent entity who can act upon objects. He learns to actively structure reality. Concurrent with these changes are the expanded interpersonal exchanges of the child's socialization. For one thing, the demands and restrictions of parents and teachers are becoming more salient.

Variants, Invariants, and Cues in Social Encounters

Having provided this backdrop, Lee elaborates on the construction of social schemes in the three different component areas. Intellectually, the child must identify both the variant and invariant features inherent in social encounters. Some of these are presented in Figure 1.
Figure 1. Features of social encounters. (From Lee, 1975)
To evaluate the invariant features of social partner and context at each social encounter, the child must learn the cues that will help him to identify the variants. For example, when a person smiles with delight (cue), there is a high probability that he is happy (variant), which is an element of the emotional state (invariant). Or if an individual is crying, the probability is high that he is sad, but there is a slight probability that he is happy (Lee, p. 214).

As Lee explains, one way the child acquires knowledge of these features of the social landscape is through the use of verbal labels. Initially, these identifications are global and diffuse, lacking real defining properties (e.g., Daddy is Daddy, is Daddy). As the child gains more experience, he begins to differentiate elements of the social partner and context. This helps the child to associate behavioral and perceptual cues with certain variants. For example, he begins to become aware of certain unique qualities and characteristics of Daddy (e.g., Daddy is big, Daddy is funny, etc.). This association between cues and variants aids the child in delineating the properties of each variant, thereby permitting him to bring order out of chaos. However, although he may be able to utilize cues in this manner,
the preoperational child's thought processes permit him to center on only one dimension at a time. Since he uses one cue at a time in defining the social encounter, the child at this stage has difficulty seeing how the cues within each variant relate to each other, how the variant relates to the cues, and how one variant relates to another. These limitations lead the child to make superficial assessments of the social situation. The element the child selects for his assessment depends upon the salience of it within a particular context. One example is the nursery school child who sees his teacher in a grocery store and does not recognize her until told who she is. The initial nonrecognition is probably due less to the child's inability to identify the teacher than to his inability to decenter her from the school setting within which he has always seen her.

As the child moves into operativity, his thought processes cease to consist of exclusive preoccupation with one element of the social encounter at a time. He begins to attend to transformations of events and consequently, is able to perceive relationships between specific behaviors, behavior sequences, and outcomes. This increased flexibility of thought allows him to use class inclusion relationships and to construct a hierarchical
system of cue probabilities. Furthermore, he can begin to relate various encounters across time and space, identifying the invariant features of his social exchanges through conservation of social partner and context. In the previous illustration of crying as a cue, the preoperational child assesses whether crying is a happy or sad state without considering any additional index. On the other hand, as Lee illustrates, the operational child can determine its referent by engaging in the following thought process:

If the individual is crying (cue 1) and is also slouching (cue 2) and everyone else is pouting (cue 3), one can conclude that the individual is sad (variant of emotional state). However, if the individual is crying (cue 1) and also jumping (cue 2) and everyone else is laughing or smiling (cue 3), one can conclude that the individual is happy (variant of emotional state). (p. 215)

Thus, the child considers other cues that are present in the immediate environment, namely other participants. However, despite the fact that he has a mobility of thought that allows him to compose or decompose classes in a hierarchy, the operational child lacks the even greater mobility of abstract, hypothetical thinking
required to ascend to the next stage of social competence.

Lee further elaborates upon the construction of social schemes in the affective and enactive component areas. He notes that although the preoperational child is able to cognize symbolically both physical and social events, he is somewhat less able to act upon the latter than upon the former. Because this is a period of intense socialization when the child is barraged with "no" and "don't" from his social partner, often an adult, he is more likely to react instead, i.e., accommodate. This does not mean that the child has no effect on the behavior of others toward him. It is simply that in the child's early social exchanges, accommodation plays a dominant role, and opportunities for assimilation are minimal. Because of this, his construction of social reality during this period is largely through the eyes of his elders. Hence, the child's sense of competence in the social realm may be less advanced than in the physical realm. Kohlberg's (1963, 1969) cognitive-developmental analysis of moral development also appears to reflect this. In the intermediate stage Kohlberg has deduced from his observations, the individual's moral judgment is based upon maintaining the conventional order and
role-expectancies of others. Consequently, there is a tendency during this time toward a "good boy" orientation, that is, a desire to win the approval of more powerful significant others by following social rules as given. Generally, this stage is most characteristic of the latency age child.

Imitation and Play

During the early preoperational period, then, imitation takes on great importance, since it is a way for the child to both accommodate to adult demands and reproduce appropriate interactive behaviors given minimal cues. Since the child during this period can retain images of absent objects and events, he is able to reenact past events in the absence of a model. These reenactments can be exact copies of previous behaviors of the model or they can be distorted reproductions. Exact reenactments are typical early in the child's development, perhaps filling an important role in introducing appropriate action sequences for the child. This is evident in the number of instances of ritualistic behaviors near the age of two. Distorted reenactments occur later,
taking place in the context of fantasy or symbolic play. In symbolic play the child is creating a personal reality through the process of assimilation. The degree to which this reality mirrors external reality may vary greatly. During symbolic play the child practices and experiments with his repertoire of imitative behaviors. One function of this is the fostering of self-sufficiency. Although the child's control of his own social reality during this period is limited owing to the adult demands by which he must abide, in symbolic play he is the controller of his own reality even if it is somewhat distorted. Piaget (1962b) documents in great detail both the ritualistic and symbolic play described here. Moreover, it is through symbolic play that the child learns to take on the social roles of others (cf. Maccoby, 1959). Through role-playing he reenacts scenarios from the past that include both emotions and actions of significant others until these become encoded into mental images. Thus, he acquires a crude sense of others' feelings and actions, which is the beginning of a true role-taking ability and the precursor for the development of empathy.

By providing a vehicle to test his personally evolved social schemes, peer exchanges aid the child in increasing his interpersonal competence. In contrast
to the customary exchanges with adults, peer exchanges are generally authority-free. As such, the child is more free to experiment. Children at this age are unable to accommodate appropriately to each other's initiations because they have not attained reciprocity. Furthermore, each child is egocentric; that is, his interests are focused primarily on himself. Given all of this, the child is forced to develop need-gratifying strategies, and these will eventually have to become oriented to external reality. Successful strategies enable him to assimilate his social partner's actions and force him to accommodate to them as well, thus leading to construction of more useful perceptions of social reality.

Egocentrism

Egocentrism is of particular interest because of its relation to the affective aspects of the child's thought and behavior. Elkind (1967) suggests that the study of egocentrism may provide a bridge between the study of cognitive structure on the one hand and the exploration of personality dynamics on the other. Elkind describes the different forms of egocentrism characteristic
of each of the major stages of cognitive growth outlined by Piaget, paying particular attention to adolescence. He notes that the transition from one form of egocentrism to another occurs in a dialectic fashion. The mental structures which free the child from a lower level of egocentrism are the same structures which ensnare him in a higher form. In presenting the various developmental forms of egocentrism, Elkind treats each of Piaget's major stages as if it were primarily concerned with resolving one major cognitive task. As such, the major cognitive task of infancy (ages 0-2) might be regarded as the "conquest of the object," that is, in learning object permanence. During the preschool period (ages 2-6), the child's major cognitive task can be regarded as the "conquest of the symbol," that is, in learning the differentiation between symbols and their referents. With the emergence of concrete operations, the major cognitive task of the school age child (ages 7-11) becomes that of mastering classes, relations, and quantities. During adolescence the individual masters formal operational thought. This enables him to conceptualize both his and others' thoughts. According to Elkind, it is this capacity to take account of others' thoughts, however, which is the crux of adolescent egocentrism. This
form of egocentrism emerges because the young adolescent fails to differentiate between the objects toward which the thoughts of others are directed and those which are the focus of his own concern. He assumes that other people are as obsessed with his behavior and appearance as he is. This gives rise to two mental constructions, called by Elkind the "imaginary audience" and the "personal fable." The first of these would appear to play a dominant role in the self-consciousness so typical of the early adolescent, who somehow believes that everyone else is studying him as intensely as he is, even though in most actual social situations this is not so. The personal fable is characterized by the young adolescent's steadfast belief in his own uniqueness, typified by such remarks as "You don't know how I feel." According to Elkind, the egocentrism of early adolescence tends to diminish by the age of 15 or 16, via a two-fold transformation. The imaginary audience is modified progressively in the direction of the reactions of the real audience. In a way, the imaginary audience can be regarded as a series of hypotheses which the young person tests against reality. As a consequence of this testing, he gradually comes to recognize the difference between his own preoccupations and the concerns of others. The personal
fable, on the other hand, appears to be overcome (although probably never in its entirety) by the gradual establishment of what Erikson (1968) has called "intimacy." Once the adolescent succeeds in adjusting his imaginary audience to the real one, he can establish less self-centered interpersonal relationships. Once relations of mutuality are generated and confidences shared, the young person discovers that other people have feelings similar to his own.

The developmental forms of egocentrism are particularly highlighted in the area of language. "Egocentric speech" has been defined in varied and sometimes conflicting ways, but it generally refers to speech that does not take into account the listener's perspective. Piaget (1926) pointed out that in the dialogue of preschool children, the messages uttered often bear little relationship to each other. The speaker does not make an effort to respond adequately to previous statements, nor does he tailor his speech to fit the expectations of his partner. Children at this age may also engage in long soliloquies or monologues without waiting for any reaction from a listener, or they may repeat a phrase uttered by another without actually responding to it (i.e., echolalia). In a study of six preschool children,
Piaget reported that anywhere from 40 to 70% of utterances were classifiable as egocentric, a report that has been controversial. One reason for the controversy, according to Bates (1975), has been the failure of all researchers to find the same levels of egocentrism in child speech. She maintains that another reason involves the widespread misunderstanding of what is meant by "egocentrism." The English translation of Piaget's term conjures up an image of children as selfish little sociopaths with no social motivation whatsoever. Some critics of Piaget, particularly Vygotsky (1962), have interpreted his remarks to mean that children do not intend to communicate at all -- they are asocial beings who speak simply to hear themselves. Vygotsky took pains to demonstrate that children's monologues decrease greatly in frequency and length when no listeners are present and when the listener is deaf or otherwise unresponsive. Piaget (1962a) eventually clarified the issue somewhat by explaining that the young child may indeed be socially motivated during much of his speech but is egocentric insofar as he is unable to adapt his speech successfully for his intended listeners.

A classic experiment for the assessment of efficiency versus egocentrism in peer communication is the Krauss-Glucksberg task (Krauss and Glucksberg, 1969).
Children are seated at a table on opposite sides of a screen, enabling them to hear but not see each other. In one version of the experiment each has before him a peg and a set of three-dimensional blocks in nonsense forms. In another version each has nine two-dimensional drawings with the same nonsense forms. In both tasks one child is asked to pick up one of the forms and describe it to the other child so that the latter can locate the same form on his side. Egocentrism versus efficiency is operationalized as the number of distinctive form cues (e.g., "The small red one with the points on it...") that the child offers to the listener on the other side of the screen. These studies generally demonstrate that children under seven fail to give enough cues to the listener to permit him to select the right form.

**Role-Taking**

Flavell, Botkin, Fry, Wright, and Jarvis (1968) offer a comprehensive discussion of the development of communication and role-taking skills in children and outline several empirical investigations they have undertaken to explore them. They describe egocentric communication
as essentially a two-stage process (see Figure 2):

1. S (speaker) cognizes X (data) and covertly codes them so that they are meaningful and "communicable" to himself.

2. S sends L (listener) a message about X. The message is in all important respects unrecoded, that is, it is essentially a simple externalization without modification of his private coding. (p. 8)

Nonego-centric communication, on the other hand, involves at least three stages (see Figure 3):

1. S cognizes X and covertly codes it for himself, just as in Step 1 above.

2. Prior to and/or during his communication to L (Step 3 below), S attempts to discriminate those role attributes of L which appear to be pertinent to L's ability to decode communicative input regarding X.

3. S recodes X and externalizes it as a message to L about X. This recoding-and-externalization process occurs under the aegis of two concurrent (and related) activities: (a) S uses the information gained in Step 2 to shape and fashion the message in such a way as to maximize the likelihood that it will meet L's communicative needs; (b) S actively suppresses the insistent and recurring tendency to allow his message to drift or "regress" toward the initial recoding of Step 1. (p. 9)

Hence, Flavell et al. consider the essence of communicative ability to be the discrimination of the other's role attributes for the purpose of "behaving appropriately"
Figure 2. Egocentric communication. (From Flavell et al., 1968)

Figure 3. Nonegocentric communication. (From Flavell et al., 1968)
toward him within the confines of one's own role.
Whether or not one will actually exhibit "appropriate
behavior" depends upon a number of prerequisites
(Flavell et al., p. 11):

1. perceptual-cognitive skills --
   S can scarcely communicate data X ade­
quately if his perceptual and cognitive
abilities are inadequate to code it prop­erly for himself at the outset.

2. verbal skills --
   An effective verbal message presupposes
   an adequate vocabulary and the ability to
   construct clear sentences and arrange them
   in a communicatively useful sequence.

3. ability to discriminate role attributes
   of other

4. disposition to discriminate role attributes
   of other --
   Whether S wants to expend the energy to
do so.

Cameron (1954) notes that effective social communi-
cation depends upon the development of an ability to take
the role of other persons, to be able to reproduce their
attitudes in one's own response, and so learn how to
react to one's own behavior as others are reacting to it
(p. 60). The paradigmatic experiment in role-taking is
Piaget's mountain task (Piaget and Inhelder, 1956). The child is seated before a fairly complex array of trees, houses, animals, and people. He is first asked to draw or describe the mountain as he sees it. Then he is asked to indicate what the same array looks like to someone on the other side of the mountain. Piaget found that on this task the ability to shift perspectives is not mastered until 7 to 9 years of age. All of Flavell et al.'s experiments also provide clear support for the proposition that role-taking ability increases with age in accordance with a Piagetian type of sequence, as do the studies of Feffer and Gourevitch (1960), Bowers and London (1965), Fry (1967), Flapan (1968), and Selman (1971).

Feffer and Gourevitch (1960) gave 6- to 13-year-old boys a series of impersonal cognitive tasks developed by Piaget and the Role-Taking Task (RTT), a projective instrument similar to Piaget's mountain task developed by Feffer (1959). The RTT consists of several background scenes and a variety of human and animal figures. The subject is required to tell a story, based on a particular background scene, that uses at least three of the available figures. Then he is asked to retell the story from the point of view of each of the
three figures. Performance on this and on the Piagetian task was analyzed by Feffer and Gourevitch in terms of the concept of balanced centering outlined in Feffer (1959), in short, the ability to shift from one aspect of a situation to another in a flexible, consistent manner. These two independent assessments were found to be positively related to each other and to chronological age. Swinson (1965) has also obtained significant correlations between the RTT and several of Piaget's concrete operational tasks (e.g., conservation of quantity) with age, grade, and IQ partialled out. On the other hand, a later study by Sullivan and Hunt (1967) did not find a relation in 7- to 11-year-olds between the RTT and a Piaget-type task based on shifting spatial perspectives. Evidently, the RTT does not relate to all Piaget-type tasks with decentering properties.

Bowers and London (1965) developed two tests assessing the child's portrayal of others and of himself in an unfamiliar situation. These were called the Dramatic Acting Test and the Hypnosis Simulation Test. The relations of these to several developmental variables were studied, including IQ, discrimination ability, and social maturity. Subjects were 40 children, five girls and five boys each at ages 5, 7, 9, and 11. Results
indicated that role-playing ability increased with age and other developmental variables but was unrelated to sex.

Fry (1967) compared the tacit coordination game performances of fourth graders, eighth graders, and college students. Participants were isolated from one another and asked to predict the choices their partners would make from a set of three different objects. Successful matches resulted in the earning of points and subsequent mutual benefit. College subjects outperformed eighth graders, who outperformed fourth graders. College and eighth grade subjects also improved with successive partners, whereas the fourth graders did not.

Further support for the proposition that children become better at "reading" social interactions as they get older is offered by Flapan (1968). She analyzed the responses of 6-, 9-, and 12-year-olds to social situations depicted in two movies and found that with age there was an increase in the number of children who made interpretations of feelings or who inferred thoughts and intentions not obviously expressed or specifically labelled.

Selman (1971) administered a role-taking task to 10 boys and girls of ages 4, 5, and 6, in which the subject
(role-taker) was required to make and explain predictions about a peer's responses in a situation in which S has information not available to the peer. Results suggested a four-level progression in role-taking skill across the age range examined, supporting the hypothesis that conceptual role-taking is an age-related social-cognitive skill that follows an ontogenetic sequence of stages of the following sort:

Level A: Child may have a sense of other but fails to distinguish between the thoughts and perceptions of other and those of self.

Level B: Child's sense of self is distinguished from other, but he fails to see any commonality of thoughts between self and other. Accurate perceptual role-taking (i.e., the ability to take another's visual perspective) can occur here, but not conceptual role-taking (i.e., the ability to take another's mental perspective). The former is assumed to be a pre-requisite for the latter.

Level C: Child attributes his own ideas to other because he hypothetically puts himself in other's position, but he sees other as having interests similar to his own.

Level D: Child is aware that other has perspectives based on his own reasoning which may or
may not be similar to his own.

Bates (1975, p. 272) feels that experiments such as Piaget's mountain task are too complex a measure of role-taking skill for young children. She maintains that the array is so complex that even if the child could perform the mental transformation required, he may be unable to draw or verbalize successfully about the resulting perspective shift. Bates cites the studies of Flavell et al. (1968) and Selman (1971) as representative of simpler kinds of role-taking tasks and notes that when the number of required mental transformations is reduced, children demonstrate role-taking ability at a much earlier age than indicated by Piaget's original studies. For example, Marvin (1972) asked 2-, 3-, and 4-year-olds to draw a picture. When they had finished, they were told, "Hold the picture up so I can take a picture of it." Most 3-year-olds unhesitatingly picked up the drawing and rotated it to face the camera. However, if the child was asked to do the same thing with the picture upside down, many subjects who were able to perform the first task held up the drawing so that only they could see it. If such a small increment in task difficulty can impede performance, it would appear that
a complex test such as the mountain task could overwhelm some children. Flavell et al. provide interesting anecdotal evidence that 2-, 3-, and 4-year-olds can role-take to some degree, and Fishbein (1971) and Shantz and Wilson (1972) report that performance on such tasks as that of Krauss and Glucksberg (1969) improves when the child receives more corrective feedback than another child usually provides and when the child is trained explicitly to focus on the needs of the listener. On the other hand, Fry (1966, 1969) related that explicit attempts to train children to focus on listener feedback failed in his studies. It seems that ability to role-take and to profit from direct instruction in it varies with the nature of the task, at least up to a certain age.

Certainly, role-taking ability is not just a developmental variable. It may also be viewed within an individual differences framework. Persons at any age may be expected to exhibit considerable variation in such skill. There seem to be many adults, who despite their apparent existence in the Piagetian stage of formal operational thought, are remarkably inept in the area of social intelligence. Data suggests that performance on role-taking tasks does covary significantly with independently assessed performance on communication tasks.
in adult as well as child samples (e.g., Feffer and Suchotliff, 1966; Phillips and Feffer, 1966). Flavell et al. (pp. 216 ff.) discuss some of the variables possibly associated with and mediating role-taking skill. Whether from a developmental or individual differences point of view, the person who is unable to role-take successfully may be described as concrete, stimulus-bound, and rigid. Role-taking usually demands more than just the ability to search and find the other's perspective. It is also likely to demand the ability to counteract the insistent intrusions of one's own during the search. At the same time, the very act of trying to predict the other's perspective may serve to enlighten your own (Flavell et al., pp. 80-81). Consequently, we might hypothesize that interpersonal adjustment may be correlated with role-taking ability. Rothenberg (1967), for instance, has reported small but statistically reliable associations between social sensitivity and several measures of intelligence and interpersonal adjustment in children. Furthermore, Cameron (1954) and Sullivan (1954) have attributed the schizophrenic's cognitive and linguistic disorders to role-taking deficiencies, and Gough (1948) has done likewise for the psychopath's deviant thinking and behavior. Consistent with these viewpoints
is the work of Solomon (1960, 1966), who found tacit coordination game performance to be worse in schizophrenics than in normals, and worse in regressed than in remitted schizophrenics. Moreover, Neale (1966) found that perceptual role-taking performance in emotionally disturbed, aggressive children was inferior to that of normal controls at each of four age levels.

**Developmental Differences in Reactions to Frustration**

**Differentiation and Integration**

The general developmental principle of movement toward increasing differentiation of partial responses coupled with hierarchical organization of these (Barker, Dembo, and Lewin, 1941; Werner, 1948) appears to be reflected in the literature on reactions to frustration. Developmental studies do tend to indicate that the form and intensity of these vary with maturation.

Sears, Maccoby, and Levin (1957) described the infant's response to a thwarting as a diffuse rage, in which he just "flails his limbs and screams" (p. 222).
Only with maturation and learning does the rage become more focused. Goodenough's (1931) study of aggression in young children clearly indicated the development of internal controls with age. Her data showed that violent outbursts within the first two years of life frequently are characterized by displays of undirected energy. Specific motor and language responses begin to increase as the child grows older, and indirect modes of aggression, such as peevishness and whining, become more frequent. Primitive, diffuse bodily responses are replaced largely by specific, controlled actions, often involving language, in which symbolic injury substitutes for physical injury. Possibly as a result of the rise of inhibitions, the diffuse rage reactions appear to become shorter in duration with age. But emotional aftereffects, such as sulking and brooding, last longer, possibly because of the restraints against aggression and perhaps also because the children, in thinking about their frustrations, continue to stir themselves up. Feshbach (1964) distinguishes between the rage or anger response and the motivated infliction of injury. The former has more of an expressive quality, while the latter is more directive, being more subject to learning. From infancy through approximately the second year, frustration produces an
instigation to hit rather than to hurt. The motivation to inflict hurt arises somewhat later.

Santostefano (1970) has proposed a developmental model of motive expression which postulates that action and fantasy are alternative means of aggressive expression, with action appearing at an early age and then being integrated later with fantasy. Development within modalities proceeds from expression of aggression that is direct and socially inappropriate to expression that is indirect and socially appropriate. Blaisdell (1972) found support for this hypothesis in a study with 40 first grade and 40 fifth grade boys. He assessed the level of maturity of aggressive expression in both action and fantasy modalities and reported that the overall pattern of change was in the direction of increased maturity of such with age. Feshbach (1964) sums up these kinds of developmental observations with these words:

The child learns to substitute language and fantasy for some forms of overt motor expression, and the development of thought processes enables him at the same time to delay impulse expression. Acknowledgment, rehearsal, and verbal communication of feelings take the place of the motoric expression of emotional tension. (p. 263)

In line with this, Rosenzweig and Rosenzweig (1952), using their Picture-Frustration Study, discovered that
direct aggression, defined in terms of extrapunitive responses, declined with age from the 4-year-olds to the 13-year-olds in their sample, while intropunitive responses, suggestive of more inhibition, increased in frequency. Palmer (1972), using a specially constructed, multiple-choice picture-frustration test and an adolescent sample of both males and females, obtained a wide variety of patterns of response, the most popular of which was denial of frustration and avoidance of blame. This pattern was far more dominant for boys, who also used much projection of blame, whereas girls tended to include more attempts at problem-solving. Douglas (1965) reported the results of two experiments undertaken using a story completion technique to study developmental changes in response to frustrating events. In the first experiment, one version of the test was administered to 116 males and females of ages 8 to 16 years. It was found that the tendency to deny, or to act as if one were unaware of the frustrating event, decreased with age. Correspondingly, the tendency to rationalize about a disappointment increased with age, as did the ability to accept frustration realistically and to cope with it rationally. In the second experiment, a different version of the story completion test was administered to a
total sample of 261 boys and girls from nursery school age through grade 6. Results demonstrated an increasing tendency with age to accept compromise solutions to potentially frustrating situations. Conversely, the tendency to "wishfulfil," i.e., to expect a completely happy solution, decreased with age. The tendency to expect a completely sad outcome also showed a slight, though nonsignificant, negative correlation with age.

Thurston, Feldhusen, and Benning (1964), using a semi-projective story completion technique in which subjects were asked to describe the reactions of the main character in four hypothetical frustrating situations, found that sixth graders produced significantly more aggressive and less adaptive responses than ninth graders. The authors noted, however, that responses varied greatly when other variables such as social status (approved-disapproved), urban-rural locale, sex, and the particular situation being responded to, were taken into account. For instance, sixth graders produced more aggressive responses than third graders as well as ninth graders, suggesting a non-linear relationship with age. Also, it was hypothesized that quality of response by socially disapproved children would be poorer and less adaptive than that given by socially approved youngsters, but
simple affirmation or negation of this hypothesis was not apparent. In fact, approved subjects tended to produce more aggressive responses than disapproved subjects at all three age levels.

**Frustration Tolerance**

Traditional research also has suggested that frustration tolerance, or the capacity of the individual to withstand a given frustrating situation without distorting its objective reality, increases with age. Rosenzweig (1933, 1945) was one of the first investigators to address himself to this idea. He considered a subject's recall of or tendency to resume a task on which he had previously failed to be an operational measure of frustration tolerance. Rosenzweig concluded that there is a shift in repetition-choice, from success to failure, as development proceeds, representing an increase in sensitivity to competitive aspects of the environment. The individual becomes better able to withstand the tension associated with failure, and his ability to delay gratification develops. Thus, the development of frustration tolerance is reflected in this shift in repetition-choice.
Bialer (1961) studied repetition-choice and delay of gratification with a sample of normal and mentally retarded children and found that mental age accounted for most of the variance among these variables and a locus of control measure. He also discovered that retarded and normal children did not differ qualitatively in development of the ability to conceptualize success and failure but that the ability seems to develop more gradually in the retardate. Also, with increasing age there was a significant tendency for the children to respond to success-failure cues instead of hedonistic ones, to perceive internal locus of control, and to delay gratification when such delay led to the eventual attainment of a larger reward. Bialer concluded that there is an overall factor — "general intellectual maturation" — in the conceptualization of success and failure and that behavior measures are closely tied to developmental measures. One implication of these findings is that purposeful induction of failure might be used as a motivating force with children, if one takes into consideration cognitive-developmental level and individual differences.

Livson and Mussen (1957) also speak on the topic of frustration tolerance:
According to psychoanalytic theory, the internalization of relatively strong inhibitions against the expression of impulses may be attributed to the functioning of the ego. As the child becomes aware of the reality principle and as his ego begins to develop, he acquires a rudimentary ability to test reality, to tolerate or bind tensions, and to postpone gratifications. These abilities, which are the major aspects or components of ego-control capacity or ego strength, presumably enable the individual to control his impulses and to cope adequately with frustrations. With further development of ego-control capacity, there is an increased recognition of, and adjustment to, culturally defined reality. Social drives become relatively more influential, compared with primary drives and immediate impulses, in guiding the child's perception of the social environment and in directing his social behavior. A child who acquires a high degree of ego-control capacity is likely to manifest more socialized behavior -- behavior which conforms with socially accepted standards -- than a child whose ego-control capacity is less highly developed. (p. 66)

Rosenzweig also felt that individuals differ, either constitutionally or as a result of experience, in the possession of frustration tolerance. He argued that there was an optimal dosage of frustration that an individual should experience at a particular developmental level if he is to attain maximal frustration tolerance. Presumably, if less than this ideal amount of frustration is experienced over the course of the person's early years, insufficient tolerance will be developed for meeting the demands of later years. On the other hand, if
the child is frustrated much beyond his resistance, areas of low frustration tolerance may be created and the way prepared for behavior disorders.

Modifiability and Control of Reactions to Frustration

Direct Training

Evidence for the modifiability and control of reactions to frustration derives from a number of researchers. Keister and Updegraff (1937) found after using the method of successive approximation and a set of problems graduated so that subjects could handle each new one with success that children who initially reacted to frustration with "emotional" behavior became far more adaptive in the face of insoluble problems. Davitz (1952) discovered that children permitted to behave aggressively in a particular environment showed a great deal of aggression after frustration, whereas children trained to behave quietly and cooperatively in the same environment showed very little aggression after the same sort of frustration.
Empathy and Role-Taking

The modifiability of aggression also seems to be facilitated by the development of empathy. Feshbach (1970, p. 200) states that observation by an empathic child of the consequences of an aggressive act directed toward another child should tend to elicit distress responses in the observer even if he himself is the instigator of the aggressive act. These vicarious, painful responses provide feedback which can be expected to function as inhibitors of the child's own aggressive responses. Thus, children high in empathy should manifest less overt aggression than children low in empathy. The relationship here, however, is probably not all that straightforward. Murphy (1937), for instance, obtained a positive correlation between teachers' ratings of aggressive behavior in nursery school children and ratings of sympathetic behaviors which were similar to empathic responses in a number of respects. On the other hand, Feshbach and Feshbach (1969) procured experimental measures of empathy and teachers' ratings of aggressive behavior on 40 6- and 7-year olds and on 48 4- and 5-year-olds. In the older subjects, high empathy boys were significantly less aggressive than low empathy boys, while
the converse was true for the younger subjects. No significant differences were found between high and low empathy girls at either age level. The authors felt that the sex differences are consistent with other data reflecting differential correlates of aggression in the two sexes (cf. Palmer, 1972, cited earlier; Feshbach, 1969; and McIntyre, 1972), noting also that teacher ratings of aggressiveness are probably subject to sex bias in that different frames of reference are likely to be used for boys and girls. Feshbach and Feshbach attributed the contrasting relationship between empathy and aggression for boys to developmental changes in the role of aggression in social behavior. Murphy (1937) also discussed this, saying that both aggressive and sympathetic responses are instances of socially oriented behavior, and that their correlation can be traced to their common relationship with the social maturity of the child during the preschool period. Hoffman (1970) gives a particularly cogent discussion of the role empathy might play in harnessing aggressiveness:

We are proposing that at a fairly young age the child is capable of both empathy and the awareness of being responsible for another's distress. He also knows the difference between accidental and intentional, and provoked and unprovoked acts. These responses do not naturally occur together, however, especially in the emotionally charged
context of the deviant act. Interventions by an external agent, ordinarily in the form of induction techniques, are necessary. Given optimal arousal conditions for engaging the child's attention, the resulting coalescence of empathy and awareness of being the causal agent of the other's distress produces a response having the cognitive (self-critical) and affective properties of guilt. Repeated experiences of this kind help sensitize the child to the human consequences of his behavior.... With further cognitive development this sensitivity expands from an exclusive focus on physical harm to inclusion of feelings such as embarrassment, pride, and rejection. And the child's capacity for direct empathic response becomes elaborated into a more sophisticated and cognitively based ability to take the other's role in a variety of situations. Eventually he can infer the feelings of others just from knowing the stresses operating on them; direct observation of distress cues emanating from them is unnecessary. (p. 330)

Gough (1948) explains further how role-taking may foster self-control:

Role-taking ability provides a technique for self-understanding and self-control. Learned prohibitions ... may be observed by "telling one's self" not to behave in a certain way.... Role-playing, or putting one's self in another's position, enables a person to predict the other's behavior. Finally, role-playing ability makes one sensitive in advance to the reactions of others; such prescience may then deter or modify the unexpressed action. (p. 363)
Language

The control of reactions to frustration also appears to be facilitated by the development of language. For one thing, the availability of verbal competence may simply enable the individual to display alternative responses he would not have otherwise. For example, "cutting one to ribbons" verbally is less likely to land one in jail than cutting one to ribbons literally. As Berlyne (1970, pp. 949-955) describes, one of the chief functions of verbal instructions is to draw attention to relevant cues in the external world. The tendency is for direct control of behavior by external stimuli to give way gradually to the mediating influence of verbal stimuli. At first, the child is susceptible to control by verbal responses of adults, but he gradually becomes capable of self-control through his own verbal behavior. A behaviorist analysis of self-control yields the proposition that a voluntary response is one that an individual can effect any time with the help of subvocal speech (cf. Gough's quotation above). Berlyne summarizes some of the research of Luria and his associates, who have traced the development of voluntary behavior through verbal instruction. They believe that subvocal
speech can perform in turn orienting, inhibitory, initiating, and regulatory functions for the individual.

Cognitive Structuring and Restructuring

In line with the foregoing, it seems reasonable to hypothesize that varying responses to frustration can be elicited by social stimuli that are processed differently at different cognitive stages. If I perceive your bumping into me as intentional, I am likely to react differently than if I perceive it as accidental. Indeed, Berkowitz (1962) characterizes the habitually hostile person as:

someone who has developed a particular attitude toward large segments of the world about him. He has learned to interpret (or categorize) a wide variety of situations and/or people as threatening or otherwise frustrating to him. Anger is aroused when these interpretations are made, and the presence of relevant cues -- stimuli associated with the frustrating events -- then evokes the aggressive behavior. In many instances the anger seems to become "short-circuited" with continued repetition of the sequence so that the initial thought responses alone elicit hostile behavior. (pp. 258-259)

On the other hand, there is evidence to suggest that a plausible interpretation of a frustrating or
threatening stimulus can inhibit antisocial responses. Jones, Hester, Farina, and Davis (1959) found that many people believe they should not be aggressive toward anyone who could not help being a frustrater because of personality disturbance. This was reflected in an experiment in which pairs of college women heard another woman criticize and insult one of the pair members. Half of these pairs had been led previously to believe that this derogator was "emotionally maladjusted," while the others had been informed that she was "well adjusted." Those persons in each pair who were not themselves directly attacked by the derogator later described her more unfavorably when she was "normal" than when she was "maladjusted." Similarly, Mallick and McCandless (1966) discovered that a reasonable, positive interpretation of a frustrating situation after the fact had a cathartic effect on aggression. Behavioral expressions of aggression were lower for frustrated subjects who were told that the frustrater had been sleepy and upset at the time. Nickel (1972) manipulated the perception of the intentionality of aggression (electric shock) along with the amount of it administered. The experimental subjects were 61 college males who worked in pairs such that each subject believed that his partner was administering the
shock received. Nickel found that the amount of shock the subject believed his partner intended produced a greater difference in his behavior when given the chance to retaliate than did the amount actually received. Subjects retaliated far less when they felt low shock had been intended, even when they received a high shock, and vice versa. Rule and Duker (1973) used a story completion technique to study 8- and 12-year-old boys' evaluations of an aggressor whose intentions varied and whose aggression resulted in serious or less serious consequences to a victim. Results demonstrated that both age groups judged the act more negatively when the aggressor's intentions were bad than when they were not so bad. In agreement with Piagetian theory, however, younger subjects relied more on consequences to determine their judgments than did older subjects. Pepitone (1958) also concluded that the perceived responsibility of an instigator for his act, the justifiability of it, and the intentionality with which it is committed affects the degree of resentment by the victim of the slight.

Physiological and phenomenological states of arousal can also be amenable to modification through the induction of cognitive labelling and social comparison processes (Hokanson and Shetler, 1961; Schachter and
Singer, 1962); and several systems of psychotherapy, most notably Rational Emotive Therapy (Ellis, 1962; Maultsby, 1973; Maultsby and Goodman, 1974) concentrate on modifying the individual's self-defeating emotions by getting him to examine and modify his self-defeating thoughts. As reflected in the earlier quotation from Berkowitz (1962), extremely aggressive and antisocial individuals often have been found to exhibit a rather global way of categorizing stimuli. On the basis of their studies of hyperaggressive children undergoing therapeutic treatment, Raush, Dittman, and Taylor (1959) reported that those who improved in treatment seemed to have gained in the ability to discriminate between different situations. Berkowitz (p. 64) states that "emotional," or "defensive" responses to a situation do not seem to arise until problem-solving behaviors have been exhausted, suggesting that reinterpretation of a stimulus may also yield rationalizations, which would then serve to inhibit antisocial or self-defeating reactions in what would otherwise be frustrating or threatening situations.
Cognitive-Developmental Parameters

The control and modifiability of reactions to frustration, then, can be accomplished in a variety of ways. Feshbach (1964) summarizes much of the previous discussion with his statement that reduction of anger and aggressive drive can come about via: (a) injury to the frustrating source or some form of displaced aggression, (b) facilitation of mediating responses which are incompatible with anger and hostility, and (c) modification of the initial eliciting stimulus condition either through removal of the stimulus or through change in the meaning of the stimulus. The first of these is simply aggression, whereas the latter two involve more prosocial responses. Letter (c) may be called "cognitive restructuring," and the previously cited studies of Jones et al. (1959), Mallick and McCandless (1966), Nickel (1972), and Pepitone (1958) provide support for it. Such phenomena as role-taking and empathy would seem to fall under letter (b) above, with such writers as Feshbach (1970), Feshbach and Feshbach (1969), and Hoffman (1970) providing support.

However, cognitive-developmental level would appear to be a limiting factor on the extent to which
these various approaches are effective in fostering tolerance to frustration, both in specific situations and in general. In line with the statements on frustration tolerance by Rosenzweig (1945) and Livson and Mussen (1957), Walters and Brown (1963) felt that older children may be less susceptible to some frustrations than younger children. They found that children aged 7 to 9 were better able to tolerate minor frustrations than those of preschool age. Also, Feshbach (1970, p. 206) argues that the pain and tension induced by the frustration may simply be weaker in older children, who at the same time, have a larger repertoire of coping responses. On the other hand, Ryan and Watson's (1968) review of the literature on frustrative nonreward theory applied to children suggests that older children seem to have a higher expectancy for success in competitive or ability-oriented tasks than younger children and appear to act more vigorously in the face of nonreward. As previously mentioned, Ryan and Watson interpret this to indicate that nonreward may be more frustrating for older individuals. The studies of Bialer (1961), Bialer and Cromwell (1965), Sullivan (1927), Zander (1944), and Theisen and Meister (1949) suggest that mental age could be more significant in this regard than chronological age insofar as persons
of higher intelligence were observed to be less susceptible to frustration than those of lower intelligence. Robinson and Robinson (1970, p. 628) note that the incidence of emotional disturbance among the mentally retarded, and retardation among the emotionally disturbed, are higher than the incidence of either in the general population, and cite several studies testifying to this observation. They remark that retarded persons appear to be especially vulnerable to emotional distress because of deficiencies in judgment and anticipation which lead to repeated experiences of frustration and failure to meet the demands of the environment, and because of a reduced capacity for sophisticated psychological defenses. Moreover, it is generally accepted in clinical practice that the prognosis of most diagnostic categories of mental disturbance, particularly the psychoses, is directly related to premorbid level of intelligence -- usually the higher the intelligence, the better the prognosis.

We might hypothesize that there is a "double-edged blade" for a person of a relatively advanced cognitive level. In one sense, he should be more able than the less advanced person to interpret potentially frustrating or threatening social stimuli such that he is able to prevent himself from responding maladaptively,
and to reinterpret existing frustrating or threatening stimuli such that he is able to inhibit certain response-sequences that might already have begun. In another sense, the person of relatively advanced cognitive level should be more capable than the less advanced person of interpreting subtle social cues in such a way as to portend frustration or threat (e.g., the feeling that someone is trying to cheat or con you). We might conclude, then, that the cognitively advanced person is both less subject to frustration and more subject to frustration than the less advanced person. Or alternatively, he shows responsiveness to different types of frustration. For example, there is some evidence that he may be more threatened than the latter individual by success-failure manipulations and by the prospect of losing control in a task in which he perceives success as being determined primarily by his skill. Given this, it is an open question as to whether the advanced individual will exhibit more differentiated responding in the face of frustration than his counterpart. Given his cognitive level and greater number of life experiences (if older), the former should have more alternatives open to him, but due to his particular child-rearing and reinforcement histories, the alternatives would not be equally probable as overt
behaviors.

It perhaps should be considered that aggressiveness need not always be a maladaptive reaction to frustration. Zander (1944), for instance, separated subjects into superior and inferior scores on the factors of maturity, personality development, intelligence, emotional stability, and introversion-extroversion. He then placed them in an insoluble learning task. On comparing the two groups, Zander found that the inferior group was typified by either regressive or inattentive behavior or both. The superior subjects, however, were more likely to have used aggressiveness, which he believed was more closely related to task attentiveness. Similarly, O'Connor (1952), in a study of psychological stability and anxiety-aggressiveness, administered a battery of tests to a group of high-grade male mental retardates and found that those who could be rated as anxious tended to be less intelligent, more susceptible, and clumsier than the less anxious ones. Conversely, those whose behavior was aggressive under failure or frustration were generally found to have higher IQ's. Also, as cited previously, Thurston, Feldhusen, and Benning (1964) found that socially approved subjects at the third, sixth, and ninth grade levels tended to produce more aggressive-
responses to hypothetical frustrating stories than did socially disapproved subjects. In attempting to explain these kinds of findings, Zaidi (1960, p. 63) suggests that in the bright individual inhibition of aggression might be less frequent because, owing to his superior gifts, he feels confident, secure, and more inclined to be active and imposing than a person of comparatively lower endowment, who may be more self-conscious regarding his limitations. However, no evidence for a significant or systematic relationship between levels of intelligence and reactions to stress emerged from his study.

Working Hypotheses of the Present Study

The present study was designed to investigate some cognitive-developmental differences in response to frustration and their modifiability in a dyadic problem-solving task, i.e., one in which two persons were required to work together for mutual benefit. The relationship of behaviors in this situation to verbal responses on a story completion test was a secondary consideration. The chief working hypotheses were:
(1) Individuals of different cognitive-developmental levels — as gauged by chronological age — will display different patterns of response to instigated frustration. Studies cited previously have indicated that older individuals are more cognitively adept at "reading" social interactions than younger individuals. Consequently, it was expected that the former would be more capable of displaying adaptive responding than the latter; that is, they would be better able to exhibit "prosocial" responses and to inhibit "antisocial" ones.

(2) The phenomena of role-taking and cognitive restructuring were expected to inhibit or modify antisocial responses to frustration in the present study, in line with results suggested by other research in the literature. Moreover, role-taking and cognitive restructuring were hypothesized to be more operative in modifying responses to frustration the higher one's cognitive-developmental level, since both require the rather abstract abilities of decentering and
adopter a perspective different from one's own.
CHAPTER II

METHOD

Design and Procedure

The dyadic problem-solving task in this study took the form of a game called "Airport," in which one participant was designated the "pilot," and his partner, the "navigator." The navigator's task was to guide his blindfolded pilot as successfully as possible through a series of paper-and-pencil mazes of varying degrees of difficulty intended to simulate different "flight patterns." Any communication between the two was required to be verbal -- the navigator was not allowed to touch the pilot in any way. Also, since pilots were blindfolded, they had no knowledge of the shape of any of the mazes prior to attempting them. To ensure the incentive value of the task, the pair was given a certain number of shared points at the beginning of the game and told that these would be split 50-50 and exchanged for hamburger
tokens at the end. The object of the game was to lose as few points as possible. Points could be lost either by "crashing" through the side walls of the mazes or else by exceeding the time limits given for them. Single crashes counted one point each. Exceeding the time limit or incurring more than four crashes on any one maze constituted a failure, resulting in the loss of eight points. The mazes were printed on 8½" X 11" sheets and presented to the dyad one at a time. Other experimental equipment included a double clipboard which held the mazes steady, goggles such as worn by skindivers, and a stopwatch. The better the cooperation between pilot and navigator, the greater the benefit for both. The importance of teamwork and of depending upon one's partner was emphasized.

**Phase 1** of the game consisted of an explanation of the rules and practice trials during which the dyads were able to experience working together in the game situation. They were encouraged to communicate as clearly as possible in whatever manner was sufficient for their purposes and allowed to develop their own system. Pilots were permitted to remove their goggles following each maze and see how they had performed. This phase was terminated when the participants were able to navigate two consecutive mazes without incurring any crashes.
In Phase 2 the game began in earnest. During this period time limits were imposed, crashes tabulated, and points subtracted when appropriate, but trials were arranged such that the participants were generally able to experience success in working together for mutual benefit. Relatively easy mazes were presented, and time limits were lenient. Furthermore, through his comments, the experimenter attempted to reinforce whatever success the partners were experiencing together. During the first half of this phase, pilots were allowed to remove their goggles following each maze as in Phase 1. During the second half, this was not allowed, but the experimenter provided immediate knowledge of results for the pilot’s benefit.

After a short break, Phase 3 began. During this period the experimenter created mild frustration for the participants via the frustrative nonreward model. More difficult mazes were introduced, and time limits became stringent. As the mazes became more difficult to complete successfully, the experimenter remarked that the participants were beginning to lose their points and "blowing" their chance to receive the hamburger tokens. Moreover, during Phase 3 dyads were randomly assigned to one of four experimental manipulations:
(A) In the role-taking condition (RT), members of the pair were instructed to switch places and did so for a number of trials, continuing with the difficult mazes.

(B) In the cognitive restructuring condition (CR), members of the pair were given a logical reason for the failures, namely, the difficulty of the task. Following this, the game continued for approximately the same number of trials as in (A) above.

(C) In the unmodified frustration condition (UF), subjects were neither told to switch roles nor given any plausible reasons for their difficulties but continued the game for approximately the same number of trials as in (A) and (B) above.

(D) In the control condition (CO), frustration was not instigated. The difficult mazes with stringent time limits were not introduced, and no comments were uttered by the experimenter as to errors made by the subjects.

Phase 3 continued until the partners had failed at least three mazes (control condition excepted). At the end of Phase 3 the subjects were told that the game was finished for the day and that the experimenter wished to discuss individually with them their feelings about it.
Each subject was then given a structured interview designed to probe his reactions to the game and to his partner. The reactions of each individual to his partner constituted the major dependent variable of the study. Each subject was asked to specify, given the opportunity to play the game again, whether he would not play the game at all, play but with a different partner, or play with the same partner. If he chose either to quit or to play again with a different partner, the subject had the additional choice of either keeping just his share of the day's earnings or else keeping both his and his old partner's share. These choices were set up so as to be mutually exclusive. They may be summarized as follows:

1. Quit playing, keep own earnings.
2. Quit playing, keep own and old partner's earnings.
3. Continue playing with old partner.
4. Continue playing with new partner, keep own earnings.
5. Continue playing with new partner, keep own and old partner's earnings.

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1 Subjects who chose to deprive their partners of their earnings were not actually allowed to do so. During the interview the experimenter put himself in the position of safeguarding fair play and explained that depriving the partner would be a violation of it.
Instrumentation

Approximately 150 mazes were constructed by the investigator and pretested with dyads of different ages on order to determine their degree of difficulty prior to the manipulation described above. Twenty pairs of pilots and navigators aged 6 through 30 were used. Most of the children were drawn from two urban day care centers in Columbus, Ohio. Adults were friends, associates, and relatives of the investigator. Data collected during this pretesting included the number of errors ("crashes") incurred for each maze and the time taken to complete it. Also, a non-empirical structural analysis of the factors expected to dictate differential difficulty among the mazes (e.g., width, length, number of turns, diagonality, circularity) was undertaken. An integration of both empirical and non-empirical variables enabled the investigator to construct an approximate ranking of the mazes in order of difficulty for use in the aforementioned experimental design. The ones eventually used are depicted in Appendix A.

Subjects were also administered the Situation Exercises Test developed by Thurston, Feldhusen, and Benning (1964) (see also Feldhusen, Thurston, and Benning,
This instrument consists of four short paragraphs describing a child in personally frustrating circumstances. The four situations are: (1) being accused of cheating in school; (2) being threatened with punishment for an unavoidable mistake, namely, coming home late; (3) receiving a social rebuff; and (4) not being allowed to make a simple decision concerning the selection of clothing. The stimulus material was differentiated slightly according to age, and all of the main characters in the stories were male (the sex of all of the subjects). Subjects were asked to write what the main character might say or do in response to each situation. This instrument was administered to groups of subjects approximately two weeks prior to the Airport game, when the experimenter introduced himself to them and familiarized them with what they would be doing. Responses were scored by two independent judges according to two systems derived from Thurston, Feldhusen, and Benning: (1) either adaptive, maladaptive, or indeterminate (scored 1, 3, and 2, respectively); and (2) according to Murray's (1938) analysis of needs, inner states, and presses. In order to render this latter analysis more intelligible, the responses were grouped into three major classes. The major components of the abasement class (scored 1) were the
abasement, counteraction, passivity, succorance, and understanding needs; the anxiety, dejection, and super-ego states; and the aggression press. The defendance class (scored 2) included the needs for defendance, blamavoidance, and harmavoidance. The aggression class (scored 3) comprised the needs for aggression, dominance, and rejection. A fourth category included those responses unclassifiable in any of the above three groups. The Situation Exercise material, along with scoring guides taken from Thurston, Feldhusen, and Benning, are included in Appendices B and C.

Subjects

Subjects used in this study were 96 males from 8 through 16 years of age. All were from predominantly white, middle class schools in Columbus and Grove City, Ohio. Given the differences the literature reports between males' and females' responses to frustration, particularly in the area of aggression (e.g., Feshbach, 1969; McIntyre, 1972), the investigator decided to use males only in this study, as an experimental control. The above subjects were grouped into three age classifications:
(1) 8-9 year-olds, (2) 11-12 year-olds, and (3) 15-16 year-olds. Thirty-two subjects (16 pairs) were used at each age level, distributed evenly across the four experimental conditions. Mean ages were 9 years, 5 months; 11 years, 10 months; and 15 years, 11 months, respectively. Originally, the investigator had planned to use an experimental group including subjects younger than 8, but the pretesting described above suggested that the task was too difficult for them, even if given "easy" mazes and time limits. These findings were in agreement with some of the investigations into role-taking cited earlier, along with Elkind (1961), who showed that children younger than 8 displayed great difficulty dealing with the concepts "right" and "left," particularly when applied to relationships not directly tied to their own bodily appendages. The three age groups used represented fairly distinct points within Piaget's cognitive-developmental stages. The 8-9 year-olds presumably were characteristic of persons in his concrete operational stage; the 11-12 year-olds presumably were characteristic of individuals in transition between concrete and formal operations; and the 15-16 year-olds represented those fully into formal operations.
The particular mazes and time limits used in the eventual running of the experiment tended to differ for each age group, with the older subjects being administered more difficult ones than the younger subjects. Moreover, the older subjects received more points initially than the younger subjects but also had a greater opportunity to lose points inasmuch as they were required to attempt more mazes. The 8-9 year-olds were given 60 points and approximately 15 mazes; the 11-12 year-olds, 70 points and approximately 20 mazes; and the 15-16 year-olds, 80 points and approximately 25 mazes. Control condition subjects at each age level were given 10 points less to compensate for the fact that they were expected to lose fewer points than subjects in the other three conditions and would therefore have a built-in advantage over them in earning hamburger tokens. The specific mazes presented to subjects within each age group also tended to vary somewhat from one dyad to another, depending upon which phase it was in and how well it had been performing. The presentation of mazes and time limits during Phases 1 and 2 was manipulated in order to facilitate success, whereas the presentation of these during Phase 3 was intended to bring about failure. The experimenter exercised care in order to allay any
Table 1. Overall design of the study.

<table>
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<th>Conditions</th>
<th>Ages</th>
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<td>Cognitive Restructuring</td>
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<td>15-16</td>
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<tr>
<td>Totals</td>
<td>32</td>
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</table>
suspicions that the manipulation was arbitrarily designed to ensure failure. In fact, however, it was. Table 1 illustrates the overall design of the study.

**Controls**

As mentioned previously, only males were used in this study in an effort to control for sex differences. Also, individuals with developmental or learning disabilities were excluded. While specific IQ scores were not garnered for the subjects, school personnel were queried so as to ensure some homogeneity of intellectual ability. Individuals of average general ability were desired, and there is no reason to suspect any gross departure from this in the samples used. Random assignment of individuals to conditions served as another control for IQ differences. Furthermore, in order to avoid pairing persons with best friends or worst enemies, all subjects completed a brief sociometric measure in which they were requested to list the two persons they liked the most and the two persons they liked the least in their class. Individuals were then paired with persons not on their list. This was administered at the same
time as the Situation Exercises.

The aforementioned procedure of presenting somewhat different mazes to different dyads both across and within age groups may also be considered an experimental control. While this procedure rendered the task less standardized in one respect, it rendered it more standardized in another, namely, in exposing all subjects (except those in the control condition) to similar experiences of success, failure, and frustration. The inclusion of the control condition afforded a check on the effectiveness of the experimental manipulation, since subjects assigned therein were expected to react differently than subjects assigned to the conditions in which frustration was instigated. A final control consisted of the structured interview, during which time each subject was asked directly for his perceptions of the study and degree of frustration experienced. This provided yet another check on the experimental manipulation. The format of this interview is presented in Appendix D.
Debriefing

Following the structured interview with each subject, partners were reunited for the debriefing procedure, tallying of points, and awarding of tokens. Debriefing consisted of the experimenter's volunteering to be a pilot for a few trials, explaining that he wished to see if the task was as difficult for him as for the subject who had been the pilot. The experimenter added that he had seen all of the mazes before, and as such, should do better than the subject, displaying some bravado as he said this. The subjects were allowed to decide which of them would be the navigator and which would be the time-keeper. They were also permitted to choose any mazes and time limits they wished. During these trials, the experimenter then purposely did poorly (in some instances this posed no problem), contrived frustration, and complained that the goggles hurt his eyes. Afterwards he admitted that the task was more difficult than he had thought and that he had decided to reimburse some of the subjects' points. The hamburger tokens were then awarded. In most cases, the foregoing seemed to be a very adequate debriefing method. In addition, it was felt that the structured interview provided a debriefing component
inasmuch as subjects were given an opportunity to air their feelings.

Experimental Hypotheses

It may be recalled that the reactions of each individual to his partner constituted the major dependent variable of this study. Each subject was asked to choose, given the opportunity to play the game again, one of the following courses of action:

(1) Quit playing, keep own earnings.
(2) Quit playing, keep own and old partner's earnings.
(3) Continue playing with old partner.
(4) Continue playing with a new partner, keep own earnings.
(5) Continue playing with a new partner, keep own and old partner's earnings.

These patterns of choices would seem to relate to some of the characteristic patterns of response advanced and examined in the frustration literature. If translated into action, they may be hypothesized as representing different points along at least two theoretical dimensions: (A) frustration tolerance, and (B) prosocial
versus antisocial behavior. For instance, continuing a task which has generated frustration may be indicative of frustration tolerance. If so, choices 3, 4, and 5 represent greater frustration tolerance than choices 1 and 2. Deciding to continue with a partner who perhaps has not worked well with you, as in choice 3, may be viewed similarly, although conceivably one may question the adaptiveness of this choice given the option of being paired with someone else who may be more effective. Choosing to deprive a partner of his earnings (choices 2 and 5) suggests an antisocial or aggressive response to frustration, whereas choosing to keep one's own earnings only (choices 1, 3, and 4) is reasonable and clearly more prosocial.

Along these lines, the following experimental hypotheses were advanced:

(1) Older Ss would exhibit more frustration tolerance than younger Ss. That is, the 15-16 year-olds would pick choices 3, 4, and 5 relatively more often than the 11-12 year-olds, who would pick them more often than the 8-9 year-olds. Conversely, the younger Ss were expected to pick choices 1 and 2 more often than the older Ss.
(2) Older Ss would display more prosocial responses to frustration than younger Ss. That is, the 15-16 year-olds would pick choices 1, 3, and 4 relatively more often than the 11-12 year-olds, who would pick them more often than the 8-9 year-olds. Conversely, the younger Ss were expected to pick choices 2 and 5 more often than the older Ss.

(3) Regardless of age, Ss in the unmodified frustration condition would display less frustration tolerance than Ss in any of the other three conditions. That is, they would choose options 1 and 2 relatively more often than Ss in the other experimental groups.

(4) Regardless of age, Ss in the unmodified frustration condition would make fewer prosocial responses than Ss in any of the other conditions. That is, they would choose options 2 and 5 relatively more often than Ss in the other experimental groups.

(5) Regardless of age, Ss in the control condition would display fewer effects attributable to frustration than Ss in any of the other conditions. That is, they would pick choice 3 relatively more often than other Ss.

(6) Regardless of age, Ss in the cognitive restructuring and role-taking conditions would exhibit relatively less frustration
tolerance than Ss in the control condition but relatively more than Ss in the unmodified frustration condition. The patterns of choices described in hypotheses (1) and (3) above constituted the measure of this. Further, cognitive restructuring Ss were expected to display somewhat less frustration tolerance than role-taking Ss. The rationale for this prediction is the fact that in this study the former were offered what might be regarded as a more developmentally advanced means of reducing frustration than the latter, namely, a verbal-cognitive mechanism as opposed to a motor-cognitive mechanism.

(7) Regardless of age, Ss in the cognitive restructuring and role-taking conditions would exhibit relatively fewer prosocial responses than Ss in the control condition but relatively more than Ss in the unmodified frustration condition. The patterns of choices described in hypotheses (2) and (4) above constituted the measure of this. Further, cognitive restructuring Ss were expected to display somewhat fewer prosocial responses than role-taking Ss, for the same reasons as given in the previous hypothesis.

(8) An interaction between age and assigned condition would account partially for the different patterns of choices that occurred.
(9) Developmental differences in reactions to frustration would appear on the Situation Exercise material. Older Ss would produce more adaptive responses than younger Ss.

(10) Subjects who produced more prosocial and adaptive responses to frustration on the Situation Exercises would also be the ones who displayed more prosocial responses to instigated frustration in the Airport game.

**Statistical Analyses**

The data were analyzed in the following manner:

(1) The total number of Ss choosing each of the five alternative responses to the instigated frustration (or lack thereof as in the control condition) was tabulated by age group, condition, and age X condition combination.

(2) Chi-square analyses were performed to determine whether:
   (a) pilot and navigator choices were sufficiently independent to warrant pooling of these two sets of data and to ensure
that one of the chief assumptions underlying usage of $\chi^2$ in subsequent analyses was not violated, namely, independence of observations.

(b) the overall distribution of choices for all Ss departed significantly from chance expectation.

(c) any differences in choices were attributable to age effects.

(d) any differences in choices were attributable to condition effects.

(e) any differences in choices were attributable to interactions between age and condition.

Given the low expected cell frequencies in some of the cases in which $\chi^2$ was to be used, the investigator considered utilizing more sophisticated discrete multivariate techniques, such as described in Bishop, Fienberg, and Holland (1975), if $\chi^2$ resulted in many significant values. This was intended to minimize the effect of any artificially inflated $\chi^2$ values and so give a more valid statistical picture of any relationships that emerged.
(3) Analyses of variance were performed on the responses of Ss to three of the questions asked during the structured interview in order to ascertain whether there were differences among conditions and to clarify the effectiveness of the experimental manipulation. These questions were:

(a) "How difficult do you think this task was?"

(b) "How frustrating was this task to you?"

(c) "How did you like working with your partner?"

(4) Responses to the Situation Exercises were analyzed to determine:

(a) interscorer reliability.

(b) the correlation between age, adaptiveness-maladaptiveness, and need-press.

(c) the correlation between adaptiveness-maladaptiveness, need-press, and choice made in the Airport game.
CHAPTER III

RESULTS

Analysis of Experimental Choices

The number of subjects in the various cells of the design choosing each of the five alternative responses is presented in Table 2. As may be observed, choice 3, that of continuing to play with one's old partner, was by far the most popular alternative, with 73 of the 96 subjects choosing it. The second most popular alternative was choice 4, that of continuing to play with a new partner and keeping one's own share of the earnings. Sixteen of the 96 subjects chose this course. Relatively few subjects opted for the remaining three choices. Five chose to quit playing and keep their own earnings, two chose to continue with a new partner and keep both their and the old partner's earnings, and none chose to quit and keep both shares. This pattern is also reflected in most of the rows (conditions), columns (ages), and cells (age × condition combinations) of the design.
Table 2. Total number of subjects choosing each alternative by age, condition, and age X condition combination.

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Table 3. Number of pilots and navigators choosing each alternative across all ages and conditions.

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<tr>
<td>Totals</td>
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The number of pilots and navigators choosing each of the five alternatives across all ages and conditions is given in Table 3. The $\chi^2$ analysis performed on these data indicated that pilots did not make different patterns of choices than navigators ($\chi^2 = 4.17$, 3 df, n.s.). As such, these two sets of data were combined for subsequent analyses.

The $\chi^2$ analysis performed on the overall distribution of choices for all subjects (i.e., 5, 0, 73, 16, and 2 for choices 1-5, respectively) indicated that the departure from chance expectation (i.e., 19.2 subjects per choice) was highly significant ($\chi^2 = 196.40$, 4 df, $p < .001$). The exact probability of this distribution's occurring by chance, as calculated by the multinomial formula, is $3.502 \times 10^{-39}$. More refined statistical procedures were not deemed necessary in this instance given the fact that the expected value of 19.2 for each choice was high enough to warrant valid usage and interpretation of $\chi^2$.

The number of individuals choosing each alternative by age level is condensed from Table 2 and presented in Table 4. The $\chi^2$ performed on this table (excluding choice 2 owing to the zero in its marginal) indicated no overall difference from expectations based on the marginal
Table 4. Number of subjects choosing each alternative by age level.

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</tbody>
</table>
values ($\chi^2 = 5.77, 6 \text{ df, n.s.}$). Specific $\chi^2$ analyses comparing each age level with each other were performed also. None of these were found to be significant (8-9 year level vs. 11-12 year level: $\chi^2 = 7.03, 4 \text{ df, n.s.};$ 8-9 year level vs. 15-16 year level: $\chi^2 = 7.04, 4 \text{ df, n.s.};$ 11-12 year level vs. 15-16 year level: $\chi^2 = 3.87, 4 \text{ df, n.s.}$). Hence, age did not seem to influence the choices that subjects made.

The number of persons choosing each alternative by assigned condition, as condensed from Table 2, is given in Table 5. As predicted, control condition (CO) subjects chose to continue the game with their old partners relatively more often than subjects in the other conditions (exclusively in fact), and unmodified frustration (UF) subjects chose it relatively less often, with the cognitive restructuring (CR) and role-taking (RT) subjects in between these extremes. However, although the resulting $\chi^2$ on this table approached significance, it indicated no overall statistically significant differences from expectations based on the marginal values ($\chi^2 = 15.25, 9 \text{ df, n.s.}$). (Again, choice 2 was exempted from analysis because of the zero in the marginal.) However, specific $\chi^2$ analyses comparing each condition with each other showed the distribution of
Table 5. Number of subjects choosing each alternative by condition.

<table>
<thead>
<tr>
<th>Choices</th>
<th>Conditions</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Urmod.</td>
<td>Cogn.</td>
<td>Role-Take</td>
<td>Control</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>14</td>
<td>20</td>
<td>15</td>
<td>24</td>
</tr>
<tr>
<td>4</td>
<td>7</td>
<td>3</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Totals</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
</tbody>
</table>
choices made by control subjects to be significantly different from those made by unmodified frustration and role-taking subjects (UF vs. CO: \( \chi^2 = 17.14, 4 \text{ df}, p < .01 \); RT vs. CO: \( \chi^2 = 14.40, 4 \text{ df}, p < .01 \)). The other possible pairings did not yield any significant differences (UF vs. CR: \( \chi^2 = 6.36, 4 \text{ df}, \text{n.s.} \); UF vs. RT: \( \chi^2 = 0.21, 4 \text{ df}, \text{n.s.} \); CR vs. RT: \( \chi^2 = 4.67, 4 \text{ df}, \text{n.s.} \); CR vs. CO: \( \chi^2 = 4.80, 4 \text{ df}, \text{n.s.} \)). Thus, there is evidence that to some degree one's assigned condition affected the choice he made.

The condition X choice distributions for each of the three age levels were then compared in an effort to determine whether any interactions between age and condition accounted for the patterns of choices that occurred. The number of 8-9, 11-12, and 15-16 year-old subjects choosing each alternative according to assigned condition are reproduced in Tables 6-8, respectively. A \( \chi^2 \) analysis omitting those choices with zero marginals was performed on each of these three tables. None were found to be significant, indicating no overall departure from expectations based on marginal values (8-9 year level: \( \chi^2 = 6.74, 9 \text{ df}, \text{n.s.} \); 11-12 year level: \( \chi^2 = 12.36, 9 \text{ df}, \text{n.s.} \); 15-16 year level: \( \chi^2 = 4.10, 3 \text{ df}, \text{n.s.} \)). Despite this, it was decided to make specific
Table 6. Number of subjects choosing each alternative by condition at the 8-9 year level.

<table>
<thead>
<tr>
<th>Choices</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unmod.</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Totals</td>
<td>8</td>
</tr>
</tbody>
</table>
Table 7. Number of subjects choosing each alternative by condition at the 11-12 year level.

<table>
<thead>
<tr>
<th>Choices</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unmod.</td>
</tr>
<tr>
<td>---------</td>
<td>------------</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Totals</td>
<td>8</td>
</tr>
</tbody>
</table>
Table 8. Number of subjects choosing each alternative by condition at the 15-16 year level.

<table>
<thead>
<tr>
<th>Choices</th>
<th>Conditions</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Unmod.</td>
<td>Cogn.</td>
<td>Role-</td>
<td>Take</td>
<td>Control</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>6</td>
<td>7</td>
<td>5</td>
<td>8</td>
<td>26</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>32</td>
</tr>
</tbody>
</table>
comparisons of the distributions of choices for each possible pair of conditions at each of the three age levels. Although the investigator recognized that the small expected cell values (zero in many cases) would make $\chi^2$ a less-than-accurate approximation device in most of these analyses, it was felt to be preferable to simple eyeballing of the data. Of the 18 resulting $\chi^2$ analyses on all possible condition pairs at each age level, the only two that produced significant values were those comparing unmodified frustration and role-taking subjects, and unmodified frustration and control subjects at the 11-12 year level (UF vs. RT: $\chi^2 = 10.80$, 4 df, $p < .05$; UF vs. CO: $\chi^2 = 13.33$, 4 df, $p < .01$). It makes sense to conclude, therefore, that the joint status of a subject's age and assigned condition influenced the choice he made to a very minimal extent.

Analysis of Structured Interview

As mentioned previously, the investigator also wished to examine subjects' responses to three of the questions comprising the structured interview in order to clarify the effectiveness of the experimental manipulation.
Again, these questions were:

(1) "How difficult do you think this task was?"
(2) "How frustrating was this task to you?"
(3) "How did you like working with your partner?"

During the actual interview, each individual's responses to each of the above questions was coded into one of four categories. For example, possible responses to the first question were "very difficult," "pretty difficult," "pretty easy," and "very easy." Response categories for the other two questions were similar. The investigator attached numeric scores to these responses to facilitate statistical treatment. By way of illustration, the above responses to "How difficult do you think this task was?" were scored 4, 3, 2, and 1, respectively. Responses to the other two questions were scored in like manner.

Based on these data, mean responses to the first question for the four conditions are presented in Table 9. As predicted, control subjects perceived the task as being less difficult than subjects in the other conditions. Unmodified frustration subjects perceived the task as being the most difficult, with the role-taking and
Table 9. Mean responses by condition to "How difficult do you think this task was?"

<table>
<thead>
<tr>
<th>Condition</th>
<th>n</th>
<th>Mean Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unmod. Frust.</td>
<td>24</td>
<td>3.13</td>
</tr>
<tr>
<td>Cogn. Restr.</td>
<td>24</td>
<td>2.96</td>
</tr>
<tr>
<td>Role-Take</td>
<td>24</td>
<td>3.00</td>
</tr>
<tr>
<td>Control</td>
<td>24</td>
<td>2.88</td>
</tr>
</tbody>
</table>

Note: Responses could range from 1-4, with 4 representing the highest perceived degree of difficulty.

Table 10. Summary of analysis of variance for "How difficult do you think this task was?"

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Conditions</td>
<td>0.79</td>
<td>3</td>
<td>0.26</td>
<td>1.46</td>
</tr>
<tr>
<td>Error</td>
<td>16.52</td>
<td>92</td>
<td>0.18</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>17.31</td>
<td>95</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Critical F (3,92) = 2.70, n.s.
cognitive restructuring subjects falling between these extremes. A one-way analysis of variance was performed on these data. Results are given in Table 10. As may be seen, despite the tendency of the data to conform to expectation, no overall significant differences among the conditions emerged, \( F (3,92) = 1.46, \text{n.s.} \)

Mean responses by condition to the question "How frustrating was this task to you?" are presented in Table 11. As expected, these values show that control subjects found the game less frustrating than persons in the other conditions. Contrary to expectation, however, unmodified frustration subjects did not find the task the most frustrating. Role-taking subjects gave the highest scores in this regard. The analysis of variance for these data (Table 12) resulted in a significant condition effect, \( F (3,92) = 4.71, p<.01 \). Subsequent analysis with the Fisher Least Significant Difference Test revealed that the control condition was significantly different from the other three conditions at the 5% confidence level but that the UF, CR, and RT conditions were not significantly different from each other at that level.

Subjects' mean responses to "How did you like working with your partner?" may be seen in Table 13. These data indicate that most individuals, regardless
Table 11. Mean responses by condition to "How frustrating was this task to you?"

<table>
<thead>
<tr>
<th>Condition</th>
<th>n</th>
<th>Mean Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unmod. Frust.</td>
<td>24</td>
<td>2.29</td>
</tr>
<tr>
<td>Cogn. Restr.</td>
<td>24</td>
<td>2.13</td>
</tr>
<tr>
<td>Role-Take</td>
<td>24</td>
<td>2.50</td>
</tr>
<tr>
<td>Control</td>
<td>24</td>
<td>1.63</td>
</tr>
</tbody>
</table>

Note 1: Responses could range from 1-4, with 4 representing the highest perceived degree of frustration.

Note 2: Means for which the alphabetic subscripts are different are significantly different at the 5% level.

Table 12. Summary of analysis of variance for "How frustrating was this task to you?"

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Conditions</td>
<td>9.90</td>
<td>3</td>
<td>3.30</td>
<td>4.71  *</td>
</tr>
<tr>
<td>Error</td>
<td>64.48</td>
<td>92</td>
<td>0.70</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>74.38</td>
<td>95</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Critical F (3,92) = 2.70, p < .01
Table 13. Mean Responses by condition to "How did you like working with your partner?"

<table>
<thead>
<tr>
<th>Condition</th>
<th>n</th>
<th>Mean Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unmod. Frust.</td>
<td>24</td>
<td>3.38</td>
</tr>
<tr>
<td>Cogn. Restr.</td>
<td>24</td>
<td>3.46</td>
</tr>
<tr>
<td>Role-Take</td>
<td>24</td>
<td>3.46</td>
</tr>
<tr>
<td>Control</td>
<td>24</td>
<td>3.67</td>
</tr>
</tbody>
</table>

Note: Responses could range from 1-4, with 4 representing the highest degree of liking to work with partner.

Table 14. Summary of analysis of variance for "How did you like working with your partner?"

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Conditions</td>
<td>1.11</td>
<td>3</td>
<td>0.37</td>
<td>0.93</td>
</tr>
<tr>
<td>Error</td>
<td>36.92</td>
<td>92</td>
<td>0.40</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>38.03</td>
<td>95</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Critical F (3,92) = 2.70, n.s.
of condition, liked working with their partners. The analysis of variance (Table 14) was not significant, F (3, 92) = 0.93, n.s.

Analysis of Story Completion Material

Examination of the Situation Exercise material was undertaken next. Interscorer reliabilities are listed in Table 15. Separate coefficients were calculated for each of the four hypothetical stories and for the totals of the stories added together for each subject. Moreover, separate values were computed for the two scoring systems used—adaptive-maladaptive and need-press. Reliabilities for the adaptive-maladaptive scoring were generally more satisfactory than those for the need-press scoring, which seems to have been more intricate and ambiguous. The stories on which the judges displayed the greatest agreement were numbers 1 and 4—those involving being accused of cheating in school and not being allowed to make a decision concerning selection of clothing. Less agreement appeared on numbers 2 and 3—those involving being threatened with punishment for coming home late and receiving a social rebuff. It should be
Table 15. Interscorer reliability coefficients for Situation Exercise material.

<table>
<thead>
<tr>
<th>Situation Exercise</th>
<th>Adaptive-Maladaptive Scoring</th>
<th>Need-Press Scoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.90</td>
<td>.76</td>
</tr>
<tr>
<td>2</td>
<td>.56</td>
<td>.39</td>
</tr>
<tr>
<td>3</td>
<td>.66</td>
<td>.47</td>
</tr>
<tr>
<td>4</td>
<td>.65</td>
<td>.78</td>
</tr>
<tr>
<td>Total Score</td>
<td>.79</td>
<td>.65</td>
</tr>
</tbody>
</table>
pointed out that Thurston, Feldhusen, and Benning (1964) obtained similar reliabilities to those reported here, particularly on the need-press scoring (.66 for total score as compared to .65 in the present study). On the other hand, they reported adaptive-maladaptive reliabilities in the .86 to .96 range, whereas these were lower in the present instance (.78 for total score). Given the rather low reliabilities obtained here, some caution should probably be exercised in interpreting the other analyses undertaken using this instrument, particularly those pertaining to need-press trends.

The product-moment correlation between a subject's age in months and his total adaptive-maladaptive score (i.e., the sum of scores for the four stories) was .30. This value, as well as the remaining ones, represented the average of the correlation coefficients calculated separately for each of the two scorers. The correlation of .30 was significant at the 1% confidence level and indicates a positive relationship between age and mal-adaptiveness of response. The product-moment correlation between a subject's age in months and his total need-press score was .28 (p < .01), suggesting a tendency to give more defending and aggressive responses with increasing age to hypothetical frustrating events. This
second correlation was computed on a pool of 84 of the 96 subjects. Subjects who gave "4" responses -- unclassifiable or indeterminate ones -- were omitted since the inclusion of these values would have hindered interpretation of the correlation.

Finally, correlations between adaptiveness-maladaptiveness, need-press, and choice made in the Airport game were calculated. The subjects were arbitrarily dichotomized by virtue of the latter such that those who chose alternative 3 (continuing with old partner) comprised one group and those who chose any of the other alternatives comprised the second. Biserial coefficients between tendency to choose alternative 3 and total scores on the two Situation Exercise dimensions were then computed. The resulting correlation between choice 3 and adaptiveness-maladaptiveness was \(-.25\, (p < .02)\), suggesting that the more maladaptive a subject's responses to hypothetical frustrating events, the less likely he was to choose to continue playing the game with his old partner, perhaps the most prosocial of the five available response choices. On the other hand, the biserial correlation between choosing to continue with one's old partner and total need-press score was a nonsignificant \(-.01\). (Again, those subjects giving "4" responses were
excluded from analysis.) Thus, no relationship between these variables emerged.
CHAPTER IV

DISCUSSION

Summary of Tests of Hypotheses

The following is a summary of the results of this investigation with regard to the experimental hypotheses advanced:

(1) The hypothesis that older subjects would exhibit more frustration tolerance than younger subjects, as evidenced by a significantly greater tendency to choose to continue the task, was not supported.

(2) The hypothesis that older subjects would display more prosocial responses to frustration than younger subjects, as evidenced by a significantly lesser tendency to choose to deprive their partners of their earnings, was not supported. In fact, only two persons out of the total subject pool of 96 chose to do this.

(3) Despite an observed tendency on the part of unmodified frustration subjects to choose
less frequently to continue the game with their old partners than subjects in other conditions, the hypothesis that in general they would exhibit significantly less frustration tolerance than other subjects was not supported.

(4) The hypothesis that unmodified frustration subjects would make significantly fewer prosocial choices than subjects in other conditions was not upheld.

(5) The hypothesis that control condition subjects would display significantly fewer effects attributable to instigated frustration was not evidenced in the overall analysis of the patterns of response choices obtained. However, control subjects did display a tendency in this direction. The distribution of their choices was found to be significantly different from those made by unmodified frustration and role-taking subjects but not from those made by cognitive restructuring subjects.

(6) The hypothesis that cognitive restructuring and role-taking subjects would exhibit less frustration tolerance than control subjects but more than unmodified frustration subjects was generally not evidenced in the overall analysis of the relevant response choices, although the former two groups did fall between the latter two groups with respect to
alternative 3 -- that of choosing to continue with the old partner. The prediction that cognitive restructuring subjects would display less frustration tolerance than role-taking subjects was not supported. In fact, there was a tendency in the opposite direction, although it was not statistically significant.

(7) The hypothesis that cognitive restructuring and role-taking subjects would make fewer prosocial choices than control subjects but more than unmodified frustration subjects also was not upheld. Moreover, the expectation that cognitive restructuring subjects would make fewer prosocial choices than role-taking subjects did not hold true.

(8) The hypothesis that an interaction between age and assigned condition would account partially for the different patterns of choices that occurred was not supported to any significant degree.

(9) As judged by correlational analysis, the expectation that developmental differences in reactions to frustration would appear on the Situation Exercise material was borne out. However, contrary to prediction, older subjects produced less adaptive and more aggressive responses than younger subjects.
The hypothesis that subjects who gave more prosocial and adaptive responses on the Situation Exercises would also be the ones who displayed more prosocial game responses was supported to some extent, if only by implication. Correlational analysis suggested that the more maladaptive a subject's responses to the Situation Exercises, the less likely he was to choose to continue the game with his old partner.

Conclusions

As indicated above, very few of the experimental hypotheses were supported. Therefore, it must be concluded that this study failed to demonstrate that reactions to instigated frustration and their modifiability are subject to cognitive-developmental types of parameters. The two most popular response choices subjects made following the investigator's attempt to frustrate them were continuing to play with their old partners and playing with a new partner. These two choices accounted for 93% of those made. More "antisocial" and "defensive" types of choices, such as depriving one's partner of his earnings and choosing not to play the game again, were
made by only a few subjects. It appears that where sub-
jects were frustrated by their partners' performances,
their best means of coping was simply to choose a new
partner, which may be considered a fairly adaptive reac-
tion. This lack of diversity undoubtedly contributed
to the lack of results obtained. When virtually everyone
makes the same response, it is very difficult to find
age and condition differences.

In this study, chronological age seemed not to
contribute at all to the patterns of choices that
occurred, while one's assigned condition contributed to
a small extent. Subjects who were exposed to frustration
and not afforded any means of reducing or modifying it
(UF condition) did react somewhat differently than sub-
jects who were not exposed to frustration at all (CO
condition), thus suggesting some success in the experi-
mental manipulation. Subjects' responses to post-game
questioning regarding the degree of frustration they
experienced also reflected this. It was expected that
allowing an individual to "put himself in the other's
shoes" (RT condition) would serve to significantly reduce
the effects of frustration, but individuals under this
condition responded very similarly to the unmodified
frustration subjects. This appeared to have occurred
particularly when the individual assuming the other's role did better than the other had. Providing a plausible excuse for the difficulty subjects were experiencing (CR condition) seemed slightly more effective in reducing whatever effects of frustration arose, although not significantly so.

In short, if the subjects in this study had "antisocial impulses," they did not express them overtly when given an opportunity to do so in the game situation. Rather, it appeared that the procedure employed here served to enhance cooperative behaviors and feelings of camaraderie.

Antisocial impulses were more readily expressed in response to the story completion material, however, especially by the older subjects. This may not necessarily indicate that the older subjects were really more aggressive than the younger subjects, merely that they responded more assertively in the face of a hypothetical thwarting. An inspection of the scoring guides given by Thurston, Feldhusen, and Benning reveals that certain responses which some observers might regard as age-appropriate attempts at problem-solving were scored as aggressive, and therefore, maladaptive. As in so many other pieces of research, the definition of aggression
one employs affects the conclusions he reaches. In any case, it should not be surprising that the subjects displayed more aggression on the story completion material than they did in an actual behavioral situation, since the former represents a "safer" way to discharge hostilities, with no real potentially threatening aftereffects. On the other hand, actually "zapping" a real-life partner may lead to complications, including retaliation and possible shame or guilt. Thus, aggression-anxiety may have been operative. Peshbach (1970, pp. 181-184), for one, discusses the relationship between fantasy and overt aggression, indicating that it is by no means unequivocal. Many studies have actually found an inverse relationship between the two.

Limitations of the Study

One alternative to the conclusion that reactions to frustration do not fit a cognitive-developmental model is the strong possibility that little frustration was actually provoked in this study, thus leading to an inadequate test of the various experimental hypotheses. Given the current state of society, there is relatively
little a researcher can do to frustrate school children without incurring the wrath of public outcry. It is highly likely that the particular procedure employed here was simply not severe enough to generate reactions which may have confirmed more of the hypotheses. For one thing, the game-like atmosphere may have resulted in subjects' approaching the task less seriously than they would have under other circumstances. In this vein, the investigator noticed that most subjects, especially the younger ones, were quite eager to participate, largely because their peers who had done so earlier came back to class proudly bearing hamburger tokens. It is likely that many subjects were briefed prior to participating as to the fact that the experimenter would reimburse some of their points, regardless of how well they did.

Another consideration is the possibility that subjects did not choose to aggress toward their partners simply because they did not perceive them as being responsible for their frustration. This notion is reflected in subjects' responses to the question, "How did you like working with your partner?" Again, these data indicated that most individuals, regardless of assigned condition, liked working with their partners. Also, this possibility, if true, would help to account for the observation
that subjects in the cognitive restructuring condition reacted similarly to those in the control condition, while subjects in the role-taking condition reacted similarly to those in the unmodified frustration condition. It may be recalled that CR subjects were explicitly given reason to attribute failure to the difficulty of the task, whereas RT subjects were not. Again, it appears that for the most part the procedure employed here served to enhance cooperative behaviors and feelings of camaraderie.

Another limitation of the study involved the subject pool used. Negative results may have been obtained because the pool was not heterogeneous enough. All of the subjects used were Caucasian, and as far as the investigator could determine, middle-class. Also, the older subjects were drawn from a traditional high school, whereas the younger subjects were drawn from an open classroom setting. It is possible that this latter environment contributed to the generally prosocial response choices made by the younger children.
Implications for future research efforts in this area may be divided into two categories -- modifications in methodology and modifications in theoretical approach.

With respect to methodological changes, the following could be implemented:

1. A larger, more diverse subject pool could be utilized, with particular attention paid to their socioeconomic status and/or child-rearing histories. These could be controlled for or else included in the design as independent variables.

2. Measures of aggression-anxiety could be administered to provide insights into interactions between this and cognitive-developmental variables. Examples of specific instruments are the Test Anxiety Scale and General Anxiety Scale (Sarason et al., 1960).

3. An experimental design emphasizing competitiveness rather than cooperation, or elements of both, may be more effective in generating the degree of frustration necessary to test the hypotheses advanced in the present study. A prisoner's dilemma game is one possibility in this respect.
(4) A non-game-like task in which threats to self-esteem or social status were generated might also be more effective in instigating frustration, although debriefing would undoubtedly be both more difficult and more essential.

(5) The experimenter noticed that during the debriefing procedure employed in the present study subjects really seemed to enjoy having him "at their mercy." This may have been because they perceived him as being responsible for their frustration. As such, the experiment could be designed so that subjects' behavior toward the experimenter constituted the dependent variable.

With respect to modifications in theoretical approach, one possibility is the use of an individual differences, rather than developmental, framework. Reactions to frustration and their modifiability may be better explained by parameters of the former type. One obvious example is IQ. In the current study, an attempt was made to ensure some homogeneity of intelligence in the subject pool, and individuals were assigned randomly to conditions. Another study might use level of IQ as an independent variable. Also, since one's manner of categorizing and discriminating among events affects his
perception of the world, an exploration of the relationship between cognitive styles and reactions to frustration may be fruitful. Particular cognitive style variables which are worth scrutiny include cognitive complexity, field dependence-independence, and reflection-impulsivity. Two studies addressing themselves to this question are those of Campbell and Douglas (1972) and Thomas (1972). A final area providing possible linkage to responses to frustration is attribution theory, which deals with individuals' perceptions of the causes of behavior. Jones et al. (1972) is a required text for anyone wishing to familiarize himself with this area.
SUMMARY

In an attempt to examine the proposition that reactions to frustration and their modifiability are subject to cognitive-developmental parameters, a problem-solving task was developed in which 16 pairs of subjects at each of the 8-9, 11-12, and 15-16 year levels worked together for mutual benefit. This took the form of a game called "Airport," in which one participant was the "pilot," and his partner, the "navigator." Each pair of subjects was given points at the beginning of the game and informed that whatever remained at the end could be exchanged for rewards. The navigator guided his blindfolded pilot as successfully as possible through a series of paper-and-pencil mazes of varying degrees of difficulty. Points were lost either by "crashing" through the sides of the mazes or else by exceeding the time limits given for them.

In early trials relatively easy mazes were presented, and time limits were lenient. During later trials, the experimenter introduced more difficult mazes, and time limits became stringent such that continued success

142
was virtually impossible. During this period each pair was randomly assigned to one of four experimental manipulations:

(A) In the role-taking condition (RT), participants switched roles.

(B) In the cognitive restructuring condition (CR), participants were given a logical reason for the failure, namely the difficulty of the task.

(C) In the unmodified frustration condition (UF), subjects were neither told to switch roles nor given any plausible reasons for their difficulties.

(D) In the control condition (CO), frustration was not instigated.

During a structured interview, each subject was asked to choose one of the following courses of action, given the opportunity to play the game again:

(1) Quit playing, keep own earnings.
(2) Quit playing, keep own and partner's earnings.
(3) Continue playing with partner.
(4) Play with a new partner, keep own earnings.
(5) Play with a new partner, keep own and old partner's earnings.
Prior to the game, subjects had also been administered a sociometric exercise to ensure that they were not paired with best friends or worst enemies and a story completion test in which they were asked to describe how the main character might respond in four hypothetical frustrating situations.

It was anticipated that chronological age, assigned condition, and their interaction would account for the different choices subjects made. It was expected that older subjects would be better able to inhibit "antisocial" responses to frustration and would exhibit more frustration tolerance than younger subjects. Also, subjects in the CR and RT conditions were expected to be better able to inhibit antisocial responses and to display frustration tolerance than subjects in the UF condition.

Results generally failed to support the above expectations. Little diversity appeared in the choices subjects made. The most popular was that of continuing to play with one's partner (76% of those made). It appeared that where subjects were frustrated, their best means of coping was simply to choose a new partner but not to deprive the old one of his earnings. Chi-square analyses revealed that age seemed not to contribute to
the patterns of choices that occurred, while assigned condition contributed to only a small extent. Antisocial impulses were more readily expressed on the story completion test, especially by the older subjects, but for the most part, the procedure employed seemed to enhance cooperative behaviors and feelings of camaraderie.

Limitations of the study and recommendations for future research were discussed.
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APPENDIX A

MAZES AND TIME LIMITS
# SCORE SHEET

Condition ____________ Pilot ________
Ages (P,N) ___________ S#: ________
Cell Pair # __________ Nav. ________

8-9 year-olds -- give 60 pts. and approx. 15 mazes
11-12 year-olds -- give 70 pts. and approx. 20 mazes
15-16 year-olds -- give 80 pts. and approx. 25 mazes

"A" -- 1\(\frac{1}{2}\) inch width; "B" -- 1 inch width

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APPENDIX B

SITUATION EXERCISES
1. Tommy's teacher called his mother to tell her that Tommy was caught copying from another pupil during a test. Tommy knows the teacher called his mother. What might Tommy do or say about this?

2. Bobby's father scolded him for coming home late from visiting a friend. The reason Bobby was late was because the bus was late. His father says he does not want to hear any excuses. What might Bobby say or do about this?

3. John met a group of kids who were going to walk home together from school. John said that he wanted to walk with them. The kids said they didn't want John to walk home with them. What might John do or say about this?

4. Jim picked out a sweater in a store. He wanted to buy it with money he had saved from his allowance. Jim's mother would not let him buy it because she said it was not a good color and that it would not look nice on Jim. What might Jim say or do about this?
1. Tom's teacher called his mother to tell her that Tom was caught cheating during a test. Tom knows that the teacher called. What might he do or say about this?

2. Bob's father gave him a hard time for coming in late after visiting a friend. Bob was late because the bus was late. His father, however, says that he doesn't want to hear any excuses. What might Bob say or do about this?

3. John needs a ride home from school. A group of guys he knows are going in the right direction, but they say they don't want him to ride with them. What might John do or say about this?

4. Jim bought a new sweater in a men's shop with money he had saved from his allowance. When he got home, his mother told him to take it back since it was the wrong color and would not look nice on him. What might Jim say or do about this?
APPENDIX C

SITUATION EXERCISES SCORING GUIDES
Adaptive Responses suggest behavior which involves constructive initiative, submission to authority and punishment, requests assistance from parents and authorities, admission of guilt, forthright statement (without rationalization) of reasons for actions, avoids maladaptive responses, tries again, accepts situation realistically, uses humor without de-emphasizing the seriousness, inquires for reasons. These responses attempt to resolve the problem effectively now or in the future, or at least tend to offset any worsening of the situation for the time being.

Indeterminate Responses include all those not clearly maladaptive or adaptive. These statements lack a relationship to resolutions of the problem described. Unclear statements or repetitions of statements made in Situation Exercises are in this category.

Maladaptive Responses suggest behavior which is inappropriate, aggressive, lying, evasive, demonstrates vacillation or inaction, is fearful, justifies misdoings, involves rationalization, is retaliative, employs bribery, evidences emotional upset. These responses fail to lead to improvement in the situation and might easily cause it to deteriorate.
Needs

**n Abasement** -- To acquiesce, resign passively, accept insult or punishment, take the blame, surrender. Masochism. Apologize, promise to do better, try to improve, confess, say that he would not do it again.

**n Aggression** -- To belittle, curse, blame, slander, or ridicule. To injure. Attack. Defying authority.

**n Blamavoidance** -- Susceptibility to censure. To resist further temptation. To avoid blame by inhibiting impulses. Concern toward future. Concern about being blamed. Not do it again.

**n Counteraction** -- Seek another chance, give him another chance. "I'll show them." He should show them he can do it right.

**n Defendance** -- To disavow blame. To justify the misdeed. Explanation or alibi. Deny it. To relate facts. To explain, interpret, lie. Sour grapes.

**n Dominance** -- To influence or control others. To persuade or dictate. To lead and direct. To restrain. To assert dominance over mother, father, or peers.

**n Harmavoidance** -- To avoid or flee from physical danger or punishment. To fear injury, illness, or death. To hide or take protective measures. Run away. Not go home. To avoid shame. To escape failure or humiliation. Hypersensitivity. Don't tell anyone.

**n Nurturance** -- To be sympathetic and consoling to a person in distress. To protect.

**n Passivity** -- Be relaxed or indifferent.
n Recognition -- To seek praise or attention by display of ability or good qualities.

n Rejection -- To ignore or exclude somebody. To show contempt. When child spurns association.

n Succorance -- To seek aid, protection, or sympathy, forgiveness.

n Understanding -- To seek knowledge. To observe. Inquire. Investigate.

Inner States

Anxiety -- To fret, to worry. To be apprehensive or fearful.

Conflict -- A state of uncertainty, perplexity, or indecision.

Dejection -- Disappointment, depression, sorrow, grief. Ashamed.

Optimism -- To be lighthearted. To be confident and hopeful.

Superego -- To be governed (inhibited, guided, or punished) by conscience. He should obey conscience. He should know the right thing to do.

Press

p Aggression -- Someone curses, belittles, blames, slanders, or ridicules the subject. Parents, teacher, or other kids are out to get him, to harm, to get in trouble.
APPENDIX D

STRUCTURED INTERVIEW
Your Age ________

1. Were you: ___ a pilot? ___ a navigator? ___ both?

2. How difficult do you think this task was?
   ___ Very difficult
   ___ Pretty difficult
   ___ Pretty easy
   ___ Very easy

3. How frustrating was this task to you?
   ___ Very much
   ___ Pretty much
   ___ Just a little
   ___ Not at all

4. What did you like best about this game?
   __________________________________________

5. What did you like least about this game?
   __________________________________________

6. How did you like working with your partner?
   ___ Very much
   ___ Pretty much
   ___ Just a little
   ___ Not at all

7. What did you like best about your partner?
   __________________________________________

8. What did you like least about your partner?
   __________________________________________
9. How did you feel during this game and when? (Check all that apply)

___ angry when? __________________________
___ amused when? __________________________
___ disgusted when? _______________________
___ hurt when? ____________________________
___ confident when? _______________________
___ excited when? _________________________
___ frustrated when? ______________________
___ suspicious when? ______________________
___ challenged when? ______________________
___ overworked when? ______________________
___ worried when? _________________________

10. Would you play this game again if you had the chance?

___ Yes ___ No

11. If yes, would you:

___ continue with your old partner?
___ get a new partner?

**CHOICE**

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