COGNITIVE STAGE REGRESSION AS A FUNCTION OF EMOTIONAL DISTURBANCE IN CHILDREN

By

KEVIN ROBERT LOOMIS

Bachelor of Science
Franklin and Marshall College
Lancaster, Pennsylvania
1976

Master of Science
Oklahoma State University
Stillwater, Oklahoma
1982

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Thesis Approved:

Kenneth D. Sanford
Thesis Adviser

Pamela L. Dawcett

Larry T. Brown

J. Barbara Wilkinson

Norman N. Durham
Dean of the Graduate College

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Chapter I

Statement of the Problem

A few years ago, the writer was working as a therapist for emotionally disturbed children in a residential treatment facility. The idea and the impetus for the present study was derived from the writer's experiences treating those children. The case of one of those children, to be called John, formed the basis of the questions to be addressed in this study.

John's case produced a diagnostic contradiction. As part of the treatment process, the 12-year-old John was evaluated with a complete test battery consisting of diagnostic interview, projective tests, and objective tests of intelligence. Analysis of the test results produced contradictory diagnostic impressions. The analysis of the projective tests showed the presence of psychotic thought processes indicating a diagnosis of childhood schizophrenia. In contrast, the analysis of the objective tests and the diagnostic interview indicated a child of above-average intelligence with no apparent psychotic thought processes. Two separate diagnoses could be made from the test battery, leading to totally different treatment plans and prognosis. How could these contradictory diagnostic impressions be resolved?

To answer this question, the first step taken was to determine what type of information formed the basis for the contradictory diagnostic impressions. The projective tests function to reveal the

emotional conflicts and defense mechanisms of the child. The objective testing and the diagnostic interview elicited different types of information. They provided information on the child's cognitive abilities, which are theoretically assumed to be unaffected by emotional disturbances. The difference in the types of information of the two sources of diagnostic impression appeared to provide the means to resolve the contradictory diagnostic impressions. The answer appeared to be in the interaction of the child's affective and cognitive domains.

In order to look at this interaction, this writer performed a different type of analysis of John's test performance. John's test performance was analyzed according to the precepts of Jean Piaget's theory of children's cognitive development. John's projective test responses were analyzed for the type of cognitive abilities he utilized and the level of cognitive development at which these abilities functioned. A similar analysis was performed for John's responses during the diagnostic interview and during the objective testing. This analysis appeared to indicate that on the projective tests, when John attempted to cope with his emotional conflicts, the cognitive abilities he utilized were those characteristic of the PreOperational Stage of cognitive development. He appeared to be utilizing cognitive abilities characteristic of the cognitive level of development of children seven to nine years younger.

The analysis of his responses to the diagnostic interview and the objective tests indicated a higher level of cognitive development. When John coped with tasks that did not elicit his emotional conflicts or defenses, he appeared to utilize cognitive abilities characteristic of the transition level preceding the Formal Operations Stage of cognitive development. He appeared to utilize cognitive abilities characteristic of the cognitive level of development of children his age, if not older.

This analysis suggested an explanation for the test battery's contradictory diagnostic impressions. The analysis appeared to indicate one of the mechanisms by which emotional conflicts of a child interact with the child's cognitive development. The projective tests are assumed to elicit the child's coping mechanisms for emotional conflicts. Rather than indicate psychotic thought processes, John's projective responses appeared to exhibit the characteristic thought processes of lower-order cognitive abilities. When John acted upon situations that did not elicit his emotional conflicts, he appeared to utilize higher-order cognitive abilities. The differences in John's coping skills for affectively charged situations and non-affectively charged situations suggested a defense mechanism that operated on his cognitive performance. This defense mechanism appeared to be a regression of cognitive performance from a level of adaptation at a higher-order cognitive stage of development to an earlier, lower-order level of cognitive stage adaptation. In a manner similar to the

psychoanalytic concept of affective regression, there appeared to be a cognitive stage regression that operated as a defense mechanism on cognitive performance.

The problem was how to study this clinical interpretation of John. There were numerous questions that followed from this interpretation: What was the interaction of children's affective development and cognitive development? What effect did children's emotional disturbance have on the interaction of their affective and cognitive development? Is cognitive stage regression a defense mechanism utilized by emotionally disturbed children? How can cognitive abilities be measured?

In a previous study by Green & Loomis (1982), two methods of measuring children's cognitive development were constructed. In that study, measures of cognitive development were developed according to Piaget's theory. Two different measures were formulated and found to have interjudge reliability. One measure determined the cognitive stage of development through a series of Piagetian tasks. The second measure determined the cognitive stage of development by analyzing the verbal productions of a child.

The first two chapters of the following discourse attempted to address the question: What is the interaction of affective development and cognitive development in children? Two of the most influential theorists in the fields of children's cognitive development and affective development were Jean Piaget and Sigmund

Freud, respectively. In the first chapter, Piaget's theories of interaction of children's development and affective development will be discussed. In the second chapter, the efforts of writers such as Greenspan (1979) and Wolff (1969) will be discussed. These writers, and many others, attempted to answer the question of the interaction of children's cognitive development and affective development by integrating the psychoanalytic theory of affective development and Piaget's theory of cognitive development.

The next two chapters will address the question: What effect does emotional disturbance in children have upon the interaction of children's cognitive and affective development? In order to reduce confusion, attempts to answer this question were divided into two chapters. The first of these chapters addressed solely theoretical explanations and hypotheses for the effect of children's emotional disturbances on their affective and cognitive development. This chapter will discuss the writers who have attempted to further an understanding of children's emotional disturbance by integrating theories of psychopathology and Piaget's genetic psychology. The second of these chapters addressed attempts at experimental testing of hypotheses of the relationship between affective and cognitive development of emotionally disturbed children. These attempts have varied in methodology and generalizations. The last section of the second chapter will focus on those attempts to answer the question: Is cognitive stage regression a defense mechanism utilized by

emotionally disturbed children? Studies that related to this question have been few and were often plagued by methodological difficulties.

The researchers in this field demonstrated a consistent theoretical stance. All of the research agreed that children's affective development and cognitive development are interdependent. Both the theoretical hypotheses and the experimental studies consistently agree that emotional disturbances in children disrupt the interaction of cognitive and affective development. In all the experimental studies and theoretical papers, regardless of the methodology or subject population, when the development of the emotionally disturbed child was compared to that of normal children, the former's cognitive development was found to be different from that of normal children's. The postulated differences included delays in cognitive development, disturbances in the pattern of normal cognitive development, and disturbances in the patterns of utilization of cognitive abilities. The mechanisms of thse differences have been minimally and often contradictorily addressed.

The present study attempted to compare the interaction of cognitive development with affective development in emotionally disturbed and normal children. The present study attempted to both substantiate the findings of previous research and to answer the question of whether cognitive stage regression was a defense mechanism of emotionally disturbed children. The present study predicted that when the emotionally disturbed child coped with emotional conflicts,

s/he regressed to utilizing lower-order cognitive abilities instead of utilizing his/her higher-order cognitive abilities.

Chapter II

Review of the Literature

Piaget's Theory of Affective Development

Jean Piaget is well known for his creation of a theory of children's cognitive development (1962a, 1962b, 1968, 1971, 1972, 1973). His theory of children's affective development is less well known. Piaget defined cognitive development as the study of the structures of behavior. He described affective development as the study of behavior's energetics. He stated that affect is the energizing aspect of behavior. Piaget postulated that affective development and cognitive development are inseparable and complementary. He defined the development of affect and cognition as markedly parallel and interdependent. Affect is the interest and values given to actions for which cognition provided the structure (schemata). Just as there are cognitive schemata and motor schemata, there are affective schemata. Affective schemata are indissociable aspects of an organized set of schemata that compose the "character" of each person. Affective schemata develop by the same principles that Piaget postulated for the development of cognitive processes. These principles are the biologically inherited modes of interacting with the environment. The two basic modes of functions that the child employs to encompass new materials presented in the environment are organization and adaptation. The latter function consists of the

processes of accommodation and assimilation. By use of these functions the child continually strives to achieve equilibrium between the environment and his/her cognitive and affective schemata. Equilibrium is defined as a process of self-regulation, a series of active compensations by the child in response to external disturbances that are both retroactive and anticipatory. The conflicts and crises of affectivity are explained as a search for a coherence and organization of values that will prevent internal conflicts.

Piaget (1968) defined four factors that influence affective and cognitive development. The first factor is organic growth, especially the maturation of the nervous system and the endocrine systems. The second factor is the role of exercise and the acquired experience that the child has gained in the actions that s/he has performed on objects. The third factor is social interaction and transmission-socialization. The fourth factor is development by a gradual evolution in which each innovation is dependent upon its predecessors. Piaget stressed the ontogenetic and social interaction factors as crucial to normal cognitive and affective development.

In Piaget's (1962b) theory there are four stages of cognitive development. The four stages are: the Sensorimotor Stage, the PreOperational Stage, the Concrete Operations Stage, and the Formal Operations Stage. Each cognitive stage is characterized by the cognitive structures developed in that stage. The affective

development of the child is interdependent with the stage of cognitive development. Each stage of cognitive development has parallel affective developments dependent upon the cognitive structures developed in that stage.

During the Sensorimotor Stage, the cognitive schemata that are initially centered on the child's actions are the means by which the child develops cognitive structures needed to construct an objective and decentered universe. In parallel, affectivity starts with a lack of differentiation between the self and the environment. The developing structures of the cognitive differentiation make possible the construction of exchanges or emotional investments that attach the self to other things (through interests at various levels) or persons (through interpersonal feelings). The affectivity of the first two stages of the Sensorimotor Stage occur within a context described as adualism. In this context, there is no consciousness of the self, no boundary between the internal or experienced world and the external realities of the environment. All affectivity is centered on the child's body and action. The observable affects of the adualistic period are dependent upon general rhythms. They correspond to the spontaneous global activities of the child such as alternations between states of tensions and relaxation. Differentiation starts with the search for agreeable stimuli and a tendency to avoid disagreeable stimuli. In the third and fourth stages of the

Sensorimotor Stage, cognitive differentiation produces increasingly complex behavior and a parallel increased affective differentiation. The child begins to show discomfort in the presence of the unknown, stranger anxiety, and the beginning of a tolerance for stress. The child begins to react to persons in an increasingly specific manner because they behave differently from objects and they behave analogously to the schemata of the child's actions. A causality is developed whose source is others who produce psychological satisfactions. In the last two stages of the Sensorimotor Stage, the child's cognitive development differentiates and decenters to the point that the child develops a universe of permanent objects. In parallel development, affectivity is attached to these localized permanent objects. Persons become sources of external causality.

The major development of the PreOperational Stage is representative thinking. The child develops the ability to manipulate symbols that represent the environment. Mental imagery, memory of evocation, symbolic play, and language develop. With these cognitive developments, an affective object may be present and active in the child's actions even when physically absent. There are three major affective developments linked to these newly developed cognitive structures. The affective developments are: 1) The regulation of interests and values. 2) The development of interpersonal emotions that are linked to the socialization of the child's actions. 3) The

appearance of intuitive moral sentiments formed by the relationship between the child and adults.

Interests represent the relationship between an object and a need. Interest is a precondition for every action of mental assimilation. With the development of representative thought, the interests of the child multiply and differentiate. All external realities acquire a value to the child to the extent that they satisfy needs. The child's needs and therefore his/her interests are dependent on the child's momentary mental equilibrium and those new incorporations necessary for maintaining equilibrium. Self-evaluative feelings become possible and are acted upon. Successes and failures become incorporated into the child's mental equilibrium and influence future actions. The values that are developed influence affective interpersonal relationships. Sympathies and antipathies can develop. In social interaction, the child is pre-cooperative. At this stage, the child's cognitive structures of egocentrism are demonstrated in assimilation to his/her own actions. Cooperative play is not cognitively possible. Language is not used to provide information to others, rather, it consists of monologues. Intuitive moral feelings develop that are subject to an external will (i.e., parent). With the differentiation of values, respect can develop and form a basis for external imposition of rules (Piaget, 1962a, 1968).

The next stage of cognitive development is the stage of operations--the Concrete Operations Stage. Cognitively, the child develops the ability to utilize operations. The child develops classification abilities, reversibility, and the ability to differentiate his/her point of view from that of others. The cognitive advances are paralleled by affective developments. The child becomes capable of social cooperation and the conception of rules changes. In the PreOperational Stage, intuitive moral statements develop that are based upon externally imposed unilateral respect for adults. In the Concrete Operations Stage, mutual respect becomes possible. There is development of a notion of distributive justice based upon strict equality and retributive justice based on intentions and circumstances rather than actions. The mutual respect becomes differentiated into an organization of moral values that imputes relative autonomy to the conscience of the child. Affective life develops a regulator that Piaget (1968, 1972) calls "Will." The Will is the regulator of energy. In the previous cognitive stage, interests performed this regulatory function in a spontaneous and impulsive manner. The increasing complexity of cognitive organization that culminates in the development of operations is paralleled by an increase in the complexity of affective organization that culminates in the development of Will. The Will has the capacity for reversible operations instead of only operating on immediate and present stimuli.

The Will is a hierarchy of values that act like a logical operation organized into logical groupings.

With the advent of the Formal Operations Stage, the child develops the ability to transcend the centering on reality of the Concrete Operations Stage. The child is able to group possible transformations and can imagine reality in terms of imagined or deduced events. Affectivity, likewise, becomes capable of transcending concrete and perceptible reality and encompassing interpersonal and intrapersonal possibilities. The moral autonomy of the Concrete Operations Stage adds the dimension of ideal or supra-individual values. Affective development is marked by the development of the personality and becoming part of adult society. Personality formation begins in the Concrete Operations Stage with the development of an autonomous organization of rules and values and the development of the Will. The personal system can not develop until the achievement of formal thought processes. The development of personality includes the development of a life plan, the achievement of which requires the ability of hypothetical-deductive thought. The egocentrism of the child during this stage constructs a world separate from adults consisting of the child's plans and dreams (Piaget, 1971, 1972, 1973).

In summary, Piaget postulated a unity of process from the Sensorimotor Stage to the Formal Operations Stage of interdependent

and parallel development of affectivity and cognition. Each cognitive development is paralleled by affective development. Affectivity is the incentive for actions, the assigner of value to activities, and provider of energy to activities. Cognition provides the structure, the means, and the clarification of the goals. Cognition and affectivity strive through the functions of adaptation and organization to achieve and maintain equilibrium.

Psychoanalytic Theory and Genetic Psychology

In the preceding section, Piaget's theory of interaction of cognitive and affective development was discussed. In that section, discussion was restricted to theories of normal development. During the years that Piaget was developing his theory of genetic psychology, another theory, psychoanalysis, was being developed by Freud and his disciples. Contrary to Piaget's emphasis upon impersonal aspects of cognitive development, psychoanalysis was a theory of affective development with an emphasis on its disorders. Numerous theorists have attempted to integrate the precepts of these two theories of children's development.

While Piaget has minimally addressed the issues of a synthesis of his theory and psychoanalysis, he has addressed some of the points of synthesis and other issues of clinical pathology. Piaget (1962a) addressed issues of clinical pathology in a seminar at the Menninger Clinic. He postulated that the affect can act to accelerate or retard

the formulation of cognitive structures. He postulated that affective states can place obstacles to intellectual development. He stated that affective states can also lead to temporary errors in cognitive processes. He described one way in which affective states can lead to errors in or delays of cognitive development is by influencing perception. Piaget stated that what is attended to can be motivated by needs and interests.

Psychoanalysis theory and genetic psychology are in agreement as to the energetic composition of affectivity (Piaget, 1973). Psychoanalytic theory focuses upon the unconscious mechanisms of the energetic processes of affectivity, while genetic psychology focuses upon the conscious mechanisms of the energetic processes of affectivity. Piaget (1962a, 1962b, 1971) drew a parallel between the affective unconscious postulated by psychoanalytic theory and his concept of a cognitive unconscious. He stated that while the end products of cognition are conscious, the deepest functioning of intelligence, the processes and structures, are unknown (unconscious) to the child until s/he reaches a cognitive level at which reflection is developed.

Piaget (1962a, 1962b, 1971, 1973) described a cognitive regression similar to the affective regression postulated by psychoanalytic theory. The cognitive regression can occur when the child performs an action that does not conform to the pre-existing

conscious schemata. The child can set aside or unconsciously repress the contradictory schema. Piaget (1962b) attempted to explore the mechanisms of cognitive regressions in relation to the psychoanalytic concepts of the unconscious and symbolic thought. He postulated that affective schemata can develop that continue to function within the cognitive limits of the Sensorimotor Stage and/or the PreOperational Stage when the child is capable of functioning at higher cognitive levels.

Piaget (1962a, 1962b) explained that during development the child acts upon and is acted upon by other persons, during the process of which general affective schemata are developed. Before object permanence is achieved, these general affective schemata to people are not attached to particular people. When object permanence is achieved, persons become other "egos" and the child becomes a person. Affective schemata are related to particular people; inter-individual feelings become associated with a particular person. For example, the child will develop a general affective schema toward his/her father that functions within the limits of the cognitive characteristics of the PreOperational Stage. The child will tend to assimilate all other people to their general affective "father" schema. This affective schema will tend to be reproduced (reproductive assimilation), it will tend to find experiences to sustain it (recognitive assimilation), and it will tend to discover new schemata (generalizing assimilation).

In normal development, equilibrium dictates that the assimilative process is accompanied by the accommodative process that increasingly differentiates the general affective schema. Affective schemata remain unconscious when the assimilative process predominates over accommodation. When this occurs, the general affective "father" schema continues to operate at the level of PreOperational processes as the child progresses to higher-order stages of cognitive development.

Piaget (1962a, 1962b, 1973) generalized the above process to an understanding of psychoanalytic theory of symbolic thought. He stated that symbolic thought is the result of assimilation predominating over accommodation. When this occurs, the child has only thought based upon assimilation to understand his/her reactions. The symbolic thought is comparable to the intuitive pre-logical cognitive processes of the Sensorimotor and PreOperational Stage. The psychoanalytic concepts of projection and identification in symbolic thought are explained by similar mechanisms. Both of the processes are discussed as the result of pre-logical assimilation.

Theorists of the psychoanalytic school of thought have attempted to integrate Piaget's genetic psychology and psychoanalytic theory. The proposed syntheses have differed in the scope of the two theories they encompass and in the extent that they address both normal development and psychopathology. Greenspan (1979) classified the

various attempts at integration and synthesis into three categories:

1) those that are restricted to isolated topics common to both theories;

2) attempts at general synthesis by cross-translation of terms;

3) those that have attempted to set up parallel systems.

Greenspan (1979) presented a critique of Piaget's theories of the relationship between the affective and cognitive development. He specifically addressed the deficiency in Piaget's theory of transformation rules for the relationship between affectivity and cognition. He suggested four transformation rules for how drive influences cognition:

1) Drives may influence the selection of cognitive content.

2) Drives may result in the symbolization or deneutralization of certain cognitive processes. For example, the child may have difficulty learning simple math problems that are solvable within the capabilities of his/her cognitive stage due to math problems symbolizing affective conflicts.

3) The capacity for cognition can be more generally compromised by unresolved dynamic issues. The unresolved dynamic issues can produce a general cognitive regression to the level of cognitive development of the dynamic concerns. For example, a child with unresolved Oedipal conflicts denies the use of classification skills that would facilitate resolution of the conflicts.

4) A fixation or arrest in the drive-related aspects of development (i.e., psychosexual stage) can be severe enough to cause a fixation at the parallel level of cognitive development. (P. 114)

Cobliner (1967) and Wolff (1960) both attempted a synthesis between the postulates of each theory for the first 18 months of life. Both delineated numerous parallels between the two theories. They stated that developments Piaget postulated for the Sensorimotor Stage can be combined with Freud's psychosexual theory of the oral stage to provide fuller explanation of development. Cobliner stressed the similar focus on increasing self-regulation by intrapsychic processes and the relationship between Piaget's concept of object permanence and Freud's concept of object relations. Wolff attempted to delineate the effect of drive tension on cognitive processes. He stated that Piaget's theory explains development when the child is in a state of low drive tensions, and Freud's theory explains development when there is a state of high drive tension.

Holt (1967) and Silverman (1971) attempted to demonstrate the usefulness of Piaget's theory for understanding Freud's theory of primary process thinking and the transition to secondary process thinking. They viewed primary process thinking as not only a mode of energy organization but also as a structural system that can be understood by Piaget's cognitive stages. Holt described a regression to primary process thinking as the result of frustrated reality-adaptive thought. Silverman stated that Piaget and Freud both defined thought as an internalized symbolic trial action. He theorized that Piaget's theory helps elucidate the transition

between primary process and secondary process thinking. He described primary process thinking as a reflection of PreOperational Stage thought processes.

Nass (1966) compared the psychoanalytic concept of the superego to Piaget's theory of moral development. He described a similarity between the stages of morality that Piaget defined in terms of cognitive development and the psychoanalytic concept of superego development in terms of mainly affective development. He stated that Piaget's theory minimized the affective aspect and that psychoanalytic theory minimized the cognitive aspect.

Nilsson (1977) utilized Piagetian concepts to understand a person's response to anxiety. He constructed a model of anxiety defense mechanisms that incorporated psychoanalytic concepts and Piaget's theory of cognitive development.

Friedman (1968, 1978, 1983) attempted to explore the cognitive aspect of affective experience. He utilized Piaget's functions of assimilation, accommodation, and equilibrium to understand behavior. He utilized Piaget's theory to attempt to understand how children resolve identity questions. He stated that the striving for equilibrium allows the person to maintain a stable identity while participating in changes. The role of affect is to counterbalance the input of the environment so as to allow functions of assimilation and accommodation to balance each other and reach equilibrium. A

defective emotional relationship with the environment will impair the child's ability to attend to objects and people.

Sandler (1975) analyzed the psychosexual stages of psychoanalytic theory in terms of Piaget's cognitive stages. Sandler utilized the cognitive abilities developed in each stage to understand the phenomenon of each psychosexual stage. She described the unconscious as operating according to more primitive cognitive processes than the person is capable of utilizing.

Genetic Psychology and Psychopathology

Piaget (1962a, 1962b, 1968, 1971, 1972, 1973) has performed extensive research and theoretical work upon the parameters and characteristics of normal cognitive development. To a lesser extent, he has done theoretical work on affective development and its relationship to cognitive development. In the previous section, the attempts made by others to relate genetic psychology concepts to psychoanalytic concepts were discussed. The current section will discuss attempts to increase a theoretical understanding of psychopathology by integrating concepts of genetic psychology.

Bettelheim (1967) attempted to utilize Piaget's theories of Sensorimotor Stage development to understand the dynamics of childhood autism. Piaget emphasized action as one of the crucial factors in cognitive and affective development. Bettelheim hypothesized that the extreme rigidity of the autistic child, based

upon a belief that personal safety resides in sameness, keeps the child from acting on the environment, thus hindering normal cognitive development. He suggested that the cognitive development of the autistic child is arrested at the sixth stage of the Sensorimotor Stage, thus the autistic child never achieves object permanence and therefore never achieves a differentiated sense of self. Bettelheim hypothesized that it is emotional factors that prevent the autistic child from achieving object permanence. Piaget stressed social interaction as a second crucial factor in cognitive and affective development. For the autistic child, social interaction is dangerous and avoided. Bettelheim suggested that this results in a persistence of egocentricity in which assimilation to reality is distorted and accommodation is not performed because it is believed destructive. Children have the cognitive capabilities for object permanence, but because they distrust the stability of the environment, they do not incorporate these cognitive capabilities. Instead, the autistic child insists on sameness and avoids interaction to keep from developing object permanence for self and others. The result is an undifferentiated world of chaos and unpredictability. The only way the autistic child can create order that is not threatening is to make sure everything remains the same. The autistic child develops numerous higher-level cognitive processes to manipulate objects and

their bodies, but the development of representative thought is arrested at the sixth stage of the Sensorimotor Stage.

The dynamics of schizophrenia have been analyzed in terms of genetic psychology by numerous writers. These writers have attempted to understand the psychotic process in children and adults by analyzing schizophrenic cognitive processes and their development. Theories of the role of cognitive development in adult schizophrenics have mostly postulated either forms of cognitive regression or defects in cognitive developments as children. Freeman & McGhie (1957) attempted to relate Sensorimotor Stage cognitive processes to adult psychosis. They suggested that adult schizophrenia can be understood as the reinstatement of the more elementary modes of thought processes of the Sensorimotor Stage. Feffer (1967, 1970) discussed the characteristics of symptomatic behavior of schizophrenia and neurotic thought such as isolation, exaggeration, and fluctuation as expressions of lower-order cognitive abilities.

Two writers, Anthony (1956, 1957, 1958) and Voyat (1980, 1982, 1983) have dominated the theoretical applications of genetic psychology to understanding childhood schizophrenia. Anthony discussed various aspects of genetic psychology in terms of their relationship to aspects of clinical relevance. The first of these aspects was Piaget's theory of cognitive unconscious. Anthony focused upon the consequences of disturbances of normal functioning on

the structures of the cognitive unconscious. Piaget's concept of a cognitive unconscious allows for the advent of systems of errors taking the form of unconscious fixations or repressed intellectual complexes. Anthony suggested that an understanding of the effect of these processes on clinical phenomena would facilitate an understanding of psychopathology. For example, he suggested that the disturbances of reasoning of a learning disabled child could be understood in terms of repressed intellectual complexes and unconscious fixation. He ascribed the characteristics of the learning disabled child, such as pseudo retardation, magical thinking, syncretic thinking, and incapacity for generalization or abstraction to the structures of the cognitive unconscious.

Anthony (1956) also discussed the clinical aspects of a disturbance of affective development due to disequilibrium in the functions of assimilation and accommodation. He stated that in the case of disequilibrium of these functions, there will be clinical symptomatology, depending upon the direction of the disequilibrium. In the case of a primacy of assimilation, the clinical symptomatology will be an introversive tendency characterized by autism or egocentrism, fantasy and symbolic activity, and/or inability to differentiate between the self and the environment. In the case of a primacy of accommodation, the clinical symptomatology will show

excessive imitative behavior which can lead to a pseudopersonality with chameleon-like responses to the environment.

Anthony (1956, 1957) discussed the relationship between clinical phenomena and disturbances of the normal development of object permanence and space-time conception. He postulated that failure to develop object permanence characterizes the psychotic child. Space remains single and unchanged and time becomes tied to the moment of experience. He also postulated that children who develop psychotic processes have regressed to this objectless stage of the Sensorimotor Stage.

Anthony (1956, 1957, 1958) related disturbances in specific cognitive processes or cognitive stages to specific clinical symptomatology and diagnosis. Egocentrism is a characteristic of the PreOperational Stage of cognitive development. At this stage of development, egocentrism is characterized by a need for justification and by syncretic reasoning. Anthony compared PreOperational Stage egocentrism to the "imaginary reasoning" of the paranoid psychotic. He suggested that these symptoms are the result of a perseverance of the egocentrism of the PreOperational Stage. He described paranoid phobias in children as the result of a perseverance of the PreOperational Stage cognitive processes of immanent justice. Anthony utilized Piaget's theory of moral development to understand the dynamics of delinquency. Piaget postulated that moral

development during the PreOperational Stage is characterized by an external and authoritarian censoring element. As cognitive growth continues, morality becomes internal and autonomous. Anthony suggested that a fixation of moral development at the PreOperational Stage results in delinquency.

Piaget defined the PreOperational Stage as characterized by animism, realism, and artificialism. The stage is pre-social, pre-causal, and pre-logical. Anthony suggested that disturbances of cognitive development at this stage are seen in children diagnosed as: sensory deprived (autistic), phobic, and/or psychotic. Cognitive growth during the PreOperational Stage is characterized by a decreasing of egocentrism as a function of socialization. Anthony suggested that disturbances in this process can cause a child to become asocial or regressed.

Ertel & Voyat (1982) and Voyat (1980, 1983) expanded upon the theoretical synthesis of genetic psychology and childhood psychosis begun by Anthony and others. Voyat directly applied Piaget's theories of affective and cognitive development to understanding the dynamics of childhood psychosis.

The first point that Voyat (1980, 1983) made and tested in his research was Piaget's statement of the interrelationship between affective and cognitive development. He stressed Piaget's supposition that affect has a functional relationship to cognition,

not a structural relationship. The affective experience of the childhood schizophrenic can modify the conditions of existence and the manner in which cognition is manifested. Affect influences behavior but cannot modify the internal structures of cognition.

Voyat, like Anthony, utilized the concepts of the Sensorimotor Stage to understand the dynamics of the psychoanalytic theory of children's early development. He discussed the parallel and interdependent development of the Sensorimotor Stage developments such as object permanence and the psychosexual stage developments such as object concepts.

Like Anthony, he discussed the relationship between disequilibrium of the functions of assimilation and accommodation and psychopathology. Any imbalance in these functions causes cognitive disequilibrium that produces a disorganization of thought processes and other symptoms of childhood psychosis. Voyat utilized five criteria of Piaget's theory to understand the process by which disequilibrium occurs in the schizophrenic child. The five criteria that delimit cognitive development are: invariant sequence, cognitive structure, integration, consolidation, and equilibration. Voyat stated that in the schizophrenic child, affective and/or unconscious elements lead to a distortion of the assimilation function and distort these five characteristics of cognitive development.

In a joint essay, Ertel & Voyat (1982) attempted to draw a parallel between the cognitive processes that characterize the Sensorimotor Stage and the psychotic child's behavior and thought processes. In the PreOperational Stage, the normal child develops an internalized coordination of actions and is no longer dependent upon action as s/he is during the Sensorimotor Stage. Ertel and Voyat stated that the schizophrenic child demonstrates a reliance on action. The symptomatology of the schizophrenic child demonstrates a deficiency in the development of the internalized coordination of action that is the precursor of the representative thought of the PreOperational Stage. In other, nonsymptomatic areas of behavior, such as language, art activities, etc., the schizophrenic child may show the representative abilities typical of his/her expected cognitive stage.

Voyat concluded that the cognitive development of the schizophrenic child shows an atypical developmental pattern. Contrary to normal development that passes through ontogenetic stages, the schizophrenic child's development simultaneously reflects regression to the lowest stages of development, fixation at transitional stages, lower mean cognitive stage functioning, and a pseudo-maturity in that the child develops at higher levels while previous stages have not been completely mastered.

French & Steward (1975), Sandler (1975), Santilli & Meacham (1982), Silverman (1971), Tenzor (1983), and Weiner (1975) addressed a variety of issues pertaining to the relationship between cognitive development and psychopathology.

French & Steward (1975) developed a model for behavior that attempts to unify psychoanalytic, Piagetian, and psychophysical theories of behavior. They made two assumptions: 1) all behavior consists of two types of maneuvers, assimilation and accommodation; and 2) affect is a group of qualitatively specific signals about the survival value of a particular behavior. They defined a system of interactions of these assumptions that explain behavior. Different combinations of the concepts of these assumptions result in all levels of behavior from adaptive to clinical states such as anxiety and depression.

Sandler (1975) described unconscious processes in terms of Piagetian concepts. She stated that an organized unconscious continues to function in later ages, according to childhood laws of cognition and perception. Unconscious affective schemata formed during the pre-causal and pre-logical period of the PreOperational Stage became organized modes of functioning. These schemata can persevere through later stages of cognitive development. Psychopathology can result at these later stages if these unconscious schemata are applied to new information or experience.

Santilli and Meacham focused upon the relationship between social and personality development and the structures of the Formal Operations Stage. Santilli and Meacham discussed the relationship between affectivity and decarlage of Formal Operations cognitive processes. Decarlage refers to the generalization of cognitive processes across various environmental situations. According to Piaget, if interest (affectivity) is not present for a domain(s) of behavior, then the child will not behave in that domain(s) with Formal Operations Stage cognitive processes. During the stage of Formal Operations, the child is developing in such domains as: identity issues, perspective talking, social relations, self-concept, and moral judgment and action. Disturbances in affectivity such as are commonly present in emotionally disturbed children can hinder development of these domains. If the symptomatology of the child precludes interest being directed to some or all of these demains of behavior, then Formal Operations Stage cognitive processes will not be used. Without application of these cognitive processes, the child's development in these domains of behavior will be seriously hindered.

Silverman (1971) related Piaget's theories to understanding the psychoanalytic concept of resistance in therapy. He described resistance as an expression of a cognitive regression to more primitive stages of cognitive processes. He stated that this cognitive regression can be ego-syntonic or dystonic.

Tenzor (1983) compared the psychoanalytic concept of insight to Piaget's concept of "The grasp of consciousness." Piaget defined his concept as an active process that illuminates what is outside of awareness. Piaget described this process as facilitating elaboration and reconstruction of schemata that are at different levels of consciousness. Tenzor described insight in therapy as operating according to the same principles. He called for utilizing an understanding of cognitive development to facilitate therapy. He stated that the stages of insight in therapy are reflections of Piaget's stages of cognitive development. Each progressive stage of working through insight is paralleled by a progressive stage of cognitive development. Weiner (1975), similarly, discussed the need to use Piaget's concept of a cognitive unconscious to understand therapy processes. He described how the patient, by becoming aware of how his/her cognitive processes operate, can transfer these cognitive processes to resolving emotional conflicts.

Chandler (1973), Elkind (1967), Feffer (1967, 1970), and Looft (1971) discussed the relationship between Piaget's concepts of egocentrism and psychopathology. Egocentrism is a general concept related to the ability of taking another's perspective and being able to separate that perspective from one's own. Each stage of cognitive development is characterized by a particular stage in the development

of this ability. The above writers have studied the relationship of different aspects and/or stages of egocentrism to psychopathology.

Feffer (1967, 1970) discussed the relationship between the characteristics of egocentrism at the Sensorimotor and PreOperational Stages and schizophrenia. During these stages of cognitive development, the process of decentering is crucial to the progression of egocentrism. Feffer stated that the symptom expression of the schizophrenic can be understood as an expression of decentering. Schizophrenic thought processes are characterized by an inordinate emphasis upon specific perceptual aspects to the exclusion of general principles; by an over-inclusiveness that ignores specific perceptual aspects; and by an abrupt, discontinuous jump from one association to another. Feffer stated that these thought processes are the same as those seen in children at the early cognitive stages. Feffer also analyzed the interpersonal aspects of symptomatic behavior in relation to primitive levels of decentering. He stated that the essential characteristics of symptomatic interpersonal behaviors--isolation, exaggeration, and fluctuation--are expressions of the development of lower-order cognitive stages. They are expressions of the effect of the primitive level of decentering on interpersonal behavior.

Chandler (1973), Elkind (1967), and Looft (1971) discussed the relationship between social relationships and the characteristics of egocentrism during the Formal Operations Stage. During the Formal

Operations Stage, the child develops two major abilities: the ability to think about his/her own thinking and the ability to reflect upon possibilities as well as actualities. These abilities are instrumental in development of the egocentrism of the Formal Operations Stage. The egocentrism of this stage is characterized by the child becoming capable of conceptualizing his/her thoughts and the thoughts of others. The egocentrism is reflected in the objects of his/her own thought. The child believes that others are preoccupied with his/her behavior and appearance.

Elkind (1967) categorized the egocentrism of the Formal Operations Stage into two manifestations: the imaginary audience and the personal fable. The imaginary audience is expressed in social situations. The child anticipates that others react to him/her according to his/her own self-concept. The self-consciousness developing from this form of egocentrism can be reflected in symptoms of withdrawal, reluctance to reveal oneself, and feelings of shame. The second form of egocentrism, the personal fable, is the result of an overdifferentiation of self-perception and feelings to the extent of considering oneself special and unique. The personal fable can be experienced in symptomatic behavior as social isolation or omnipotence. Elkind, Chandler, and, to a lesser extent, Looft have suggested that a better understanding of the emotional disorders of adolescents can be gained from an understanding of the nature of

Formal Operations Stage egocentrism. The egocentrism of this stage is overcome by social interaction. Through the process of socialization and intimacy, the preoccupation with self is overcome. Chandler and Elkind drew a direct parallel between disruptions in development and social deviations and antisocial behavior. At any point in the child's Formal Operations Stage development, a disruption in the socialization processes can result in symptomatic behavior.

Experimental Studies

The previous sections of this literature review have discussed different aspects of the relationship between affective development and cognitive development. First to be discussed was Piaget's theory of the relationship between affective and cognitive development. Next to be discussed were the various attempts made to relate Piaget's theories of affective and cognitive development to psychoanalytic theories of affective development. Last to be discussed were attempts to develop theoretical understanding of psychopathology through Piaget's genetic psychology. The current section will discuss the attempts that have been made to experimentally test the relationship between affective and cognitive development. Emphasis will be upon the attempts to test the relationship between Piaget's genetic psychology and psychopathology.

Miao (1979), Selman (1971), and Wulach (1977) studied the relationship between affective and cognitive development in normal

children. Wulach studied the relationship between the psychoanalytic concepts of development from primary process thinking to secondary process thinking and Piaget's concept of cognitive development from the PreOperational Stage to the Concrete Operations Stage. Wulach hypothesized that as the child develops into the Concrete Operations Stage, there is a corresponding development of secondary process thinking. He hypothesized that primary process ideation would demonstrate more socialized and logical experiences, and libidinal and aggressive wishes would become more integrated and differentiated.

Wulach tested a group of children between the ages of five and eight years. Each child was given a series of Piagetian tasks and a Rorschach. The former was used to measure the cognitive stage and the latter to measure primary and secondary process thinking. Wulach's results supported his hypothesis of parallel development of the Concrete Operations Stage and secondary process thinking. He found that as the child's cognitive development proceeded, secondary process thinking demonstrated more adaptive control of the affective domain. He theorized that the development of the Concrete Operations Stage is accompanied by the preponderance of the accommodation function over the assimilation function. He theorized that the parallel development in the child's affective development is the preponderance of the ego over the id.

Miao (1979) studied the relationship between affective and cognitive development in elementary school children in Taiwan. Each child was tested on measures of affective and cognitive development. The cognitive development measures were Piagetian tasks that measured level of development on ten cognitive abilities. The affective development measures of social and emotional adjustment were a teacher's rated conduct rating and school achievement scores. Miao found that low scores on the affective measures were significantly related to lower cognitive development. She found that the conservation of substance and the class inclusion tasks were highly related to affective development. Miao concluded that the children's cognitive development and affective development were significantly related to each other.

Selman (1971) studied the relationship between cognitive development and moral development in children who were eight to ten years old. He hypothesized a relationship between role-taking ability (egocentrism) and moral reasoning. He hypothesized that the development from PreOperational Stage egocentrism to Concrete Operations Stage egocentrism was a necessary precondition for the development of higher levels of moral judgment. Each child was administered two role-taking tasks (measures of egocentrism), the Kohlberg Moral Judgement Scale and the Peabody Picture Vocabulary Test. He found that the development of the egocentrism of the

Concrete Operations Stage was necessary for the development of the conventional level of moral reasoning.

In the previous sections, various possible relationships were postulated between cognitive development and psychopathology. Writers such as Anthony (1956, 1957, 1958), Bettelheim (1967), and Voyat (1980, 1982) postulated a further understanding of childhood autism and/or childhood schizophrenia by an analysis of symptomatology according to the theories of genetic psychology. In the following sections, an attempt will be made to elucidate the research findings of these writers who have attempted to understand childhood autism and/or schizophrenia in terms of the theories of genetic psychology.

Anthony (1958), Decarie (1965), and Gratton (1971) studied the relationship between cognitive development in the first two years of life and childhood schizophrenia. They each studied a postulated relationship between the development of the cognitive ability of object permanence and the psychoanalytic concept of object relations. Childhood schizophrenia is characterized by impaired object relations. They hypothesized that childhood schizophrenics would also demonstrate impaired object permanence.

Decarie (1965) attempted to establish a chronological parallel between the developmental stages of object relations and the developmental stages of object permanence. She tested children

between the ages of three months and twenty months who were divided into three groups. Group A consisted of childrn who were living with their parents. Group B consisted of children who were living in foster homes and were awaiting adoption. Group C consisted of children who were living in institutions. Decarie corroborated Piaget's postulated invariant sequence for the development stages of object permanence. She found that for fifty percent of the children there was a general parallel development of the stages of object permanence and object relations. The children living in institutions (Group C) were found to have greater variability in the relations and, overall, poorer levels of object relations.

Gratton (1971) attempted to demonstrate that psychotic development in the first two years of life correlated with a failure to develop object permanence. He hypothesized that the characteristic impaired object relations and oral fixations of childhood schizophrenia are paralleled by an arrest of cognitive development at the corresponding level of the Sensorimotor Stage. He found that an autistic development in the first two years of life is paralleled by impaired cognitive development of the object concept and adherence to the abilities of the Sensorimotor Stage of cognition.

Anthony (1958) used a quasi-Piagetian framework to study the object concept of psychotic children. He developed a scale for measuring absent, incomplete, and complete object concepts based upon

Piaget's theory of object permanence. He divided his subjects into two groups, primary and secondary childhood psychoses. In the primary group, the child does not develop from the normal autistic phase of childhood. The secondary group consists of children who had appeared to be progressing according to normal development and then regressed to a state of autistic withdrawal. Anthony found that when he analyzed the two groups as a whole, object concepts developed cognitively (not cathectually) in a manner similar to normal development. When he analyzed the groups separately, the correlation between the cognitive development of object concept and normal development was higher for the primary group (r=.64) than it was for the secondary group (r=.19). Anthony interpreted the object concept development in the secondary group as showing disorganization in its cognitive development.

Anthony (1958), Decarie (1965), and Gratton (1971) studied the relationship between the cognitive development of object permanence and the affective development of object relations in autistic and schizophrenic children. Their results indicated an interdependent relationship in the development of object permanence and object relations.

Anthony (1958), Despert (1968), Halpern (1966), Lerner, Bie & Lehrer (1972), and Mook (1972) studied the relationship between other aspects of cognitive development and other aspects of the

symptomatology of childhood schizophrenia and/or autism. Despert analyzed and compared the thinking processes of normal preschoolers (age 2 to 5 years) and psychotic children (age 7 to 14 years). Despert analyzed the thinking processes as evidenced by spontaneous verbal statements of the children. She stated that her analysis of the thinking processes of the psychotic children was not comparable to the thinking processes of the preschool children. She stated that similarities between the two groups were dependent upon emotional factors.

Anthony (1958) compared the cognitive ability of egocentrism in a group of 8- to 12-year-old psychotic children and 8- to 12-year-old neurotic children. The groups were matched for age and I.Q., and each child was asked to perform a measure of egocentrism, i.e., Piaget's task, "The Test of Three Mountains." Anthony found a marked difference between the two groups' level of development of egocentrism. The psychotic children scored at a markedly lower level of development of egocentrism than did the neurotic children.

Lerner, Bie & Lehrer (1972) studied patients between the ages of 15 and 23 years who were hospitalized for severe emotional problems. They tested 30 patients who were diagnosed as either chronic psychotic, acute psychotic in partial or total remission, or borderline psychotic. Each patient was given standard intelligence tests. The patients' intelligence quotients ranged between 50 and

118. Each patient was asked to perform a series of Piagetian conservation tasks. They found that patients whose intelligence quotient was below 80 failed to perform the conservation tasks at the level of the Concrete Operations Stage. Of the patients of average intelligence, almost fifty percent were functioning at the PreOperational Stage on the conservation tasks. Furthermore, they found that for some patients, the ability to utilize their abilities was susceptible to psychotic regression.

Halpern's (1966) study was a longitudinal case history of a schizophrenic boy. She studied the boy's cognitive development over a ten-year period from the time he was five years old until he was about fifteen years old. She studied his cognitive development with a series of Piagetian tasks and standard intelligence tests. The Piagetian tasks were tests of physical causality developed by Laurendreau & Pinard (1962). She utilized three questionnaires measuring physical causality, the concept of dream, the concept of life, and the concept of the origin of night. She administered these questionnaires twice, when the child was fourteen years old and when he was about fifteen years old. According to Piagetian theory, most children at these ages would be performing at the Formal Operations Stage. Halpern found that for both administrations of the Piagetian tasks, the schizophrenic boy functioned at the Concrete Operations Stage on the concept of dream and the origin of night questionnaires.

On the concept of life questionnaire, he demonstrated precausal, animistic thought characteristic of the PreOperational Stage of cognitive development.

Mook (1972) performed a comparative study on the causal thought of schizophrenic and normal children. She divided her subjects into three groups that were matched for intelligence. The three groups were: twenty schizophrenic children between the ages of eight and ten years, forty-five normal children between the ages of eight and ten years, and twenty normal six-year-old children. Each child completed five questionnaires developed by Laurendreau & Pinard (1962) to measure five aspects of Piaget's theory of precausality development.

Mook made numerous interpretations based on her results. She stated that the causal thought of the schizophrenic children was more comparable to that of the six-year-old normal children than to that of normal children of their own age. The schizophrenic children's cognitive development was delayed at the level of the PreOperational Stage. The schizophrenic children also demonstrated more variability across stage levels than either group of normal children. The modes of precausality used and the overall patterns of precausality developed were different in the schizophrenic children from those in either group of normal children.

Mook concluded that her results demonstrated an organizational disorder in schizophrenic children's cognitive development. She

stated that this disorder was characterized by an imbalance of the functions of assimilation accommodation. When the assimilatory function predominates, the child's precausal thought is characterized by animism, dynamism, and artificialism. When the accommodatory function predominates, the child's precausal thought is determined by the immediate perceptual aspects of the given situation. Mook concluded that:

> From a structural point of view it can be said that the schizophrenic children showed atypical development patterns or they did not progress normally through the ontogenetic stages. Their development can be conceived of as simultaneously reflecting regression to the lowest levels, fixation at some transitional stages, retardation in terms of lower mean stage level functioning, and prematurity in the sense that they proceeded to higher levels while previous stages had not been adequately mastered.... The schizophrenic children failed to achieve structural integration at any stage level of causal thought development. (P. 58)

Voyat (1980, 1982) and his collaborators and students researched numerous aspects of the interplay between cognitive and affective development in schizophrenic children. In all these studies, attempts were made to understand the etiology and symptomatology of childhood schizophrenia by using Piaget's theories of cognitive development and his theories of the interaction of cognitive and affective development.

Voyat's earliest research consisted of case history analyses of childhood schizophrenics' performance on Piagetian tasks of cognition.

In each case history, he would give the child a series of Piagetian tasks. One of his case histories was that of an eight-year-old male borderline schizophrenic (Joshua). The first task that he gave to Joshua was a task measuring transformation of volume. Joshua's development in this ability was substantially advanced. On the next task, class inclusion, he also performed above age norms. When the materials of the task involved moving and living objects, Joshua began to avoid performing the task. Joshua was then given a series of one-to-one correspondence tasks. As the materials of the series of these tasks became more idiosyncratic to Joshua's emotional conflicts, task responses became more egocentric and finally resulted in a refusal to perform a task that he had earlier demonstrated a capacity to perform. Voyat concluded that the more abstract and the less personalized the content of the tasks, the better Joshua performed. When he was challenged, he could utilize his full range of cognitive ability unless he felt threatened by the materials, or in his beliefs, or by the social interaction. When he felt threatened, a system of successive hierarchical defenses would be elicited that successively regressed to lower levels of cognitive development.

On the basis of the results of Joshua's and other case histories, Voyat postulated a number of experimental hypotheses of the relationship of cognition to psychopathology. Voyat postulated that schizophrenic children's cognitive development would be characterized

by large degrees of vertical and horizontal heterogeneity. Vertical heterogeneity referred to the degree of range of cognitive abilities across developmental stages. Voyat stated that the vertical heterogeneity of schizophrenic children is dissimilar to that of normal children. In normal cognitive development there is an invariant sequence of building one cognitive ability upon the foundation of previous development. The cognitive development of schizophrenic children does not demonstrate this invariant sequence. Instead, the child may demonstrate the capacity for a cognitive ability without demonstrating the capacity for earlier abilities. Horizontal heterogeneity refers to the generalization of cognitive abilities within the child's cognitive stage. Voyat postulated that the child's emotional conflicts (elicited by evocative materials) that result in the regression of one cognitive ability would evoke a decline in operativity of other cognitive processes within the child's cognitive stage of development.

McLaughlin (1977) attempted to study Voyat's experimental hypotheses. McLaughlin had eleven psychotic children perform Piagetian tasks measuring one-to-one correspondence and class inclusion. The materials for the tasks consisted of self-selected emotionally evocative material. McLaughlin found a significant correlation between the achievement of the cognitive ability of one-to-one correspondence and the ability to answer simple reality

questions. Voyat's hypotheses of the effect of childhood schizophrenia on vertical heterogeneity was substantiated. The invariant sequence of cognitive development was not found in schizophrenic children. There was a cognitive disequilibrium not present in normal cognitive development.

Shackelford (1977), under the aegis of Voyat, attempted to expand on McLaughlin's findings. Shackelford studied ten male children at a psychiatric hospital. They were all between the ages of eight and ten years, were of average intelligence, and were all diagnosed as schizophrenic. Each child was tested on five Piagetian tasks: one-to-one correspondence, seriation, conservation of matter, conservation of length, and class inclusion. Shackelford assumed on the basis of Piaget's theory that most normal children of this age would be functioning on the tasks at the level of the Concrete Operations Stage and that these tasks would follow an invariant sequence of development. Shackelford found that only twenty percent of the schizophrenic children were performing at the Concrete Operations Stage. Fifty percent of the schizophrenic children were performing at the transitional stage between the PreOperational and Concrete Operational stages, and thirty percent of the schizophrenic children were performing at the PreOperational Stage. Shackelford also found that schizophrenic children do not develop their abilities according to the invariant sequence postulated by Piaget.

Oram (1978), under the aegis of Voyat, used a different methodology to study the relationship between childhood schizophrenia and cognitive development. Oram hypothesized that cognitive difficulties of schizophrenic children would be reflected in their Rorschach protocols. She tested fourteen children who were patients at a residential treatment center. They were all diagnosed as schizophrenic and were between the ages of eight and twelve years. Each child was tested on the five Piagetian tasks used by Shackelford and was given a Rorschach test which was scored for primary process thinking. Oram's results supported Shackelford's findings of delayed cognitive stage development and disturbed invariant sequence of development. The achievement of one-to-one correspondence and class inclusion was found to be related to high amounts of defense effectiveness and adaptive regression on the Rorschach. Egocentric thinking in the cognitive tasks was related to low defense effectiveness on the Rorschach. Oram hypothesized that the distortions she found in schizophrenic children's cognitive development were responsible for the lability of affective and cognitive functioning in schizophrenic children.

Ertel & Voyat (1982) attempted to study the etiology of the deviant cognitive development of schizophrenic children. Previous studies indicated that there is a cognitive disequilibrium in schizophrenic children at the PreOperational Stage and/or the Concrete

Operations Stage. They attempted to determine whether the cognitive equilibrium is a sudden event or whether it is part of a disrupted developmental process that began at the earliest stages of development. Ertel and Voyat hypothesized that the latter explanation was correct. They hypothesized that the basic mechanisms of cognition are impaired during the Sensorimotor Stage.

Ertel and Voyat tested their hypothesis on fifteen child patients at a center for autism. The children were all between the ages of four and eight years. They were divided into two groups: ten children diagnosed as psychotic and five children diagnosed as borderline. Each child was tested with Piagetian-derived tasks of five abilities developed during the Sensorimotor Stage. Four experimental hypotheses were made: 1) both groups would show delayed cognitive development, 2) children diagnosed as borderline would perform at a higher cognitive level than the psychotic children, 3) in contrast to children who develop normally, performance levels of the psychotic child on each ability would not be interrelated, and 4) scales requiring the most interpersonal contact with the experimenter would yield the lowest levels of performance. Ertel and Voyat's results supported each experimental hypothesis. They interpreted their results as supportive of a structural disruption of normal cognitive growth. They hypothesized that the structural organization of the psychotic child is characterized by an increased accessibility to assimilation rather

than accommodation. They stated that as the psychotic child's thought is directed toward increasingly novel and/or animated objects, he/she can not adapt through successive accommodations. Instead, the child continues to attempt to adapt with the assimilatory function. The result is a disruption of the balance between the assimilatory and the accommodatory functions. Chaos and confusion result, and there is a regression to more primitive cognition.

Voyat (1982) summarized the findings of his research and that of his collaborators and students to arrive at the following conclusions about the cognitive development of schizophrenic children:

1) There is an absence of reasoning by operatory reversibility. Logical necessity is not developed and/or used.
2) There are discrepancies between modes of operating. The child may demonstrate the achievement of an ability by action and in abstraction but describes it verbally using verbal processes of an earlier developmental stage.
3) Justification used to explain a given situation doesn't imply the utilization of transformational cues within the object. Instead, justifications reflect the actions done by the child or the experimenter. The child uses four different types

of justifications: intelligence as justification, suspicious responses, "concrete" responses, and/or emotional responses.

4) Psychotic children's cognitive development is delayed and does not develop according to invariant sequences. Development of one cognitive ability is independent of the development of any other ability.

5) There is a lack of generalization of abilities to other situations.

6) Psychotic children utilize associative thought instead of deductive thought processes. There are no operational links between different aspects of one action.

7) There is a preponderance of egocentrism in the child's justifications. The preponderance of egocentrism increases as the affectivity of the situation increases.

Several researchers have attempted to study the dynamics and symptoms of less severe psychopathology in terms of Piaget's theories of cognitive development. The subjects in these studies were classified as emotionally disturbed children. This classification excluded children who were diagnosed as schizophrenic.

Gambini (1973) compared the cognitive development of emotionally disturbed and normal boys in a public school. Each group ranged from eight to eleven years old and was matched for gender, race, age, intelligence quotient, and school grade. Each child was given a series of Piagetian tasks from the Freyberg Concept Development Test. She found significant differences between the performances of the two groups. The cognitive stage of the emotionally disturbed children was delayed compared to that of a normal group. The emotionally disturbed children performed at the PreOperational Stage in conservation of quantity, numerical equivalence, conservation of mass, additive composition, causal science relationship, and ordination.

Goldschmid (1968) studied the relationship between Piaget's concept of conservation and affective and environmental factors. He tested three groups of children on ten Piagetian tasks of conservation. The groups consisted of public school children (average age 87.35 months), private school children (average age of 82.16 months), and children from a school for emotionally disturbed children (average age 109.05 months). Goldschmid's measures of affective and environmental factors were the Children's Manifest Anxiety Scale, actual and ideal self-ratings, teachers' ratings, sociometric choice, the parental attitude survey, and I.Q. scores. Goldschmid found that conservation scores were not related to anxiety as measured by the Children's Manifest Anxiety Scale. Children who scored lower on

conservation tasks were more reluctant to admit anxiety. Positive teachers' ratings were related to high conservation scores.

Howell (1972) compared emotionally disturbed children and normal children on a Piagetian-derived test of classification ability and on the Wechsler Intelligence Scale for Children-Revised (WISC-R). He found that the normal children performed higher than the emotionally disturbed children on the WISC-R and the classification tasks. Howell found that cognitive growth as measured by the classification task increased with age for the normal children but did not for the emotionally disturbed children.

Chandler (1973) and Neale (1966) studied the relationship between Piaget's concept of egocentrism and various aspects of emotional disturbances in children. Chandler studied the relationship in children between egocentrism in social situations and antisocial behavior. He attempted to demonstrate the role of persistent social egocentrism in the development and maintenance of chronic antisocial behavior. He compared the development of one aspect of egocentrism-role-taking ability in a group of delinquent and a group of non-delinquent children between the ages of eleven and thirteen years. Each child performed the Peabody Picture Vocabulary Test (PPVT) and a task measuring role-taking ability. Chandler found that the delinquent children were markedly deficient in role-taking ability in comparison to the non-delinquent children. The delinquent children

showed marked deficits in the ability to differentiate their point of view from that of others and frequently attributed to others information known only to themselves. He stated that the level of role-taking ability in delinquent children was comparable to the level of role-taking ability found in normal children half the age of these delinquent children (Chandler, 1971). Comparison between the group's role-taking ability with intelligence quotient controlled continued to demonstrate a significant deficit in the delinquent children compared to the non-delinquent children.

Neale (1966) based his study on Piaget's theory that the socialization process is an important factor in the decrease of PreOperational Stage egocentrism. He hypothesized that because of the common symptom of poor socialization in emotionally disturbed children, these children would show higher levels of egocentrism than normal children. He compared a group of emotionally disturbed children and a group of normal children between the ages of eight and eleven years. The groups were matched for mental age, I.Q., and gender. Each child performed a Piagetian task measuring egocentrism called the Three Mountain Test. Neale found that emotionally disturbed children were significantly more egocentric than the normal children. Further, he found that there was no correlation between age and egocentrism in the emotionally disturbed children. Neale concluded that in emotionally disturbed children, emotional

disturbance overrides the normal developmental trend of decreasing egocentrism as age increases.

While there have been relatively few studies relating Piaget's theories of cognitive development to emotional disturbances in children, the results have been remarkably similar to those found for psychotic and/or autistic children. In all these studies, regardless of diagnosis, when the cognitive development of emotionally disturbed children was compared to that of normal children, the former's cognitive development was different from normal cognitive development in some manner. When the children were matched in age, race, I.Q., and social economic status, the results remained the same. Whatever the theoretical explanation, children with emotional disturbances have as part of their emotional disturbance a cognitive disturbance of some sort. What has been minimally, if at all, addressed is whether these delays and distortions in cognitive development are an indication of the operation of a cognitive defense mechanism responding to affectively charged situations. These studies have not differentiated between the emotionally disturbed child's reaction to tasks eliciting his/her emotional conflicts and the emotionally disturbed child's reaction to tasks that do not elicit his/her emotional conflicts.

There have been some researchers who postulated theoretical explanations for the cognitive disturbances in emotionally disturbed children. There have been even fewer researchers who attempted to

study the theoretical explanations for the cognitive disturbances in emotionally disturbed children. These theoretical explanations have fallen into two major categories, either a delay in cognitive development or a regression of the cognitive stage. In the following section, the few attempts that have been made to study the mechanisms of the cognitive disturbances in emotionally disturbed children will be discussed.

Lowenherz & Feffer (1969) attempted to study the effect of defensively isolated aspects of self-structure on cognitive performance. They based their study on a projective role-taking test (RTT) that they developed and tested empirically in previous studies. In the RTT, the subject was first asked to tell a standard story to a picture from the Thematic Apperception Test (TAT). Then the subject had to retell this story from the perspective of each of the figures in his/her story. They utilized the RTT as a measure of the subject's level of decentering. This is an important mechanism of cognitive growth. It is a mechanism by which cognitive abilities differentiate into more advanced abilities. In previous studies, the RTT was found to be associated with decentering activities in the cognitive abilities of conservation and part-whole tasks (Feffer & Gourevitch, 1960) and with the effectiveness of social interaction (Feffer & Suchotliff, 1966).

Lowenherz & Feffer (1969) used the projective nature of the TAT to determine defensively isolated aspects of each subject's self-structure. A group of female college sophomores was given the TAT. For each subject a set of defensively isolated aspects and a set of non-defensively isolated aspects of self-structure was determined. Then each subject was asked to retell her TAT stories from the perspective of each of her story figures. The researchers hypothesized that when the story figures represented defensively isolated aspects of the subject, the story told about that figure would demonstrate a failure to coordinate perspectives. They further hypothesized that when the story figure represented non-defensively isolated aspects of the subject, the story told about that figure would demonstrate an ability to coordinate perspectives. Their results supported these hypotheses. They interpreted their results as demonstrating the effect of dynamic defensive factors on cognitive development. They concluded that decentering ability is central to the formation of conservation in both impersonal and interpersonal aspects of cognitive development. They stated that defensive isolation and affective conflicts may prevent the development of conservation in certain role relationships.

Lowenherz & Feffer's (1969) study yielded some promising results, but there are some difficulties with their interpretation and the results. They interpreted their results as indicating that

dynamic defensive factors can prevent cognitive development in certain situations. These results can be interpreted differently. The subjects' ability to demonstrate higher-order cognitive abilities in their stories about figures that did not represent defensively isolated objects suggests that cognitive development was not prevented. Furthermore, Piaget's theory of cognitive development argues against situation-specific cognitive development. An alternative hypothesis that fits the results is that the subjects' performance demonstrated the operation of cognitive stage regression in response to emotional conflicts.

Dudek (1972), Dudek & Dyer (1972), and Wedin (1977) postulated a different mechanism to explain the cognitive disturbances in emotionally disturbed children. Instead of a situation-specific prevention of cognitive development, as theorized by Lowenherz & Feffer (1969), they postulated a mechanism of cognitive regression. Wedin reviewed the literature and found Piagetian theorists in disagreement as to the possibility of cognitive stage regression under psychological stress. He studied the interaction of experimental stress and neuroticism on children's cognitive processes. He hypothesized that cognitive stage regression would occur following experimental stress. He tested a group of nine-to-eleven-year-old children from an urban school system. Each child completed the Neuroticism Scale of the Junior Dysenck Personality Inventory. The

children were divided into an experimental group and a control group. Each group performed a pretest and a post-test. The pretest consisted of Piagetian measures of: physical conservation, visual perception taking, recursive thinking, social perspective taking, and three performance scales of the Wechsler Intelligence Scale for Children - Revised (WISC-R). The experimental stress was a memory test designed to produce failure. After the experimental group performed the memory test, each group performed the Piagetian tasks. The results did not support the experimental hypothesis. There was no cognitive stage regression as a result of experimental stress. The children in both groups performed better on the post-test than on the pretest. Wedin hypothesized that cognitive regression might have occurred on the pretest due to high initial stress.

Wedin (1977) attempted to demonstrate that cognitive stage regression would occur when children were placed under psychological stress. His study did not produce results supporting this hypothesis. Methodological problems appear to explain these results. First, there is a question as to whether his measure of applying psychological stress was itself stressful. Furthermore, there is a question about whether his psychological "stress" elicited the emotional conflicts of his subjects. The second problem is his measure of cognitive stage regression. It is questionable whether the impersonal and objective Piagetian tasks elicited the cognitive abilities that the children

utilized to cope with their emotional conflicts. The last methodological problem is that he did not use emotionally disturbed children as subjects.

Dudek (1972) and Dudek & Dyer (1972) attempted to study the concept of cognitive stage regression as it related to cognitive and affective variables. They used Piaget's theory as the basis of their definition of cognitive stage regression. According to Piagetian theory, normal cognitive stage development is a constant order of succession leading to structures of equilibrium. Cognitive stage regression is defined as the reversion to a more primitive stage after the achievement of equilibrated structures of a higher cognitive stage. Dudek and Dyer studied the occurrence of cognitive stage regression in sixty-five children from a public school kindergarten. Over a period of four years they studied children's development during the PreOperational and Concrete Operational Stages. The PreOperational Stage was divided into three stages (1, 2, 3) and each of these was divided into two or three substages (A, B, C). Each cognitive ability was defined in terms of its stage progression.

Each child was tested at yearly intervals, for three years, with a series of Piagetian tasks and affective and personality measures. A series of nine Piagetian tasks was selected from Laurendreau and Pinard's (1962) scale. The personality and affective measures were the Cattel Early School Personality Questionnaire (ESPQ) and the

Rorschach. The possibilities for cognitive regression were limited at the final testing at Grade III due to a decision not to give Piagetian tasks mastered in previous testing.

The results indicated that in the three-year period from kindergarten to Grade II, 122 cognitive stage regressions were found out of the 1170 Piagetian tasks administered. Twenty-five of these were regressions from substages of Stage 3 to more primitive substages of Stage 3. Thirty-nine of the regressions were from Stage 3 to Stage 2. Seventeen of the regressions were from substages of Stage 2 to more primitive substages of Stage 2. Thirty-two of the regressions were from Stage 2 to Stage 1. During the final task administration at Grade III, ten cognitive stage regressions were found out of the 229 Piagetian tasks administered. Seven of them were regressions from Stage 3 to Stage 2, and one regression was from Stage 3 to Stage 1.

In a second study, Dudek (1972) attempted to utilize the affective and personality measures to account for the finding that six percent of the children accounted for over fifty percent of the total cognitive stage regressions. Dudek hypothesized that children showing a high incidence of cognitive stage regressions would demonstrate different personality characteristics from children showing a low incidence of cognitive stage regressions. Dudek divided the children into groups according to whether they scored high or low on the Piagetian tasks. These two groups were analyzed in terms of their

Rorschach protocol, WISC-R scores, and ESPQ scores. The Rorschach protocols were divided into two categories, mature and immature, on the basis of form level, accuracy of detail of projected concepts, and presence of popular responses.

The results indicated that the children in the group that scored higher on the Piagetian tasks also obtained higher scores on several factors on the ESPQ. Their ESPQ scores were particularly higher on the following factors: intelligence, emotional maturity, superego controls, doubting versus certainty, and self-assurance. The children who had a high incidence of cognitive stage regression scored at a higher level of intellectual maturity (WISC-R scores, Piagetian tasks) than the children who had a low incidence of regression. The results showed a correlation between children in the high scoring group and a mature Rorschach protocol. A qualitative analysis was done on the Rorschach protocols of the children showing a high incidence of regression. They were found to utilize a concrete approach to the Rorschach in kindergarten and fragmentation in Grades I and II. Their performance was inconsistent and unpredictable. Their performance showed a cautious and hampered imagination as well as a highly loose, flexible, and often imaginative approach in the organization and content of confabulatory or combinatory responses. Dudek interpreted the results as indicating that these children regressed to lower levels of thinking in response to persistent conflict between the id

and the superego. He stated that there was a strengthening of obsessive compulsive defenses to the extent that emotional freedom and spontaneity was lost in these children.

The studies by Dudek (1972) and Dudek & Dyer (1972) yielded promising results, but there were some areas of difficulty. What these studies did not allow for was a comparison of the cognitive performance of emotionally disturbed children and normal children. Additionally, their methodology did not allow them to determine whether the cognitive stage regressions were operating as a defense mechanism in response to affectively charged situations.

The Present Study

The studies of the relationship between emotionally disturbed children's affective development and cognitive development, according to Piaget's theory, have yielded promising results. The present study attempted to demonstrate the influence that children's emotional disturbances have on the relationship between children's affective development and cognitive development. This study attempted to show that emotional disturbances in children influenced these children's cognitive performance. This study attempted to demonstrate that emotionally disturbed children utilized their cognitive abilities differentially, dependent upon whether they were acting on affectively charged situations that elicited their emotional conflicts or whether they were acting on non-affectively charged situations. The present

study predicted that when the emotionally disturbed child acted on affectively charged situations, s/he would utilize the cognitive defense mechanism of cognitive stage regression. It was predicted that this defense mechanism operated by causing the emotionally disturbed child's cognitive stage to regress to more primitive levels of cognitive development.

The present study attempted to study the influence of the child's emotional disturbance on the relationship between affective development and cognitive development while avoiding the methodological difficulties that have made past studies difficult to interpret. These difficulties have included:

1) The method for differentiating between the operation of cognitive stage regression and a delay in cognitive development.
2) The method for differentiating between emotionally disturbed children's reaction to tasks that elicit their emotional conflicts and emotionally disturbed children's reaction to tasks that do not elicit their emotional conflicts.
3) The method for eliciting the emotional conflicts of the emotionally disturbed child.

4) The method for eliciting and measuring the cognitive abilities that the child utilizes to cope with emotional conflicts.

5) The method for eliciting and measuring the cognitive abilities that the child utilizes to cope with tasks that do not elicit emotional conflicts.

6) The method for measuring cognitive stage regressions.

7) The method for selecting emotionally disturbed subjects.

The present study dealt with these methodological problems in the following manner:

First, the present study selected a group of emotionally disturbed children from an outpatient children's psychiatric clinic. These children were selected regardless of diagnosis, with one exception. Children diagnosed pervasive developmental disorder were not included in the subject group. A control group of children was selected who were not diagnosed as emotionally disturbed. The children in these two groups were matched for gender, age, and intelligence.

Second, the present study utilized a cognitive development theoretical framework with Piaget's theory of cognitive development as a model for cognitive development in children.[1]

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1 - While Piaget's theory forms the theoretical framework of this study, there are other theories of cognitive development and criticisms of Piaget.

Third, the child's Piagetian cognitive stage of development was determined by the Cognitive Abilities Scale (Green & Loomis, 1982). This scale enabled the experimenter to objectively determine the cognitive stage at which the child was functioning. This scale was assumed to measure the child's cognitive performance when s/he was acting on situations that were not affectively charged with the child's emotional conflicts. The scale consisted of six tasks that assessed a wide range of cognitive abilities. The scale has been utilized previously in a study by Green and Loomis (1982).

Fourth, the child was asked to complete the Children's Apperception Test or the Thematic Apperception Test (the test used depending upon his/her age). The present study assumed the validity of these projective tests for eliciting the child's emotional conflicts and for showing how the child operated on these conflicts.

Fifth, each child's projective responses were analyzed to determine which cognitive abilities the child utilized in coping with his/her emotional conflicts. Research reported earlier by Chandler (1973), Holt (1967), Lowenherz & Feffer (1965), Oram (1978), and Wulach (1977) demonstrated the feasibility of determining the cognitive abilities children utilized for acting on their emotional conflicts by analysis of their responses to projective tests. In the present study, the projective responses were rated for cognitive abilities with a method validated in previous research by Green and

Loomis (1982). This measure utilized a list of the cognitive abilities in Piaget's theory of cognitive development to determine the child's cognitive stage of functioning. (Refer to Appendixes A and B for a summary and the reliability coefficients of the reliability study in Green & Loomis, 1982.)

Sixth, the experimental group children were given a Neutral Pictures projective test or a control check on the assumption that the CAT and the TAT elicited the children's emotional conflicts. The Neutral Pictures projective test responses were rated for cognitive abilities by the Green and Loomis (1982) method. The CAT and the TAT were assumed to be valid as projective tests if the cognitive abilities rating of the children's performance on the CAT or TAT and Neutral Pictures was different.

Seventh, the two measures of the child's cognitive stage of development were assessed independently of each other. The judge was blind to the age and the name of the child.

Eighth, the present study operationally defined cognitive stage regression as follows. The child's optimal level of cognitive development was defined by his/her performance on the Cognitive Abilities Scale. The child's level for acting on his/her emotional conflicts was defined by the rating of the projective responses. Cognitive stage regression was determined to have occurred if the child's cognitive stage, determined by the analysis of the projective

responses, was lower than the child's cognitive stage determined by the Cognitive Abilities Scale.

Hypotheses

1) Given that projective tests elicit the child's emotional conflicts and show how s/he copes with these conflicts, the present study hypothesized that the analysis of the cognitive abilities used by emotionally disturbed children in their responses to the CAT or TAT would be significantly different from the analysis of the cognitive abilities that these children used in their responses to the Neutral Pictures.
2) Given that the Cognitive Abilities Scale measures the cognitive abilities the child utilizes to act on non-affectively charged situations, the present study hypothesized that the mean cognitive stage of the emotionally disturbed children and the normal children would not be significantly different.
3) Given that the emotionally disturbed and normal children were matched for age and gender, the present study hypothesized that the emotionally disturbed children would demonstrate significantly more cognitive stage regression than the normal children.

Chapter III

Method

Subjects

Thirty Caucasian male children participated in the present study. All children were from an industrial city in the Northeast. The children were divided into two groups of fifteen children matched for age, gender, and intelligence. They ranged in age from 7 years, 9 months to 13 years, 10 months. They ranged in intelligence from low average to superior intellectual functioning, according to the standard intelligence classification of the manual of the Wechsler Intelligence Scale for Children - Revised (1974).

The first group consisted of children with a DSM III diagnosis of mental disorder. Children in this group were currently receiving psychotherapy at an outpatient children's psychiatric clinic. The emotionally disturbed children were randomly selected from a sample of referrals from the clinic's professional staff. The children in this group were selected regardless of the diagnosis, with one exception: children with the diagnosis of Pervasive Developmental Disorder were not included in this study. The level of rapport needed for accurate evaluation of children with this diagnosis was not possible to achieve in this study. Dialogue with the referring therapists after selection of subjects indicated that they referred children they considered difficult treatment cases. See Table I for

Table I

Clinical Diagnoses of Emotionally Disturbed Children*

Subject Number	Diagnosis
15	Attention deficit disorder with hyperactivity
5	Avoidant disorder of childhood
2	Adjustment disorder with mixed disturbance of emotions and conduct
13	Conduct disorder, socialized, nonaggressive
11	Adjustment disorder with mixed disturbance of emotions and conduct
1	Adjustment disorder with mixed emotional features
9	Attention deficit disorder with hyperactivity
6	Adjustment disorder with disturbances of conduct
19	Overanxious disorder
17	Adjustment disorder with mixed disturbance of emotions and conduct
10	Conduct disorder, undersocialized, aggressive
12	Conduct disorder, socialized, nonaggressive
4	Oppositional disorder
3	Conduct disorder, undersocialized, nonaggressive
7	Conduct disorder, socialized, aggressive

* Diagnoses according to the Diagnostic and Statistical Manual of Mental Disorders (DSM III).

a listing of the diagnoses of the experimental group children. Diagnoses were made by the referring therapist according to the diagnostic rules of the DSM III.

The second group of fifteen children composed a control group. The control group consisted of children who were not currently receiving psychotherapy. The control group children were obtained from an elementary and junior high school system. The two groups were matched for intelligence by their performance on the Peabody Picture Vocabulary Test (PPVT). The PPVT produced a standard score and a confidence interval based on one standard error of measurement for each child. The confidence intervals for each control group child were matched to overlap with the confidence interval of an experimental group child. Concurrently, each control group child was matched for age to be within four months of age to the experimental group child he was matched to for intelligence. Children whose standard score on the PPVT classified them as below average intelligence (standard score less than 80) were excluded from this study. Refer to Table II for a table of the matched characteristics of the control group and the experimental group.

Materials

Intelligence Test

The Peabody Picture Vocabulary Test, Form L, (PPVT) was selected to measure the children's level of intelligence. The PPVT was

Table II

Subject Characteristics - Matched Pairs

Experimental Group				Control Group			
Subject Number	Age	PPVT Score (+15.0)	Intelligence Classification (WISC-R)	Subject Number	Age	PPVT Score (+15.0)	Intelligence Classification (WISC-R)
15	8-0	80-86-94	Low Average Average	21	7-9	86-93-100	Low Average Average
5	8-1	93-100-107	Average	38	7-11	106-116-120	Average High Average Superior
2	8-4	97-105-112	Average High Average	35	8-5	97-104-111	Average High Average
13	8-5	95-102-109	Average	33	8-7	106-114-120	Average High Average Superior
11	8-9	92-105-112	Average	32	8-8	92-99-106	Average High Average
1	9-1	99-106-113	Average High Average	34	9-5	102-109-116	Average High Average
9	9-4	90-96-103	Average	29	9-8	105-113-119	Average High Average
6	9-7	99-106-113	Average High Average	30	9-8	106-114-120	Average High Average Superior
19	9-8	110-120-124	High Average Superior	22	10-0	109-119-123	Average High Average Superior
17	9-9	98-105-112	Average High Average	28	10-2	105-113-119	Average High Average
10	10-3	79-85-93	Low Average Average	20	10-6	78-86-94	Low Average Average
12	12-2	77-81-91	Low Average Average	24	11-11	90-107-104	Average
4	12-10	91-98-105	Average	37	13-1	105-113-119	Average High Average
3	12-11	81-87-95	Low Average Average	23	12-11	97-104-111	Average High Average
7	13-9	93-100-107	Average	27	13-10	102-109-116	Average High Average

administered according to the instructions of the test manual. The PPVT is a test for children's intelligence that has significant correlation (r=.62 and .64, respectively) with the Stanford-Binet and the Wechsler Intelligence Test for Children.

Projective Testing

Two projective tests were chosen for this study: the Children's Apperception Test (CAT) and the Thematic Apperception Test (TAT). The CAT was used for children 10 years old or younger. The children started with the animal form of the CAT. If the child protested that the animal form was too "childish," then s/he was administered the human form of the CAT. Children older than 10 years of age were administered the TAT. The projective tests were administered according to the instructions of the test manual.

Bellak (1975) stated that the CAT and the TAT were developed to investigate the individual's personality by studying the dynamic meanings of the individual response to perception stimuli. The pictures on the CAT were selected to elicit the emotional conflicts of children. The pictures on the TAT were selected to elicit the emotional conflicts of adolescents and adults. Both projective tests were developed to elicit the individual's structure, defenses, and his/her dynamic style of responding to and coping with his/her

developmental tasks. (Refer to Appendix C for a review of reliability and validity studies of the CAT and the TAT.)

A third projective test was developed as a control measure for the CAT and TAT. Ten neutral pictures were compiled from art books and magazines. Neutral pictures were defined as any pictures that did not include people or animals. These pictures included pastoral scenes, landscapes, and city scenes. Black and white copies were made of these pictures and they were mounted on separate poster sheets. The Neutral Pictures and the CAT and TAT pictures were of similar size. The Neutral Pictures were administered by the same directions as the CAT and the TAT.

Analysis of Children's Cognitive Abilities in their Projective Test Protocols

The child's projective test protocol and neutral pictures protocol was scored for the cognitive abilities used by the child to respond to the pictures. The protocols were scored by the examiner who was blind to the child's age, gender, and performance on the Cognitive Abilities Scale. Ten of the protocols were selected randomly to be scored by a second judge trained in genetic psychology.

To obtain a measure of the cognitive abilities the child employed in conceptualizing his/her projective responses, the research of Elkind (1974), Flavell (1963), Ginsburg & Opper (1979), and Phillips (1975), was perused to complete a list of the cognitive abilities

developed during each of Piaget's stages of cognitive development. Each cognitive ability was defined and labeled as to the cognitive stage of development it indicated. The resultant list consisted of four cognitive abilities that were indicative of functioning at the Sensorimotor Stage, twelve cognitive abilities that were indicative of functioning at the PreOperational Stage, eight cognitive abilities that were indicative of functioning at the Concrete Operational Stage, and six cognitive abilities that were indicative of functioning at the Formal Operations Stage. The cognitive abilities that the child employed were used to determine the level of cognitive development by which the child conceptualized and coped with the emotional conflicts expressed in his/her projective responses. (Refer to Appendix D for examples of cognitive abilities from the children's CAT and TAT stories.)

Determination of the Child's Cognitive Stage of Development from the Projective Test Protocols

The child was determined to be in one of five levels of cognitive functioning: the PreOperational Stage, the Transitional Level between the ProOperational and the Concrete Operations Stages, the Concrete Operations Stage, the Transitional Level between the Concrete Operations Stage and the Formal Operations Stage, and the Formal Operations Stage. It was determined that the child was functioning at a given cognitive stage (PreOperational, Concrete Operational, or

Formal Operational) if at least 75% of his/her scored cognitive abilities were indicative of thought in that stage. The child was determined to be functioning at the Transitional Level between the PreOperational and the Concrete Operational Stages if approximately 50% of his/her scored cognitive abilities were indicative of the PreOperational Stage and 50% were indicative of the Concrete Operations Stage. The child was determined to be functioning at the Transitional Level between the Concrete Operational and the Formal Operational Stages if approximately 50% of his/her scored cognitive abilities were indicative of the Concrete Operations Stage and 50% were indicative of the Formal Operations Stage. (Refer to Appendix E for the list of cognitive abilities, criteria by which they are defined, the stage of the criteria by which they are defined, and the stage of development they indicate.)

Based on the analysis of the projective test protocol, the child's cognitive level of functioning was ordinally scaled as follows:

PreOperational Stage	1.0
Transitional Level between the PreOperational and the Concrete Operations Stage	1.5
Concrete Operations Stage	2.0
Transitional Level between the Concrete Operations Stage and the Formal Operations Stage	2.5
Formal Operations Stage	3.0

Interjudge Reliability of Scoring Children's Cognitive Abilities

For the ten selected interviews, Pearson Product-Moment Correlation Coefficients were used to assess the interjudge reliability for scoring of the cognitive abilities employed in the CAT and/or TAT stories. A highly significant correlation ($r=.96$, $p<.001$) was found between the two judges' assessments of the child's stage of cognitive development.

Cognitive Abilities Scale

Based on Piaget's model, a cognitive scale was developed that would ascertain each child's cognitive functioning. A series of tasks was selected from Elkind (1974), Ginsburg & Opper (1979), and Phillips (1975). The tasks selected were those that Piaget used in his research on children's cognitive development. The scale contained Piagetian tasks that could be used to determine a child's level of development in object permanence, conservation of length and volume, egocentrism, reversibility, and logical processes. Each of these constructs is developed by a child at a particular stage (or part of a stage) in Piaget's model of cognitive development (as reported in Elkind, 1974; Ginsburg & Opper, 1979; Phillips, 1975). The scale consisted of: the Blanket Task, the Toy Car Task, the Water Bottle Task, the Three Mountain Task, the Word Problem Task, and the Pendulum Problem. (Refer to Appendix F for description of the apparatus of each task and its administration and scoring.) For each of these

tasks at least two different responses could be made by the child. Each response indicated a particular stage (or part of a stage) of cognitive functioning. (Refer to Appendix G for the stages, or parts of a stage, the tasks delineated.)

The child's performance on the Cognitive Abilities Scale (CAS) was used to determine the child's level of cognitive development. Piaget's model of cognitive development, as reported by Flavell (1963), was used to determine five stages of cognitive development. The child's performance on the cognitive tasks was used to determine whether s/he functioned at the PreOperational Stage, the Transitional Level between the PreOperational and the Concrete Operations Stages, the Concrete Operations Stage, the Transitional Level between the Concrete Operations and the Formal Operations Stages, or the Formal Operations Stage.

Scale Administration. In delineating the child's cognitive stage, a basal and a ceiling level were determined. The basal level was defined as that cognitive stage at which the child passed all tasks tested at that level. The ceiling level was defined as the highest level of cognitive development at which the child failed all tasks tested at that level.

Subjects began with the Blanket Task and then performed in order the Toy Car Task, the Water Bottle Task, the Three Mountain Task, the

Word Problem Task, and the Pendulum Problem until their ceiling level had been determined.

Determination of Cognitive Stage of Development. Based on the cognitive tasks, the child's performance was ordinally scaled as follows:

PreOperational Stage	1.0
Transitional Level between the PreOperational and the Concrete Operations Stage	1.5
Concrete Operations Stage	2.0
Transitional Level between the Concrete Operations Stage and the Formal Operations Stage	2.5
Formal Operations Stage	3.0

The child's level of cognitive development was determined by the following criteria:

1. PreOperational Stage - If the child performed at the PreOperational level on the Blanket Task and the Early PreOperational level on the Toy Car Task, then s/he was determined to be functioning at the PreOperational Stage of cognitive development.

2. Transitional Level Between the PreOperational and the Concrete Operations Stages - If the child performed at the PreOperational level on the Blanket Task, the Late PreOperational level on the Toy Car Task, and at the Early Concrete Operations level on the Water Bottle Task or the Three Mountain Task, then s/he was determined to be functioning at the Transitional Level between the PreOperational and the Concrete Operations Stage.

3. Concrete Operations Stage - If the child performed at the Late PreOperational level on the Toy Car Task, the Early or Late Concrete Operations level on the Water Bottle Task and the Three Mountain Task, and the Concrete Operations level on the Pendulum Problem, and failed to pass the Word Problem Task, then s/he was determined to be functioning at the Concrete Operations Stage.

4. Transitional Level Between the Concrete Operations Stage and the Formal Operations Stages - If the child performed at the Late Concrete Operations level on the Water Bottle Task, on the Three Mountain Task, and on the Pendulum Problem, and answered correctly one of the two Word Problems, then s/he was determined to be functioning at the Transitional Level between the Concrete Operations Stage and the Formal Operations Stage.

5. Formal Operations Stage - If the child performed at the Late Concrete Operations level on the Water Bottle Task and the Three Mountain Task, and performed at the Formal Operations level on the Word Problems Task and the Pendulum Problem, then s/he was determined to be functioning at the Formal Operations Stage.

Procedure

Written consent was obtained from the parent(s)/guardian(s) of the child prior to contact with the subject. Appendix H contains the permission slips used for the children. Verbal consent was obtained from the child prior to the initiation of data collection.

The control group children were tested at their homes. The experimental group children were tested at the Psychiatric Clinic or their home. Both groups of children were tested in a quiet room, free of auditory distractions. Before testing proceeded, the experimenter talked with each child until rapport was established. The child was brought into the testing room. Once the experimenter and the child were alone, the experimenter presented the instructions.

The first step of the procedure was the administration of the Peabody Picture Vocabulary Test (PPVT). The test was administered according to test manual procedures. This test acted as a screening device. Children who obtained an intelligence classification below the low average classification (standard score less than 80) were excluded from further test procedures. The fifteen subjects for the experimental group were tested before any of the control group children were selected. After the experimental group children were selected, the control group children were selected to match one of the experimental group in gender, age, and intelligence classification. Control group children not matched in the intelligence classification according to PPVT performance were excluded from further test procedures.

The experimental group children and the control group children selected by the PPVT were given a brief rest upon finishing the PPVT.

During this time the experimenter talked with the child and answered any questions that s/he had about the PPVT or the situation.

The second step of the test session focused upon the child's performance on the Cognitive Abilities Scale. When the child's stage of cognitive development was determined by the Cognitive Abilities Scale, s/he was given a brief rest.

During this time the experimenter talked with the child and answered any questions that s/he had about the scale or the situation.

The third step was the administration of the projective tests. Children who were 10 years old or younger began with the animal form of the Children's Apperception Test (CAT). If they demonstrated reluctance to respond to this form due to the "childish" nature of the animals, then they were given the human form of the CAT. Children over 10 years of age were given the Thematic Apperception Test (TAT). The CAT and the TAT were given as instructed by the test manual. After completing the projective tests, the experimental group children were administered the Neutral Pictures, using the CAT and TAT test manual directions.

Throughout the testing, the experimenter gave reassurance as was necessary to keep the child comfortable and relaxed in responding to the pictures. The setting and atmosphere of the testing was kept informal and flexible. A cassette tape recorder was used during the testing to record everything stated by the child.

When the child completed the projective tests, the test session was complete except for debriefing. During the debriefing, the experimenter answered any questions that the child had about the purposes of the study. The experimenter was careful not to address any therapeutic issues brought up by the experimental group children's projective testing. If the parent(s)/guardian(s) of the experimental group children gave permission, the test results were made available to the child's therapist. Dissemination of the projective test results to the parent(s) of the experimental group children was left to the discretion of each child's therapist. If the parent(s) of the experimental group children refused permission to share test results with their therapist, the child's therapist was consulted as to how the situation should be handled. In a separate debriefing, the experimenter answered any questions that the parent(s) had about the purposes of the study.

Chapter IV

Results

A nondirectional t-test for related differences was employed to assess the validity of utilizing the CAT and TAT to elicit the cognitive abilities used by emotionally disturbed children in coping with their emotional conflicts. The cognitive stage of development as measured by the analysis of the emotionally disturbed children's CAT or TAT stories was compared with the cognitive stage of development as measured by the analysis of their Neutral Pictures stories. Procedural difficulties limited the number of experimental group children tested to ten of the fifteen experimental group children. Two children were eliminated because of time constraints of the psychiatric clinic at which they were tested. Three children were eliminated because of Neutral Pictures protocols that provided insufficient verbal productions for an accurate analysis of cognitive abilities. The experimental group children's cognitive stage of development as measured by the analysis of the cognitive abilities in the CAT or TAT stories was significantly different from the experimental group children's cognitive stage of development as measured by the analysis of the cognitive abilities in the Neutral Pictures stories ($t_{(9)}=10.00$, $p<.001$).

Thus, hypothesis one was supported. The results supported the present study's assumption that the CAT and the TAT elicited the

emotionally disturbed children's emotional conflicts and the children's coping mechanisms. Further, the difference was in the expected direction. The mean cognitive stage of development as measured by the analysis of the cognitive abilities in the CAT or TAT stories was lower ($x=1.6$) than the mean cognitive stage of development as measured by the analysis of the cognitive abilities in the Neutral Pictures stories ($x=2.5$).

A nondirectional t-test for related differences was utilized to assess the relationship between the Cognitive Abilities Scale (CAS) performance of the experimental group children and the control group children. No significant differences were found between the experimental group children's cognitive stage of development as measured by the CAS and the control group children's stage of development as measured by the CAS. Thus, hypothesis two was supported. The cognitive stage of development of the emotionally disturbed children and the children who were not emotionally disturbed was not different when both groups of children utilized their cognitive abilities in non-affectively charged situations.

Directional t-tests for related differences were utilized to assess the cognitive stage regressions of the experimental group children and the control group children. A series of t-tests for related differences was utilized to assess the relationship between cognitive stage regression and emotional disturbance in the two

groups. The first t-test compared the experimental group children's cognitive stage of development as measured by the CAS and the experimental group children's cognitive stage of development as measured by the analysis of the cognitive abilities used in their CAT or TAT stories. The experimental group children's cognitive stage of development as measured by the analysis of the cognitive abilities in the CAT or TAT stories was significantly lower than the experimental group children's cognitive stage of development as measured by the CAS ($t_{(14)}=4.5$, $p<.0005$). Thus, hypothesis three was supported. The emotionally disturbed children demonstrated cognitive stage regression when they coped with their emotional conflicts.

The second t-test for related differences compared the control group children's cognitive stage of development as measured by the CAS and the control group children's cognitive stage of development as measured by the analysis of the cognitive abilities used in their CAT or TAT stories. The control group children's cognitive stage of development as measured by the CAS was not significantly different from the control group children's cognitive stage of development as measured by the analysis of the cognitive abilities used in their CAT or TAT stories. Thus, hypothesis three was further supported. Cognitive stage regressions were not demonstrated in the CAT or TAT stories of the children who were not emotionally disturbed.

The third t-test for related differences was a nondirectional test utilized to directly compare the cognitive stage regressions of the experimental group children and the control group children. The experimental group children's cognitive stage of development as measured by the analysis of the cognitive abilities in the CAT or TAT stories was compared to the control group children's cognitive stage of development as measured by the analysis of the cognitive abilities in the CAT or TAT stories. The experimental group children's cognitive stage of development as measured by the analysis of the cognitive abilities in the CAT or the TAT stories was significantly different from the control group children's cognitive stage of development as measured by the analysis of the cognitive abilities in the CAT or TAT stories ($t_{(14)}=4.38$, $p<.001$). Thus, hypothesis three was supported. Children who were emotionally disturbed demonstrated more cognitive stage regression than did children who were not emotionally disturbed.

Chapter V

Discussion

The hypothesis concerning the utilization of the CAT and TAT stories to analyze the cognitive abilities that emotionally disturbed children used in dealing with their emotional conflicts was supported. The present study documented a highly significant difference between the emotionally disturbed children's level of cognitive development as measured by the analysis of the cognitive abilities used in their CAT or TAT stories and their level of cognitive development as measured by the analysis of the cognitive abilities used in their Neutral Pictures stories. The emotionally disturbed children's level of cognitive development was lower in their CAT and TAT stories than it was in their Neutral Pictures stories. The results of the present study support the hypothesis that the CAT and the TAT elicited the emotionally disturbed children's emotional conflicts and their ways of dealing with their emotional conflicts.

The hypothesis that emotionally disturbed children's level of cognitive development was not delayed in comparison with normal children was supported. The present study documented no significant differences in Cognitive Ability Scale performance between emotionally disturbed children and normal children matched for age, gender, and intelligence. The results of this study suggest that

emotionally disturbed children operate at the same level of cognitive development as normal children in situations that are not related to their emotional conflicts.

At this point it would be interesting to compare the present study's findings with the findings of previous research. Previous research is almost unanimous in postulating that the level of cognitive development of emotionally disturbed children is delayed in comparison with the level of cognitive development of children who are not emotionally disturbed. What are the reasons for the apparent disagreement of the present study's findings and the findings of previous research?

A major portion of the previous research reported delays in the cognitive development of schizophrenic children. Anthony (1958), Decarie (1965), Despert (1968), Gratton (1971), Lerner, Bie & Lehrer (1972), and Mook (1972) concluded that the cognitive development of schizophrenic children was delayed or disorganized in comparison to normal children's cognitive development. The studies of Anthony (1958) and Ertel & Voyat (1982) suggest a possible solution to the discrepancy between these results and the results of the present study. They compared the cognitive development of schizophrenic children to that of neurotic and borderline children, respectively. In both studies, the level of cognitive development was found to be delayed in comparison to the cognitive development of the neurotic

and borderline children, respectively. While the researchers in neither study compared their groups of emotionally disturbed children with normal children, the differences in cognitive development between children of different diagnoses suggest a possible variable in the relationship between emotional disturbance and cognitive development. Their findings suggest that the relationship between cognitive development and emotional disturbance may vary as a function of the severity of the diagnosis.

If this hypothesis is correct, then if Anthony (1958) and Ertel & Voyat (1982) had compared the cognitive development of their neurotic and borderline children to that of normal children, no delays in cognitive development would have been found between these groups. Delays in cognitive development would occur only between schizophrenic children and normal children. This hypothesis gains credence in that the present study found no delays between the cognitive development of emotionally disturbed children and normal children, but the emotionally disturbed group did not include children diagnosed as schizophrenic. More complete analysis will be needed to ascertain whether the relationship between cognitive development and emotional disturbances in schizophrenic children is qualitatively and/or quantitatively different from the relationship in less severely disturbed children.

Methodological difficulties of previous research suggest other possible reasons for the discrepancy between the present study's findings and the findings of previous research. Anthony (1958) and Mook (1972) were the only researchers whose studies compared their groups of schizophrenic children to a group of normal children matched for age and intelligence. Decarie (1965), Gratton (1971), and Lerner, Bie & Lehrer (1972) did not use control groups of normal children. McLaughlin (1977), Shackelford (1977), and Voyat (1980, 1982) compared the level of cognitive development of schizophrenic children to the level of cognitive development they assumed children their age would have achieved. The lack of adequate control groups makes the findings of much of the previous research difficult to interpret.

Another methodological difficulty of much previous research lies in the scope of children's cognitive development that was measured. The present study measured a multitude of cognitive abilities across all stages of cognitive development. Most previous researchers based their conclusions of delayed cognitive development in schizophrenic children and other emotionally disturbed children on the basis of testing one or, at most, a few cognitive abilities. Conservation (Gratton, 1971; Lerner, Bie & Lehrer, 1972), classification (Howell, 1972), and egocentrism (Anthony, 1958; Chandler, 1973; Neale, 1966) were the most frequently tested cognitive abilities. The question of

delayed cognitive development for emotionally disturbed children of any diagnosis is difficult to conclude on the basis of one or a few cognitive abilities. Only by assessing a wide range of cognitive abilities can the question of overall delayed cognitive development in emotionally disturbed children be addressed with any confidence.

Chandler (1973), Gambini (1973), Howell (1972), and Neale (1966) reported conclusions of delayed cognitive development in emotionally disturbed children. Their findings are more difficult to understand in the light of the findings of the present study. The groups of emotionally disturbed children studied appeared to be similar to the group in the present study in that schizophrenic children were excluded and the emotionally disturbed children were compared for cognitive development with normal children matched at least on age. A part of the reason for their discrepancy in findings with those of the present study lies in their limited scope of inquiry into different cognitive abilities. A more complete explanation rests in the implications of the single-subject studies of Voyat (1980, 1982) who gave a series of tasks measuring cognitive abilities to a severely disturbed child. He reported that the level of cognitive development at which the child performed the tasks varied widely. He concluded that the child's level of cognitive development decreased as the conditions of he task appeared to reflect the child's emotional conflicts. When the conditions of the same task did not

reflect the child's emotional conflicts, his level of cognitive development appeared to increase.

Voyat's (1980, 1982) studies suggest that the lack of separating affective factors from the measurement of cognitive development contaminates measures of emotionally disturbed children's cognitive development. This hypothesis has implications for the conclusions of previous research of delayed cognitive development in schizophrenic children and other emotionally disturbed children. Did these previous studies separate affective factors from their measurements of cognitive development? They do not appear to have done so. For example, Chandler (1973) studied the level of cognitive development in emotionally disturbed children. He had emotionally disturbed children look at pictures and then tell stories from the perspective of other people in the stories they told. If the child had difficulty with interpersonal relationships, wouldn't his/her stories reflect affective factors? If so, did Chandler's test of egocentrism measure the child's optimal level of cognitive development of the ability of egocentrism? If not, can any statements be made about delay in the child's cognitive development? If affective factors were separated from the measurement of emotionally disturbed children's cognitive development, would delays in cognitive development have been found?

The present study proposed that previous studies' findings of delays in the cognitive development of emotionally disturbed children are due to the methodological difficulties already discussed and their inability to separate affective factors from the measurement of emotionally disturbed children's optimal level of cognitive development. While measuring the cognitive development of schizophrenic children was beyond the scope of the present study, methods were developed by the present study to separate affective factors from the measurement of cognitive development in emotionally disturbed children. Methods will need to be developed in future studies to determine whether separating affective factors from the measurement of schizophrenic children's level of cognitive development would continue to indicate a delayed level of cognitive development.

The present study developed methods that could differentiate between cognitive delay, cognitive regression, cognitive fixation, and cognitive disorganization in emotionally disturbed children. The following sections will attempt to integrate previous discussion of the implications of findings about cognitive delay and the findings about cognitive regression. The present study separated affective factors from the measurement of emotionally disturbed children's cognitive development. When the effect of affective factors was separated from the measurement of emotionally disturbed

children's cognitive development, emotionally disturbed children and normal children were found to be functioning at the same level of cognitive development. The present study proposes that the delay in emotionally disturbed children's cognitive development reported by past studies is open to another interpretation. The findings of past studies do not reflect a cognitive delay in emotionally disturbed children. Instead, they demonstrate the differences in how emotionally disturbed children and normal children utilize their cognitive abilities to deal with their emotional conflicts.

The level of cognitive development at which emotionally disturbed children operated on their emotional conflicts was hypothesized to regress to lower levels of cognitive development than the level at which they dealt with situations that did not reflect their emotional conflicts. The level of cognitive development of the normal children was hypothesized to be less subject to regression than that of the emotionally disturbed children. The hypothesis that emotionally disturbed children would demonstrate more cognitive regression than normal children was supported. The present study documented that emotionally disturbed children's level of cognitive development on tasks measuring the cognitive abilities they used to deal with their emotional conflicts was significantly lower than their level of cognitive development in tasks that measured their optimal level of cognitive development. The normal children's level

of cognitive development on tasks measuring the cognitive abilities they used to deal with their emotional conflicts was not significantly different from their level of cognitive development on tasks that measured their optimal level of cognitive development. Further, the emotionally disturbed children's level of cognitive development on tasks measuring the cognitive abilities they used in dealing with their emotional conflicts was significantly lower than the normal children's level of cognitive development on tasks measuring the cognitive abilities they used to deal with their emotional conflicts.

The present study suggests that emotionally disturbed children's cognitive performance is dependent upon the nature of the tasks being addressed. When emotionally disturbed children and normal children are matched for age, gender, and intelligence, they do not differ in the level of cognitive development. Differences occur when emotionally disturbed children use their cognitive abilities to deal with their emotional conflicts. Under these conditions, a mechanism of cognitive regression appears to operate. Cognitive regression functions to hinder the emotionally disturbed children's capacity to utilize their higher-order cognitive abilities to deal with their emotional conflicts. The cognitive performance of emotionally disturbed children appears to regress such that they utilize lower-order cognitive abilities to deal with their emotional conflicts.

Cognitive regression appears to operate only with emotionally disturbed children. Normal children appear to utilize their higher-order cognitive abilities to deal with their emotional conflicts.

At this point it would be interesting to consider how to integrate previous research findings and the present study's findings about cognitive regression. Piaget (1962a, 1962b, 1968, 1971, 1972, 1973) provided a possible theoretical framework for the operation of cognitive regression in emotionally disturbed children. He defined children's affective development and cognitive development as markedly parallel and interdependent. He stated that affective factors can influence cognitive performance. He proposed that the functions of assimilation and accommodation are the mechanisms of cognitive development. Piaget (1962a, 1962b, 1971, 1973) predicted that affective factors can disturb the relationship of these functions and lead to disturbances in children's cognitive development. He predicted that affective factors could disturb the operation of assimilation and accommodation such that the child's level of cognitive development would regress to lower levels of cognitive development. Piaget (1962a, 1962b, 1971, 1973) and others such as Friedman (1968, 1978, 1983), Holt (1967), and Sandler (1971) appeared to postulate a relationship between the affective development and cognitive development of emotionally disturbed

children that was demonstrated experimentally in the present study's findings of cognitive regression.

Anthony (1956, 1957, 1958), Ertel & Voyat (1982), Mook (1972), and Voyat (1980, 1982, 1983) concluded that the cognitive development of schizophrenic children was disturbed. They utilized Piaget's theoretical framework to explain this disturbance in terms of disturbances in the functions of assimilation and accommodation. From their studies they concluded that schizophrenic children's cognitive development was characterized by simultaneous regression to the lowest level of cognitive development, fixation at transitional levels, delayed cognitive development, and a pseudomaturity characterized by higher levels of cognitive development with concurrent lack of mastery of previous levels of cognitive development. Chandler (1973), Gambini (1973), Howell (1972), Lowenherz & Feffer (1969), and Neale (1966) postulated similar findings for the cognitive development of children who are emotionally disturbed though not diagnosed as schizophrenic.

In earlier sections of this discussion, possible reasons were discussed for the present study's contradictory findings that emotionally disturbed children's cognitive development was not delayed in comparison to that of normal children. In this section, an attempt will be made to integrate with the findings of previous research the present study's findings of cognitive regression and no

cognitive delay in emotionally disturbed children. The purpose of this discussion will be to attempt to explore the reasons for differences between previous research findings and the present study's findings. The goal will be to further an understanding of the relationship of emotionally disturbed children's affective development and cognitive development.

The theoretical proposals of Piaget and the previous experimental research are characterized by a common difficulty, which is addressed in the writings of Greenspan (1979) and Kessen (1983). The difficulty lies at the root of Piaget's theory of the relationship between children's affective development and cognitive development. Piaget (1962a, 1962b, 1971, 1973) utilizes the functions of assimilation and accommodation to explain the mechanisms of the relationship between affective development and cognitive development. Both Greenspan and Kessen pointed out that these theoretical constructs are vague verbal statements that cannot be evaluated experimentally. Therefore, the fact that this difficulty has not been addressed hinders interpretation of the results of the previous studies. Those studies did not differentiate between cognitive regression, cognitive delay, cognitive fixation, or cognitive disorganization. They have not proposed the defining characteristics of these constructs nor have they proposed what

variables determine their operation in emotionally disturbed children's cognitive development.

Previous research also fell victim to a failure to differentiate between the child's level of cognitive development and the child's cognitive performance. Bullinger & Chatillon (1983) discussed the importance of this distinction. They pointed out that the type of relationship between observable behavior and cognitive activity has not been determined. They stated that according to Piagetian theorists there is a direct relationship between observable behavior and cognitive activity. Bullinger and Chatillon reported that more recent studies have begun to question the accuracy of a direct relationship between observable behavior and cognitive activity. They reported on these studies' conclusions that the type of relationship between observable behavior and cognitive activity was dependent upon the child's characteristics, the conditions that the child had to satisfy, and the status of the action. If these variables are not addressed, then it remains unknown whether a study's measurement of the child's cognitive development was an accurate measurement of the child's optimal level of cognitive development.

The present study suggests that the relationship between observable behavior and cognitive activity must take into account the effects of the child's characteristics, the conditions of the task,

and the status of the action, which previous research failed to do. Therefore, it is difficult to ascertain the meaning of the findings of past research. The difficulty that past research had in differentiating the variables of the differences in cognitive development between emotionally disturbed children and normal children can be resolved by understanding the effects these variables had on their measurements of emotionally disturbed children's cognitive development.

The present study attempted to address these common difficulties of past research in order to ascertain the differences in cognitive development between the emotionally disturbed children and normal children. The theoretical framework of Piaget (1962a, 1962b, 1971, 1973), the experimental work of Dudek (1972), Dudek & Dyer (1972), and Wedin (1977), and the criticisms of Bullinger & Chatillon (1983), Greenspan (1979), and Kessen (1983) were addressed in developing the research design. Cognitive regression was defined and hypothesized to be a mediating variable in the relationship between emotionally disturbed children's affective development and cognitive development. The research design was developed to differentiate between children's cognitive performance in experimental conditions with defined task characteristics, conditions, and subject characteristics.

When the theoretical and methodological difficulties are addressed, a clearer picture develops of the relationship between

affective development and cognitive development in emotionally disturbed children and normal children. The results of the present study provide support for the hypothesis that cognitive regression operates on emotionally disturbed children's cognitive performance. Cognitive regression is proposed as a construct in the process by which Piaget's functions of assimilation and accommodation mediate the relationship between emotionally disturbed children's affective development and cognitive development. Additional research will be needed to determine whether cognitive regression operates with schizophrenic children. New methods will have to be developed that permit the measurement of schizophrenic children's optimal level of cognitive development.

Although Piaget's theory formed the theoretical framework of the present study, the theory is not without its criticisms and shortcomings. These criticisms must be kept in mind as the results of the present study are interpreted. Additionally, there are other theories of children's cognitive development. What effect do these criticisms have on the conclusions of the present study? Can these criticisms and the other theories of children's cognitive development further an understanding of the findings of this study? These questions have already been partly answered. The criticisms of Bullinger & Chatillon (1983), Greenspan (1979), and Kessen (1983) facilitated an understanding and integration of the present study and

past studies. The type of relationship between observable behavior and cognitive activity and the vagueness of Piaget's functions of assimilation and accommodation are important issues that merit further study. The present study appeared to demonstrate that the cognitive activity of emotionally disturbed children depends upon what tasks the children are addressing. Cognitive regression was proposed as an experimental construct whose predictions could be evaluated. Further research is needed to determine whether there are other variables that affect the relationship between observed behavior and the cognitive activity of emotionally disturbed children. Additional research is needed to further explore the robustness of the construct of cognitive regression.

Brainerd (1978) criticized the status of Piaget's theory as an experimental theory, stating that it is not an explanatory theory from which experimental constructs can be developed. Brainerd characterized Piaget's theory of stages of cognitive development and his explanatory constructs as examples of circular reasoning that do no more than describe age-related changes in behavior. Baldwin & Baldwin (1978) countered Brainerd's theories by arguing that Piaget does not utilize his stage theory as an explanatory theory. Instead, they stated that the important aspects of Piaget's theory are the functions and rules of development that he proposed to explain the underlying causal factors of development. What remains common to

both their arguments is the difficulty in going from Piaget's explanatory constructs such as assimilation and accommodation to testable hypotheses. In the present study, the construct of cognitive regression was proposed in response to these criticisms. Kessen (1983) proposed that information processing theories of cognitive development can also be used to resolve these criticisms of assimilation and accommodation. He suggested that information processing theories of the mechanisms of cognitive development can be used to better understand Piaget's theory. Kessen applied information processing theory research on self-modification systems to the study of the operation of Piaget's functions of assimilation and accommodation. He stated that information processing constructs of production systems can help understand the self-modification aspect of Piaget's theory.

The integration of the information processing theories and Piaget's theory could facilitate the development of testable hypotheses of the relationship between children's affective development and cognitive development. The possibilities of integrating these theories as well as other social learning theories and psychobiological theories of cognitive development can only further expand our knowledge of children's development.

The diagnostic contradictions of the case of John, as cited in Chapter I, provided the initial impetus for the present study. The

findings of this study suggest answers to that contradiction and may have implications for the treatment of emotionally disturbed children.

The diagnostic contradiction of John appears to have resulted from a failure to separate the effect of affective factors on his cognitive performance. The case of John was not a contradiction; rather, his case demonstrated the effects of cognitive regression on the diagnostic procedure used for emotionally disturbed children. The findings of the present study suggest that the diagnostic procedure for emotionally disturbed children would be improved by considering the relationship between affective development and cognitive development. The inclusion of this relationship in John's diagnosis resulted in a diagnosis that was totally different from that which his projective test data indicated. Instead of being diagnosed as schizophrenic, John's diagnosis was much less severe, resulting in a completely different treatment plan with a much better prognosis.

The implications of the findings of the present study for the treatment of emotionally disturbed children can facilitate the treatment process. Chandler's (1973) study presented an example of applying an understanding of the relationship between children's affective development and cognitive development to the treatment process. In Chandler's study, a group of adolescent delinquents completed a training exercise for decreasing their egocentrism in

social situations. He found that when the adolescents began to apply higher-order levels of egocentrism to social situations, their delinquent behavior decreased. Nass (1966) and Selman (1971) suggested that moral development is related to cognitive development. Elkind (1967), Looft (1971), and Santilli & Meacham (1982) discussed the importance of adolescents using Formal Operations Stage cognitive abilities in order to successfully resolve issues of peer relationships and identity formation.

The implications for the treatment of these proposed relationships between cognitive development and affective disturbances depends on the understanding of the relationship between emotionally disturbed children's affective development and cognitive development. Previous research identified this relationship as a delay or disorganization of emotionally disturbed children's cognitive development. The therapist's task would be the enormous undertaking of conceptualizing the child's weakness in cognitive development and then raising the child's delayed or disorganized level of cognitive development to the age-appropriate level.

The findings of the present study suggest a treatment plan with a higher prognosis of success. The emotionally disturbed children's cognitive development is conceptualized as regressing to lower levels of cognitive development when they deal with their emotional conflicts. Instead of focusing upon the child's weaknesses, the therapist can

focus on the child's strengths. The therapist's task would be to facilitate the emotionally disturbed child's utilization of his/her higher-order cognitive abilities to deal with his/her emotional conflicts. Instead of having to promote delayed cognitive development, the therapist helps emotionally disturbed children maximize their underutilized strengths.

Cognitive regression also has implications for the treatment of children in learning disabled and/or emotionally disturbed classrooms. An understanding of the relationship between children's affective and cognitive development can facilitate school interventions.

The present study addressed the relationship between the affective development and the cognitive development of emotionally disturbed children. Cognitive regression helps to further an understanding of how emotionally disturbed children utilize their cognitive abilities in ways that perpetuate their emotional difficulties. Cognitive regression also suggests means of improving the prognosis of treatment. The present study has been only the first step in understanding the complex relationship between the affective development and the cognitive development of emotionally disturbed children. Future research can further expand the variables of cognitive regression and develop new studies of the variables mediating the relationship between children's affective development and cognitive development.

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APPENDIXES

APPENDIX A

INTERJUDGE RELIABILITY TABLE

TABLE III

INTERJUDGE RELIABILITY FOR COGNITIVE PROCESSES IN THE DEATH AND DYING INTERVIEWS*

a. Differentiating Between the PreOperational and the Concrete Operations Stages (n=15)

Cognitive Processes	r
Metastructure	0.60
Immanent Justice	1.00
Artificialism	1.00
Centering	1.00
Egocentrism of Reasoning	0.72
Transductive Reasoning	0.72
Egocentrism of Social Relationships	0.87
Egocentrism in Representation of Objects and Events	0.58
Realism	1.00
Concept of Whole vs. Parts	1.00
States vs. Transformations	0.60
Classification	1.00

b. Differentiating Between the Concrete Operations and Formal Operations Stages (n=10)

Cognitive Processes	r
Egocentrism	0.76
Plays on Words	0.80
Combinatorial Logic	0.76
Form	0.67
Real vs. Possible	1.00
Reversibility	0.82

*Each of these reliability coefficients was significantly greater than zero at the .05 level.

APPENDIX B

INTERJUDGE RELIABILITY OF SCORING CHILDREN'S COGNITIVE ABILITIES

Appendix B

Interjudge Reliability of Scoring Children's Cognitive Abilities

For the 25 selected interviews, Pearson Product-Moment Correlation Coefficients were used to assess the interjudge reliability for scoring of the cognitive abilities employed in conceptualizing death and dying. A highly significant correlation was found ($r=.98$, $p<.001$) between the two judges' assessment of the child's cognitive stages. Significant correlations were found for interjudge scoring of all the individual cognitive processes. The correlations between the judges' scoring of cognitive processes differentiating between the PreOperational and the Concrete Operation Stages ranged from 0.58 to 1.00. The correlations between the judges' scoring of the cognitive processes differentiating between the Concrete Operations and Formal Operations Stages ranged from 0.67 to 1.00. Each of these reliability coefficients was significant at the .05 level.

APPENDIX C

REVIEW OF RELIABILITY AND VALIDITY STUDIES OF THE CAT AND THE TAT

Appendix C

Review of Reliability and Validity Studies of the CAT and the TAT

The Thematic Apperception Test (TAT) and the Children's Apperception Test (CAT) were selected for this study to perform a specific function, i.e., to obtain a verbal record of children's emotional conflicts and their means of coping with these conflicts. Both of these projective tests have been developed to provide scores on a variety of adaptive mechanisms and personality characteristics. For the purposes of this study, the reliability and validity with which these tests provide these scores is unimportant. What is important is the validity and reliability of Bellak's (1975) statement that these projective tests elicit the individual's structure, defenses, and his/her dynamic style of responding to and coping with his/her developmental tasks. The following section will attempt to explore this basic assumption of projective tests.

Bellak (1975) based the CAT on the statements of approximately 200 children between the ages of three and ten years. He compared CAT results for these children with the clinical information supplied by the child mental health worker. He concluded from this comparison that the CAT elicited the problems and the dynamic background of these problems for these children.

Haworth (1963), Lehmann (1959), and Byrd & Witherspoon (1954) attempted to determine whether the CAT elicited the dynamics of personality development in children with emotional problems. Byrd and Witherspoon attempted to determine the face validity of the CAT for preschool children. They rated the children's responses to the CAT for apperceptive responses (responses revealing psychological dynamics) and reported that 80 percent of the responses to the CAT were apperceptive. Lehmann attempted to replicate the results of Byrd and Witherspoon. Lehmann rated the responses of preschool-age children to the CAT and reported that 67 percent were apperceptive responses. Haworth (1963) developed a checklist for the qualitative evaluation of CAT stories. The checklist comprised psychological dynamics rated on a scale from high (emotional difficulties) to low (no emotional difficulties). She compared a group of emotionally disturbed children with a group of normal children and reported that the emotionally disturbed children scored higher on the checklist than did the normal children.

The reliability and validity of the TAT has been studied for 40 years. Bell (1948) discussed some of the early objections by TAT proponents to the need for reliability in TAT protocols. He also discussed early findings of low reliability by researchers. The research of Lundy (1984), Kraiger & Hakel (1984), Winter & Stewart (1977), and Murstein (1963) represents continuing attempts at studying

the reliability of the TAT. All of them agree as to the wide range of reliability coefficients found in studies of the TAT. They reported reliability coefficients ranging from r=.13 to r=.80. Lundy (1985) reported test-retest correlations of r=.48 and r=.56 for two needs of the TAT. He stated that these reliability coefficients compared favorably with those reported for objective personality tests.

Sharkey & Ritzler (1985), Ritter & Eron (1952), and Garfield & Eron (1948) studied the differences in TAT responses of emotionally disturbed adults and control groups of adults. Davison (1953) utilized the TAT to differentially diagnose psychoneurotic and schizophrenic patients. He determined that these two groups differed on the formal characteristics and the themes of their TAT stories. Ritter & Eron and Garfield & Eron found that the TAT responses of normal control groups differed significantly from those of psychoneurotic and schizophrenic patients. The differences were in the emotional tone and themes of the stories. Sharkey & Ritzler compared the efficacy of the TAT and the New Picture Projective Test for their ability to differentiate between normal adults and depressed or psychotic patients. They found that both projective tests differentiated the stories of the normal adults from those of the psychiatric patients.

Sutton & Swenson (1983) performed a concurrent validity study of the TAT. They compared the subjects' scores for ego development on

the TAT with those obtained on the Sentence Completion Test of Ego Development (SCT). They found high reliability between different judges' ratings of ego development on the TAT. They reported correlations between SCT and TAT scores of ego development of r=.79.

Coche & Spector (1978) studied the relationship between hospitalized psychiatric patients' affiliative motivation (as measured by TAT stories) and affiliative behavior in therapy groups. They reported direct relationships between patients' scores of affiliative motivation and the patients' ratings of affiliative behavior in the therapy groups.

Coche & Sillitti (1983) performed a study with direct bearing on the needs of the present study. Within the arena of psychotherapy outcome research they demonstrated the ability of the TAT to elicit depressive dynamics when they are present and to not elicit depressive dynamics when they were not present. They gave the TAT to hospitalized psychiatric patients with the diagnosis of depression. The patients performed the TAT while they were depressed and when they were being discharged. Concurrent validity for the TAT was observed from clinical evaluations and objective psychological tests. They concluded that their results supported the hypothesis that TAT stories reflect current and abated states of depression.

While the research on the reliability and validity of the CAT and TAT remains controversial and unclear as to scored measures of

adaptive mechanisms and personality characteristics, there appears to be support for the assumption that is important for this study, i.e., that projective tests elicit the individual's emotional conflicts and his/her ways of coping with these conflicts.

APPENDIX D

EXAMPLES OF COGNITIVE ABILITIES FROM THE CHILDREN'S CAT AND TAT STORIES

Appendix D

Examples of Cognitive Abilities from the Children's CAT and TAT Stories

Metastructure, Egocentrism of Social Relationships
PreOperational Stage. Subject #2. CAT-A, Picture #7.

"Like a monkey might have been teasing the tiger and like the tiger chasing him, like the monkey. This is sort of like the story I know about Lavender Lizards - it's called the chase . . . like the monkey might get away. It looks like the monkey might be eaten. Or like it gets to a certain place and you might be able to trick the tiger into doing something wrong; like the raccoon climbed out on the river and the wolf screamed at the river and jumped in because he thought the raccoon was in there and he almost drowned."

Immanent Justice
PreOperational Stage. Subject #6. CAT-H, Picture #5.

"That it was their fault."

Centering
PreOperational Stage. Subject #1. CAT-H, Picture #7.

Child: "Man's chasing the little boy."
Examiner: "What's going to happen?"
Child: "The man's going to catch the little boy."

Concrete Operations Stage. Subject #34. CAT-H, Picture #5.

"Two kids are supposed to be asleep but they are talking and they are telling ghost stories and they are feeling scared and then the Mom's going to hear them and punish them."

Egocentrism of Reasoning
PreOperational Stage. Subject #10. CAT-A, Picture #1.

"They won't let him eat (because) he's too big."

Concrete Operations Stage. Subject #20. CAT-H, Picture #4.

"And they feel good cause it's warm outside so that they could walk there and they are feeling that they are lucky that it's warm outside to go to the store."

Transductive Reasoning
PreOperational Stage. Subject #15. CAT-A, Picture #5.

"There's a rug on the floor, and way up there a table. There's a mother's lamp on the table, three windows with the big bear and little bear in the bed, and there's a crib, and after that it's going to be morning time again."

Transductive Reasoning, Metastructure, Realism
Concrete Operations Stage. Subject #3. TAT, Picture #1.

"There's a boy who's looking at a violin, learning how to play it, looking at his music, wondering what to do. Well, he's not doing very well at what he's doing right now. And he don't have anybody to help him. And so just sitting there doing nothing, looking at the violin. He could get up and try to play it, learn what he's supposed to do. I don't know what I am supposed to say. What else am I supposed to say?"

Egocentrism of Social Relationships
Concrete Operations Stage. Subject #1. CAT-H, Picture #10.

Examiner: "What's that person thinking and feeling?"
Child: "He's mad."

Egocentrism in Representation of Objects and Events
PreOperational Stage. Subject #1. CAT-H, Picture #7.

Examiner: "What's the man thinking and feeling?"
Child: "I don't know."

Concrete Operations Stage. Subject #20. CAT-H, Picture #8.

"And the mother felt good because she had, would have had a hard time getting the little boy up in the morning and she was feeling good because she had a good party that night."

Realism
PreOperational Stage. Subject #19. CAT-A, Picture #1.

"The mother's thinking how nice they are and she's feeling that they like her."

Concept of Whole vs. Parts--Conservation
PreOperational Stage. Subject #2. CAT-A, Picture #9.

"All the rabbits are scared before his mother and father, and mother said there's nothing to be afraid of in the dark and it happens and it happens in a while that he comes crying to his mother and father I am scared."

Concrete Operations Stage. Subject #23. TAT, Picture #1.

"Last week the boy got a violin for Christmas. Right now he is learning how to play it. In the future, let's see, he'll be good at it. His parents gave it to him as a gift and he really enjoys it."

States vs. Transformations
PreOperational Stage. Subject #9. CAT-A, Picture #6.

"Summer and it just hit winter."

Concrete Operations Stage. Subject #20. CAT-H, Picture #7.

"If the genie would have caught him, he would have died, and he was feeling good because when he woke up he felt--it was only a dream."

Classification
PreOperational Stage. Subject #2. CAT-A, Picture #5.

"Looks like bears are sleeping and if they continue they will doze off to sleep and before they were getting ready for bed and stuff like that. And now in lying in bed together getting to doze off to sleep."

Concrete Operations Stage. Subject #17. CAT-A, Picture #5.

"Yeah, they're sleeping. They don't think anything when they're sleeping."

Egocentrism
Formal Operations Stage. Subject #37. TAT, Picture #13B.

"This kid has just done something pretty bad and he's sad about it. And so he wanted to be all alone by himself. So he went to a deserted barn and he's sitting down thinking about his feelings and trying to work out his problems. Before, he broke a window with the

people who lived next to him. He'll probably end up going back to his house and getting in trouble."

Plays on Words
Formal Operations Stage. Subject #37. TAT, Picture #8BM.

". . . this is probably not the first time he's done this. He'll probably end up getting the ransom anyway."

Combinatorial Logic
Formal Operations Stage. Subject #37. TAT, Picture #5.

"A lady is opening the door and probably calling for her kid to come to dinner. She was probably preparing dinner and the kid was either doing homework or just playing around."

Form
Formal Operations Stage. Subject #23. TAT, Picture #7BM.

"The man just heard something he didn't like. He's telling his partner what he did not like and, let's see (ha-ha) and they are talking about what they should do with what was said. And it's really disturbing both of them."

Real vs. Possible
Formal Operations Stage. Subject #37. TAT, Picture #7BM.

"They are probably thinking about, looks like one of them doesn't like something, and maybe revolting or something. They might be talking about something political or something."

Reversibility
Formal Operations Stage. Subject #23. TAT, Picture #13MF.

"Okay, the man just realized that this is not his wife. He just had something splashed in his eyes. It also affected the lady on the bed. He's standing up trying to regain his eyesight. And he does not know what he's going to do."

APPENDIX E

COGNITIVE PROCESSES

Sensorimotor Stage

Object Permanence - Not developed--out of sight, out of mind.

Beginning Action Oriented - The beginning of thought action oriented, limited to concrete goals, limited to linking successive perceptions of concrete events.

Imitation - They do it--you do it. Beginning of imitation of things or people not present.

Seeing is Believing - If can still remember not gone or changed? What they can visualize in their minds to them is real.

PreOperational and Concrete Operational Stages

Metastructure - Increasing internalization of representational actions and increasing differentiation of signifiers from significants.

Early PreOperational Stage: Child has no metastructure.

Late PreOperational Stage: Child beginning to develop metastructure.

Concrete Operational Stage: Child has efficient metastructure. He/She no longer gives impression of understanding something and moments later reveal a lack of any understanding.

Immanent Justice - The child in the PreOperational Stage attempts to explain how justice and law are maintained. Whenever a misfortune occurs, the child answers in egocentric overtones.

Artificialism - The child in the PreOperational Stage conceptualizes natural objects or events to be designed by men for man's use.

Centering - The child in the PreOperational Stage centers attention on one detail or event and is unable to process information from other aspects of a situation. The child in the Concrete Operations Stage can switch his/her center of attention.

Egocentrism of Reasoning - There are three uses of "because" that describe the relationship between adjacent causes: 1) Causal Explanation--a cause and effect relationship between two facts, 2) Psychological (Motivational) Explanation--it answers the question why and the two parts of it are the intention and the act, and 3) Logical Implication--establishes a relationship of reason and consequence between two

ideas or judgments. The child in the PreOperational Stage is unable to discriminate between these types of relations. His/her thinking is a juxtaposition of facts or ideas. The child in the early part of the Concrete Operations Stage can distinguish between Causal and Psychological explanations but has difficulty with Logical Implications--often using a psychological explanation instead. In the latter part of the Concrete Operations Stage, the child can distinguish between all three types of explanations.

Transductive Reasoning - The child in the PreOperational Stage is not capable of inductive or deductive reasoning, but rather, they reason from particular to particular. Therefore, their reasoning is not logical and often does not make sense. There are two types of transductive reasoning: 1) A causes B is not seen as different from B causes A, and 2) A is like B in some way; therefore, A is like B in every way.

Egocentrism of Social Relationships - The child in the PreOperational Stage engages in simple monologues which contain the content of their own activities or in collective monologues in which the child responds to another's statement with a response totally unrelated to that person said. In the Concrete Operations Stage, the child can shift from his own viewpoint to another and is capable of intercommunication.

Egocentrism in Representation of Objects and Events - The child in the PreOperational Stage is unable to see the world from others' point of view. They feel as though the world is created for their own personal satisfaction. They are unable to benefit from the experiences of others. The child in the early part of the Concrete Operations Stage realizes that there are other points of view but it is not until the latter half of the stage that the child can correctly identify the other person's point of view.

Realism - Confusion between wish and reality, confusion between psychological events and objective reality.

> PreOperational Stage: Child has absolute realism, nothing is inner or subjective, everything is external and real.
>
> Early Concrete Operations Stage: Thoughts originate in the mind but become objective realities.
>
> Late Concrete and Early Formal Operations Stages: There is a realization of a dualism that exists between psychological events and objective reality.

Concept of Whole vs. Parts--Conservation - The Child in the PreOperational Stage can reason either about the whole or the parts but not about both at the same time. When the child achieves the concept of reversibility in the Concrete Operations Stage, he/she can form a pattern of relationships into an integrated whole.

States vs. Transformations - The child in the PreOperational Stage attends to the successive states of an event rather than the transformations by which one state is changed into another. The child in the Concrete Operations Stage can attend to both.

Classification - The ability to differentiate and coordinate the two properties of a class: 1) intention--the criterion that defines a class, and 2) extension--the objects meeting the criterion.

> Early PreOperational Stage: A given intention does not determine any specific extension.
>
> Late PreOperational Stage: Child is better able to determine the extension of a class but the concept of class inclusion is lacking as well as a lack of hierarchies.
>
> Concrete Operations Stage: The two properties of classification can be used by the child.

Concrete and Formal Operations Stages

Egocentrism - Children in the Formal Operations Stage can cognitize the thoughts of others but they devise idealistic schemes to bring reality into line with their own thinking. They fail to distinguish between the focus of another's thoughts and those which are their own focus of concern.

Plays on Words - The child in the Formal Operations Stage can appreciate metaphor, irony, satire, parables, and analogies.

Combinatorial Logic - When children in the Concrete Operations Stage are faced with solving a problem with many factors, they usually test each factor separately and fail to consider all possible combinations. The child in the Formal Operations Stage can deal with a problem in which several factors operate at the same time. He/She can consider all possible combinations.

Form - The child in the Formal Operations Stage is more concerned with the form of his/her responses than the content. He/She will attempt to tie the different concepts of a response into a relationship.

Real vs. Possible - The child in the Formal Operations Stage formulates hypotheses in which he/she imagines what events would occur under imagined conditions. The child is not tied to immediate perception as is the child in the Concrete Operations Stage. Possibilities dominate reality.

Reversibility - The thoughts of a child in the Formal Operations Stage can proceed in one direction and then use several different methods to return to the starting point.

APPENDIX F

COGNITIVE ABILITIES SCALE

1. Blanket Task (Object Permanence) - This task measures the child's level of object permanence and was used to determine if the child had completed the tasks of the Sensorimotor Stage of cognitive development. The apparatus for this task was a piece of bulky cloth and a coin. The child was shown a coin in the experimenter's hand. Then the experimenter closed his fist and put his hand under a piece of cloth. While his hand was under the cloth, the coin was dropped onto the floor. The experimenter then reclenched his fist and withdrew his hand from under the cloth. The experimenter then told the child to find the coin. The entire sequence of this task occurred as the child was watching the experimenter's behavior.

The child who has completed the development that occurs in the Sensorimotor Stage of cognitive development will first look in the experimenter's hand for the coin and then under the piece of cloth where the experimenter's hand had been. The child who has not completed the development that occurs in the Sensorimotor Stage will look in the hand and not under the cloth.

2. Toy Car Task - This task measured the child's ability to conserve length and determined at what level of PreOperational or Concrete thought the child was functioning. The apparatus for this task consisted of a 20" x 30" sheet of white poster board, two toy cars, and a 1" x 2" piece of white poster board. On the larger piece of poster board, two lines were drawn with a wide edge, black, magic marker. The lines were centered on the poster board and positioned parallel to each other with corresponding end points. The top line was a horizontal line 20" in length. The bottom line was composed of two inch line segments positioned perpendicular to each other, alternating

horizontal and vertical segments. (Refer to Appendix K for a diagram of the setup.) The two inch length of poster board was placed within easy sight and reach of the child before the instructions were stated. The potential use of this piece as a measuring device was not pointed out to the child. The experimenter moved one of the toy cards two and a half segments along the bottom line. The child was instructed to move his/her toy car the same distance along the top line as the experimenter had moved his car along the bottom line. The experimenter repeated the instructions, substituting synonyms of "distance" until the child stated he/she understood the directions. This task was performed twice by each child. The only difference between Trial 1 and Trial 2 was that the experimenter moved his car four and a half segments for Trial 2.

The purpose of this task was to determine the child's ability to use more than one dimension of a situation to solve a task. To score this task, their placement of their cars and any comments they made about how they solved the task was used as criteria. There are three possible solutions to this task. If the child placed his/her toy car directly above that of the experimenter, then this task indicated that his/her development of the conservation of length is at the Early PreOperational Stage. The second possible response is if the child doesn't place his/her car directly above that of the experimenter. Instead, his/her response is close to the correct distance, but he/she doesn't use the measuring piece of poster board or any other measuring attempt. This response indicates that the child is performing at the late PreOperational Stage on this task. The third possible response is for the child to use the measuring piece of poster board or another

measuring device to determine the distance that he/she should move his/her car. This response indicates that the child is functioning at the Concrete Operations Stage on this task. If the child gives both a first and a second type of response on the two trials, then a third trial is given and the type of response most given by the child is used for scoring.

3. Three Mountain Task - This task measured the child's level of egocentricity and determined at what level of PreOperational and Concrete thought the child was functioning. Three miniature "mountains" were constructed by covering cones of styrofoam with colored felt. Mountain 1 was eight inches high, 3-3/4 inches in base diameter, and covered with dark blue felt. Mountains 2 and 3 were both 5-1/2 inches in height with a base diameter of three inches. Mountain 2 was covered with yellow felt and Mountain 3 was covered with red felt. Two pieces of green styrofoam were glued together to form a two foot by two foot flat board. Places were marked on the board for each mountain. The places were centered on the board and arranged in the shape of an equilateral triangle with a mountain at each vertex. The places were marked such that the mountains were 12 inches apart. The assembled board was placed on a table and eight 5 x 8 inch photographs were taken from the perspective of a child sitting at the table looking at the board. The photographs were the four straight-on views and the four views from the angles of the board. (See Appendix L for a diagram of the setup and the views the photographs presented.) In the test situation the mountain board was placed on a small table with four chairs around it. The child was asked to walk around the table and look at the mountain board from all directions. The child was

then seated in Chair 1 and a lifesize (32 inches in height) Raggedy Ann doll was seated alternatively in the remaining chairs. The child was given the set of eight photographs and asked to look through all the photographs for the photograph that showed the view the doll had of the mountain board. This was done three times with the doll in Chairs 2, 3, and 4, respectively. The photograph that the child chose for each position of the doll was recorded.

This task differentiated egocentricity into three levels of development, each level corresponding to a particular stage of cognitive development. The level of development of egocentricity expressed on at least two of the three trials was used to determine the stage of cognitive development at which the child was functioning on this task. If the child chose the view of the Mountain Board corresponding to what he/she sees as the view of the doll, then he/she was operating at a cognitive level of the late PreOperational stage on this task. If the child chose a view of the Mountain Board other than his/her own and he/she picked the correct view for the doll one trial or less, then he/she was operating at a cognitive level of the early Concrete Operations Stage.[1] If the child chose the view of the Mountain Board corresponding to the view of the doll on two or three trials, then he/she was operating at the late Concrete Operations Stage or the Formal Operations Stage.

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[1]Elkind (1974) and Phillips (1975) disagree slightly as to what response is indicative of a child at the early Concrete Operations Stage. Elkind states that the child would pick a view other than his/her view of the mountain board and this view would have no relationship to the view of the doll. Phillips agrees with this except to add that the child might make some correct responses.

4. Water Bottle Task - This task measured the child's ability to conserve volume and determined at what level of PreOperational and Concrete Operational thought the child was functioning. The apparatus of this task consisted of freehand, outline drawings of four water bottles. Each bottle was identical in their physical dimensions. They were five inches in height and three inches wide at the base. The neck of each bottle was one inch in diameter. Two bottles were drawn in upright positions. One of these bottles simulated an empty bottle. The other bottle was drawn to simulate a bottle one-fourth filled with water. The other two bottles were drawn at different degrees off the vertical, one at 45 degrees off the vertical and the other at 90 degrees off the vertical. Both of these bottles were drawn to simulate empty bottles. (See Appendix M for drawings of the bottles.)

The Water Bottle Task was administered in the following manner: The child was shown the outline drawing of the upright bottle, one-fourth filled with water. He/She was instructed that this was a picture of a bottle, one-fourth filled with water. He/She was given an outline drawing of the empty, upright bottle and asked to draw what the waterline would be if the water from the first bottle was poured into the empty bottle. This was used to determine that the child understood the directions of the task. If the child understood the directions, he/she was given the drawing of the bottle, 45 degrees off the vertical. He/She was asked to draw what the waterline of this bottle would be if the water from the upright bottle was poured into it. After the child completed this, he/she was given the drawing of the bottle, 90 degrees off the vertical and asked to do the same thing--draw the waterline.

This task differentiated conservation of volume into three levels of cognitive development. The level of development of conservation of volume that was expressed on both trials was used to determine the stage of cognitive development at which the child was performing this task. Scoring was as follows: The child operating at a cognitive level consistent with the late PreOperational Stage would center on the configuration of the bottle and draw the waterlines of the tilted bottles from that basis. The figure below demonstrates the responses that they would make:

The child operating at the cognitive level of the early Concrete Stage would be in conflict as to where to base the waterlines of the tilted bottles. Their conflict would be in choosing the dimension by which to make their estimate of the waterline. The conflict would be between taking references from the bottle's configuration or to use the horizontal and vertical contours of the surround as a reference. The following figure demonstrates the responses of this stage of cognitive development:

The child operating at the cognitive level of the late Concrete Pre-Operations Stage would draw the waterline correctly. The following figure demonstrates the responses of this level of cognitive

development:

5. Word Problem Task - This task was used to differentiate between the Concrete Stage and the Formal Operations Stage. This task focuses on the child's level of reasoning ability. The materials of this task consisted of two word problems. These are:

a. Helen is taller than Mary and Mary is taller than Jane; who is the tallest of the three?

b. Jack is heavier than John and John is heavier than Peter; who is the heaviest of the three?

The word problems were read to the child by the experimenter. They were repeated if the child requested to hear the word problem again.

If the child answered both questions correctly, he/she was functioning at the Formal Operations Stage on this task. If the child answered one of the two problems correctly, he/she was performing at a transitional level between the Concrete Operations and the Formal Operations Stages. If the child failed both problems, the task was not used to determine cognitive stage.

6. Pendulum Problem - This task measured the child's propositional logic and hypothesis testing ability and determined at what level of Concrete Operational and Formal Operational thought the child was functioning. The apparatus for this task consisted of a pendulum with specific characteristics. In this pendulum, both the length of the string and the weight of the suspended object could be varied. Two strings were made, one 23-1/2 inches, the other 10-1/2

inches in length. They were constructed for easy attachment and detachment from the tip of the pendulum, as well as easy attachment and detachment of the weights. Two weights were used, one of four ounces, and the other of 10 ounces. (See Appendix N for a diagram of the pendulum.)

The child was presented with an experiment. He/She was shown the pendulum and its special characteristics. He/She was shown how to vary the length of the string, how to vary the weight of the object, how to release the pendulum from different heights, and how to push the pendulum with different amounts of force. The child's task was to determine which of four factors: length, weight, height, and force, alone or in combination with other(s), was the major causative factor of the pendulum's frequency of oscillation. The correct answer is the factor of length of the string. The child was instructed to determine the answer in whatever manner he/she wished using the materials supplied. The child was asked to explain his/her reasoning throughout his/her attempts at finding a solution.

In order to reach the correct solution to this task, three cognitive abilities are required. The child must be able to design a test by which the effects of all the variables can be determined without confounding. In order to accomplish this, the child needs to be capable of hypothesis testing. The second requirement for success is for the child to be able to accurately observe the results of his/her manipulations of the variables. The third requirement for success is for the child to draw the correct, logical conclusions from his/her results. The child who is performing at the Concrete Operations Stage may arrive at the correct answer but he/she will

confound the variables during his/her manipulations and the logical conclusions that he/she draws from the empirical results are inaccurate. The child who fulfills all three of the requirements for obtaining a correct response is considered to be functioning at the Formal Operations Stage even if he/she gives an incorrect response.

APPENDIX G

COGNITIVE SCALE TABLE

TABLE IV

COGNITIVE STAGE TESTED BY EACH COGNITIVE TASK

Tasks	Cognitive Stages								
	Sensorimotor Stage	Early Pre-Operational Stage	PreOperational Stage	Late Pre-Operational Stage	Early Concrete Operational Stage	Concrete Stage	Late Concrete Stage	Transitional Concrete to Formal Stage	Formal Operations Stage
Blanket Task	X	X							
Toy Car Task		X		X		X			
Three Mountain Task				X	X		X		
Water Bottle Task				X	X		X		
Word Problem Task								X	X
Pendulum Problem Task						X			X

APPENDIX H

PERMISSION SLIPS

To: Parent(s)/Guardian(s)

From: Kenneth Sandvold, Ph.D.
Kevin Loomis, M.S.
Psychology Department
Oklahoma State University

Subject: Participation of your child in a study investigating how children understand their feelings.

We know little about how children use their thinking abilities to understand their feelings. When we watch children, they often seem to be a bundle of feelings going every which way. They come up with the most surprising statements about events that catch their attention. How do they come up with these statements? How do they understand what they feel? We are completing a study tha will attempt to study how children understand their feelings. We will show the child pictures of common, everyday scenes and ask them to tell stories about the scenes. Then we will measure how the child understands these scenes with simple Piagetian tasks and by analyzing the thinking abilities that they used in their stories.

We would like your permission for your child to be part of this study. With your permission, we will then ask your child to participate in the study. If you choose to give permission, please sign below. We would be happy to talk with you further and to provide information about the results of the study after its completion.

Thank you for your help in this matter.

Sincerely,

Kevin Loomis

Parent's Signature

_____

Child/Parent would like feedback on results

_____ Yes

_____ No

To: Parent(s), Guardian(s)

From: Kevin Loomis, M.A.
Child & Adolescent Psychiatric Clinic
Doctoral Candidate
Oklahoma State University
Kenneth Sandvold, Ph.D., Chairman

Subject: Participation of your child in a study investigating how children think about their feelings.

Dear Parent(s), Guardian(s):

While I am currently employed at the Child & Adolescent Psychiatric Clinic, I am also completing my doctoral degree in Clinical Psychology at Oklahoma State University. As part of my degree, I am performing a study in which I would like your child to participate.

Little is known about how children use their thinking abilities to understand their feelings. When you listen to children, they often seem to be a bundle of feelings going every which way. They come up with the most surprising statements about events that catch their attention. How do they come up with these statements? How do they understand what they feel? In this study, I will attempt to discover some answers to these questions.

To answer these questions, I will first measure their thinking abilities three different ways. First, I will measure their vocabularies by showing them pictures and asking them to select the picture that defines particular words. Then I will ask the children to do a series of problem-solving tasks. Then the children will be asked to tell stories about common, everyday scenes that draw out feelings. The entire procedure can be completed in one sitting of forty-five to sixty minutes.

I would like your permission for your child to be part of this study. Participation in this study is voluntary with no charge. It is not part of the services you are receiving from the Clinic and will have no impact on those services. All information will be held confidential and will be shared with you at your convenience. If you decide that the study information would benefit the Clinic services being provided your child, then I will be glad to share the information with your therapist. The time and place (at the Clinic or at your home) for each child's participation will be arranged with you at your convenience.

Thank you for your consideration. If you choose to give your permission, please sign below. Before beginning the study, each child's permission will also be asked and respected. If you have any questions, I would be happy to talk with you further.

Sincerely yours,

Kevin Loomis, M.A.
Work phone: 835-4011

Parent(s)/Guardian(s)
Signature

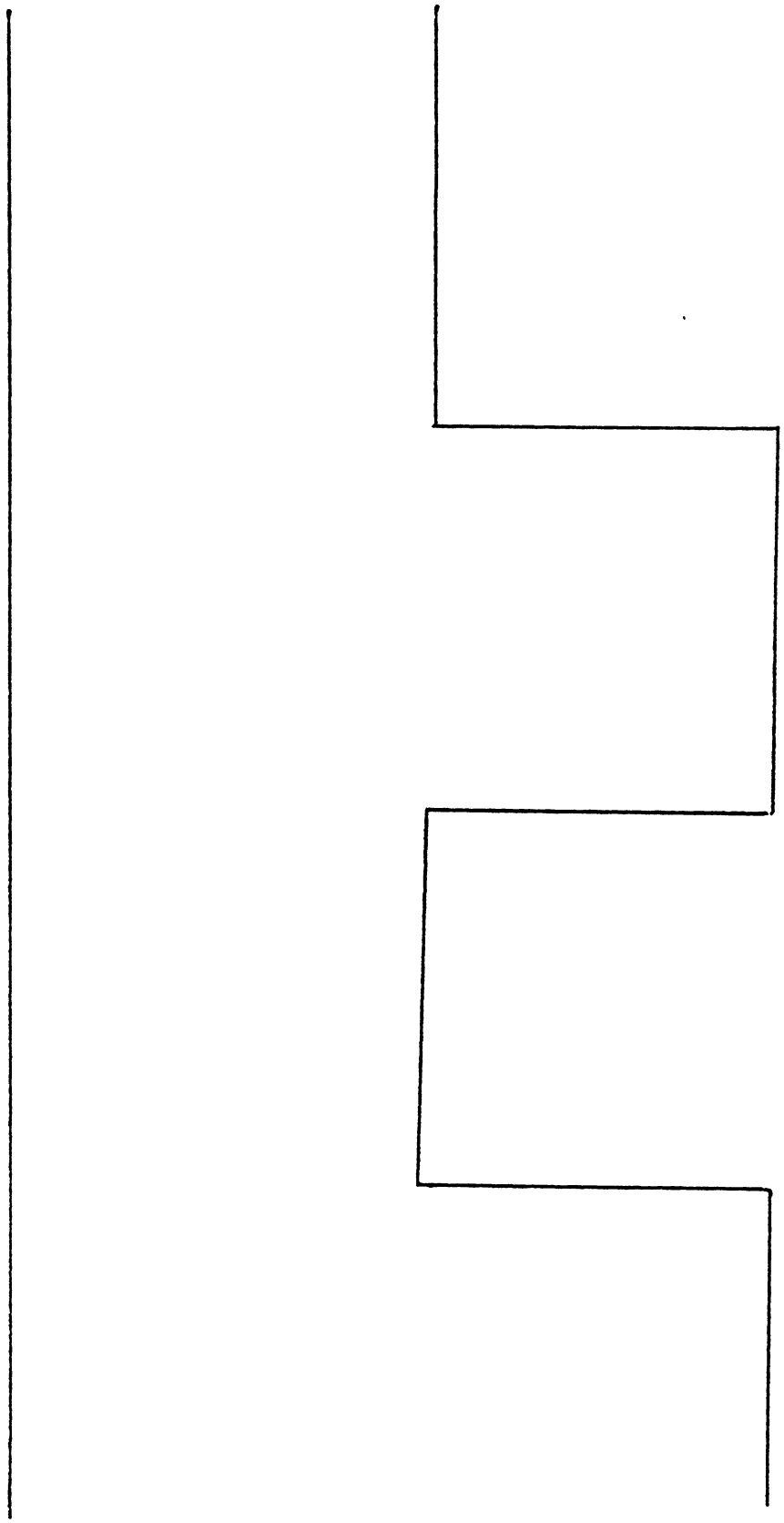
_____

Parent(s)/Guardian(s) would like feedback on the results of the study

Yes_____ No_____

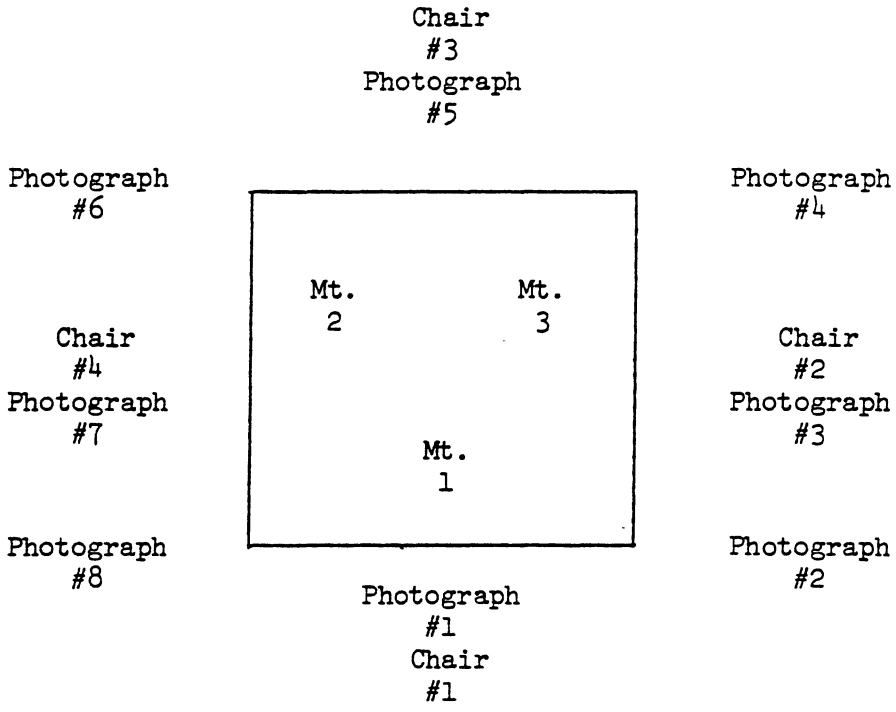
APPENDIX I

TOY CAR TASK



APPENDIX J

THREE MOUNTAIN TASK


Chair
#3
Photograph
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#6
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#2
Photograph
#7
Photograph
#3
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Chair
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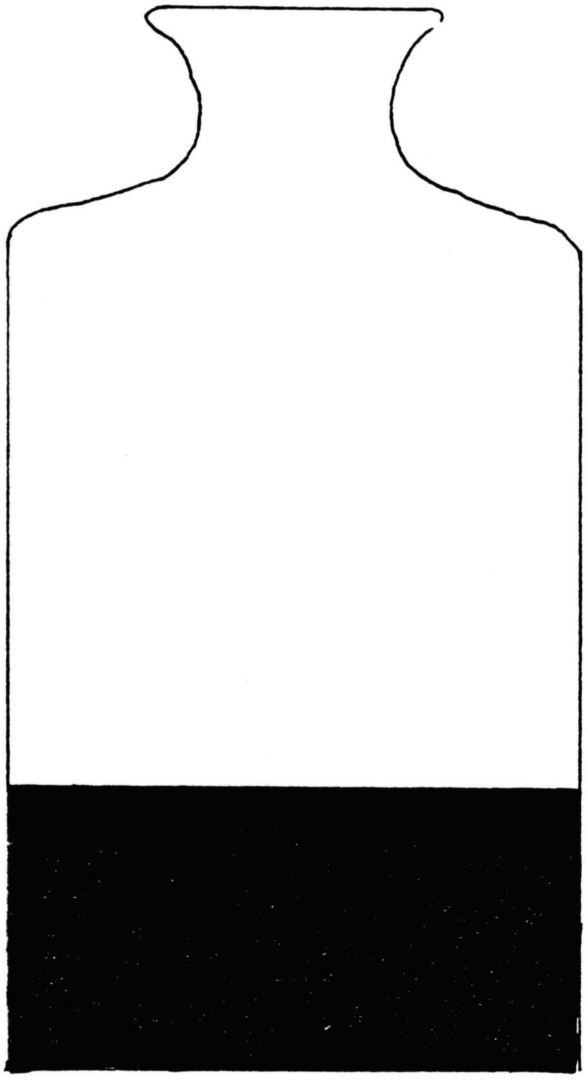
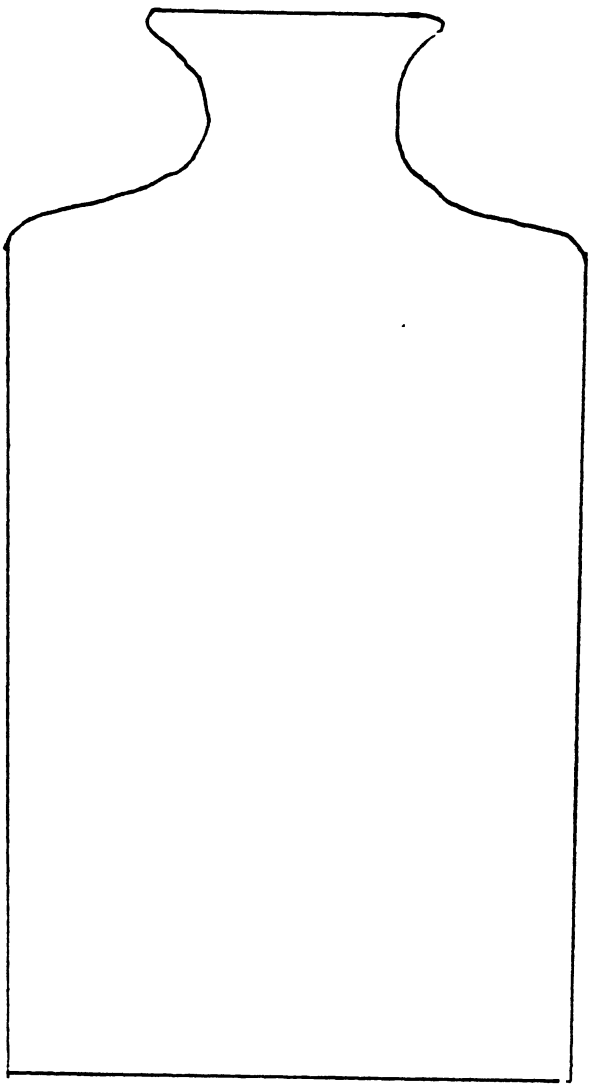
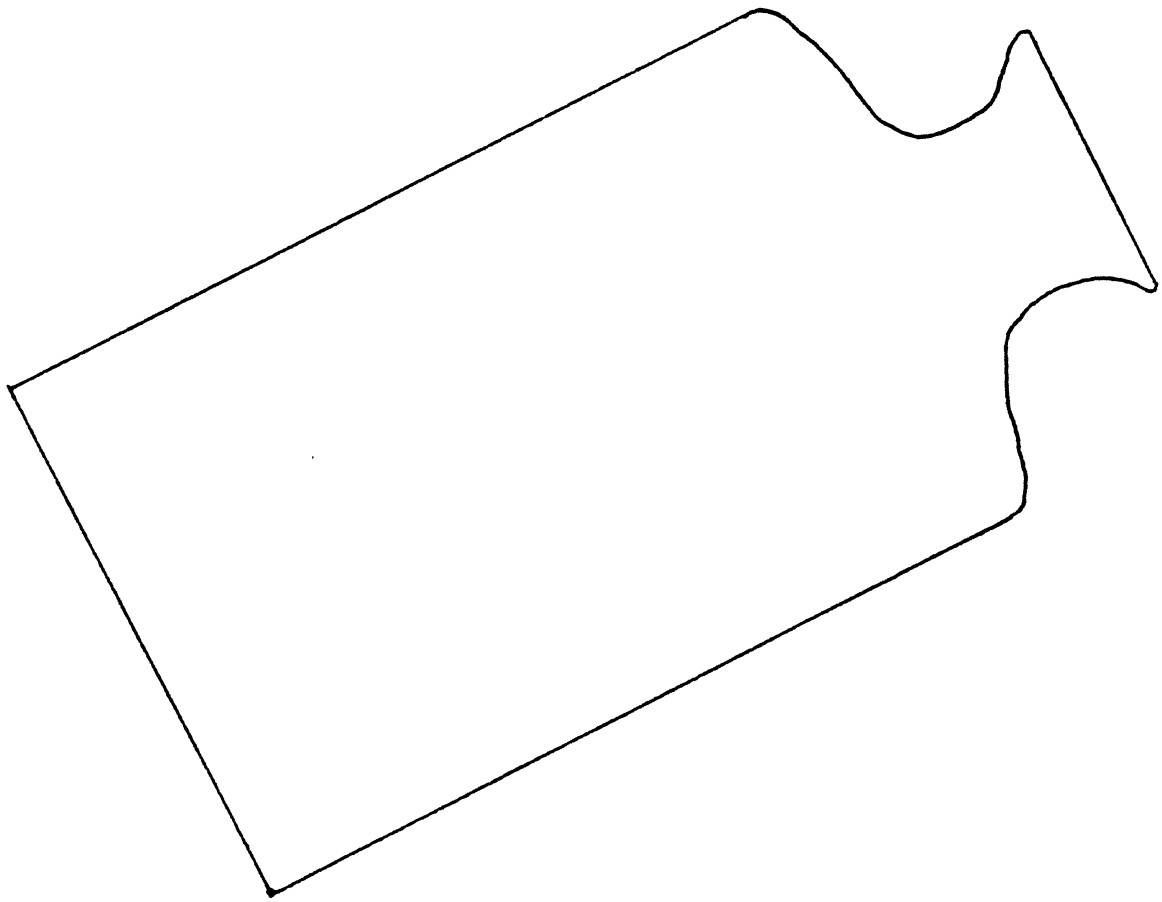
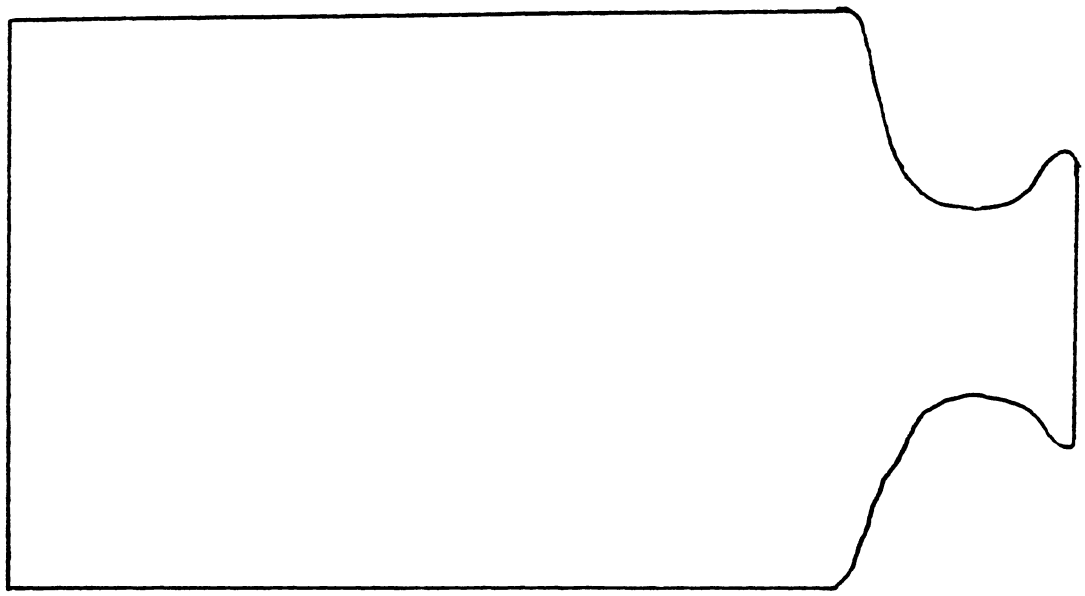
APPENDIX K

WATER BOTTLE TEST





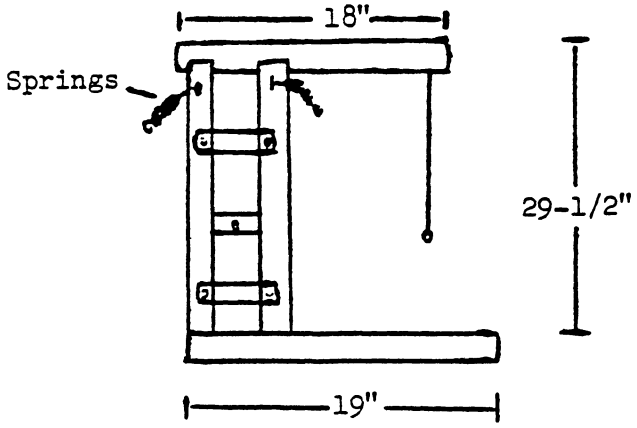




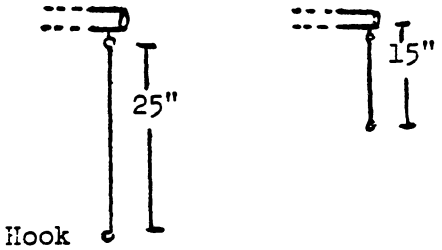
APPENDIX L

PENDULUM PROBLEM

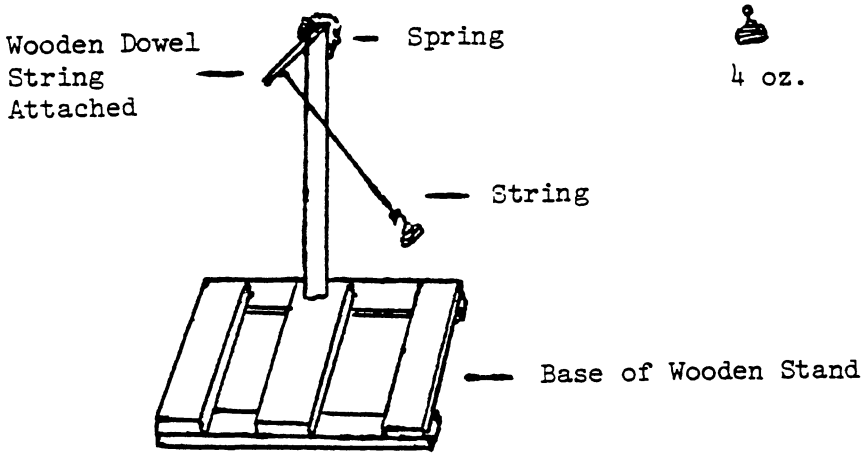
Side View



Two dowels with length of string attached



Front View



Two Weights

VITA

Kevin Robert Loomis

Candidate for the Degree of

Doctor of Philosophy

Thesis: COGNITIVE STAGE REGRESSION AS A FUNCTION OF EMOTIONAL DISTURBANCE IN CHILDREN

Major Field: Clinical Psychology

Biographical:

Personal Data: Born in Hartford, Connecticut, May 7, 1954, the son of Mr. and Mrs. R. W. Provost.

Education: Graduated from South Windsor High School, South Windsor, Connecticut, in June, 1972; received Bachelor of Arts degree in Psychology from Franklin and Marshall College in 1976; received Master of Science degree in Psychology from Oklahoma State University in 1982; enrolled in doctoral program at Oklahoma State University, 1982-86; completed requirements for the Doctor of Philosophy degree at Oklahoma State University in July, 1986.

Professional Experience: Graduate Research Assistant, Oklahoma State University, 1976-77; Graduate Teaching Assistant, Oklahoma State University, 1977-78; Psychological Associate, Psychological Services Center, 1976-82; Psychology Intern, Children's Medical Center, 1979; Psychology Intern, Oklahoma Juvenile Treatment Center, 1979; Psychology Intern, Central State Griffin Memorial Hospital, 1981-82; Clinical Psychology Intern, Veterans Administration Medical Center, 1982-83; Child and Family Therapist, Child and Adolescent Psychiatric Clinic, 1983.