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LA THÈSE A ÉTÉ  
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AN INVESTIGATION OF THE DISCRIMINATORY  
ABILITY OF A NEW RORSCHACH RATING SYSTEM  
AMONG THREE AGE GROUPS OF CHILDREN

by Allen Rollie

Thesis presented to the School of  
Graduate Studies at the University  
of Ottawa as partial fulfillment of  
the requirements for the degree of  
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## Curriculum Studiorum

Allen B. Rollie was born in Gallup, New Mexico, U.S.A. on September 4, 1946 where he spent his childhood. After attending the Lawrence Academy at Groton, Massachusetts for his secondary education, he attended Union College at Schenectady, N.Y. where he was graduated in 1969 with a Bachelor of Arts degree in studio arts. He further received a Bachelor of Arts (Honors) degree in psychology in 1977 from the University of Ottawa. The title of his honors paper was: Immanuel Kant and Carl Jung: Parallels and Comparisons.

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## ABSTRACT

The first well researched and validated developmental scoring system utilizing the Rorschach Inkblot test was constructed by Friedman (1951). His scoring system, however, only involved the Rorschach location scores. Mook (1977) has recently constructed a new Rorschach rating system which is based on the developmental theories of Werner (1948) and Schachtel (1959) and which attempts to extend genetic level Rorschach scoring to the determinants in addition to the location scores. This new rating system has not been subjected to any empirical test. As development is often distinguished by parameters of chronological age, it seems useful and necessary to ask if this new rating system is sensitive to and discriminative of different chronological age groups of children.

To answer the above question, three age group of normal children (ages 5:0-6:3, 8:0-9:3, and 11:0-12:3) were compared employing the three composite indices of the new rating system in a multiple discriminant function analysis. The subjects were 120 normal children (20 males and 20 females per age group) who were registered in the Ottawa Separate Elementary School System.

Discriminant analysis indicated that the three age

groups of children differed reliably on each of the three composite indices of the new rating system. Such differences were in the appropriate developmental direction with higher developmental scoring paralleling increasing chronological age. The investigation affirmed and cross validated the global discriminatory ability of Mook's (1977) rating system, and delineated a number of more specific questions to be investigated in future validation research on the new system.

## INTRODUCTION

The concept of development as an unfolding sequence of differentiation and hierarchic integration is fairly ubiquitous and "assumed" in contemporary psychology and the biological sciences. It is one of those formulations that rings immediately clear and yet for all its simplicity, its full meaning is as elusive and mysterious as the fact that a child can grow to be a human person. A major value of such a concept of human development lies perhaps not so much in terms of its ability to reduce development to a simple encapsulation but rather to provide an underlying heuristic structure and perspective from which meaningful questions can be investigated. From Darwin and Spencer to John Hughling Jackson and Freud, the evolution of life in general, its various species as well as its bodily organ systems and neurological capacities have been conceptualized as developing from a very general homogeneous mass through a process of increasing differentiation to a very heterogeneous specificity which simultaneously develops a comparable degree of integration among its parts in order to sustain life and to adapt to a changing environment.

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In psychology, various theoretical formulations have been constructed as attempts to explain human development, its progressions, its phenomena, and its derailments. Many theorists have succeeded to construct a model of some kind of unfolding and reciprocal sequence of increasing extension, differentiation, and hierarchic integration of psychological structures and processes (Freud, 1923; Lewin, 1935; Luria, 1932; Piaget, 1932; Rapaport, 1951; and Werner, 1948). For Freud, every child is born with a basic motivating instinct, libido. At first the libido is diffuse primitive sexuality, but as the child grows older this diffuse sexual energy pool becomes subject to increasingly numerous developments of differentiation and integration. The id, ego, and superego become differentiated in this way and integrated into a whole functioning personality (Freud, 1964). In social field theory, Lewin sees the most important psychological process that occurs during development as the increasing differentiation of various dimensions of the life space. He further speaks of the expansion of psychical systems which are initially few in number, possess fluid boundaries and little differentiation. These systems proceed through a process of stabilization into a multitude of psychic structures (Lewin, 1946). Jean Piaget in elucidating what he sees as the unfolding sequence of cognitive development describes a

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newborn child arriving into a very undifferentiated world. From this undifferentiated world of the sensorimotor stage where the child is learning the bare rudiments of space and time in reference to his or her own bodily reactions (mostly reflexive) in the environment, Piaget's various stages unfold to the concrete and formal operations stages where the child acquires a set of operational concepts which are organized into systems of thought of increasing abstraction. As well, the invariant functions of adaption and organization seem highly related to the processes of differentiation and integration (Ginsburg and Opper, 1969).

There are many other such theories that discuss these processes and their role in development. Whether it be on a purely descriptive level of how at a particular average age a child discovers his toes or on a dynamic one relating how a child passes through an affective instinctual role conflict and identifies with the parent of his own or her own sex, most approaches to development conceptualize directly or indirectly a process of progressive differentiation and integration of higher and higher orders of complexity and sophistication.

The theoretical framework of this research has specific roots in the developmental theories of Heinz Werner (1948) and Ernest Schachtel (1959, 1966). Both theorists

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are important because they explicitly investigate the process of differentiation and integration, and they do so from a holistic and organismic orientation. Werner's theory is a structural approach, and Schachtel's is a phenomenological and experiential one. Both these approaches are highly relevant to this investigation.

Heinz Werner (1948) in his Comparative Psychology of Mental Development sees development as an orderly systematic and sequential process implicit to which is a 'built-in' direction. The regulatory principle behind this direction Werner adapts from the embryogenic principle of orthogenesis and applies it to mental development. This orthogenetic developmental principle of Werner's states that when development occurs, it proceeds from a state of relative globality and lack of differentiation to a state of increasing differentiation articulation, and hierarchic integration (Werner, 1948). Werner adopts a comparative approach to obtain a broad overview of the applicability of this principle of development. He investigates many qualities of function, content, and structure which are characteristic of young children, abnormal adults, and primitive peoples as contrasted with the normal adult of Western culture. In looking at the differences and similarities between these groups, Werner formulates four pairs of concepts whose dynamic polar nature helps him to

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focus more fully on the directional quality of his orthogenetic principle: (1) syncretic-discrete; (2) diffuse-articulated; (3) rigid-flexible; (4) labile-stable. The immature and low developmental processes he describes as being syncretic, diffuse, rigid, and labile while the mature and high developmental processes are described as as being discrete, articulated, flexible, and stable. These four pairs of concepts Werner sees as being especially useful in investigating the genetic levels of mental development.

Among the first to apply Werner's heuristic framework in research involving the Rorschach, Friedman (1951) attempted to link this formulation of genetic theory with clinical theory and to relate development with its opposite process, regression. Specifically, Friedman developed a series of structural scores for the locations of the Rorschach inkblot test and distinguished these as being "genetically mature" and "genetically immature" on the basis of their degree of differentiation and integration. Utilizing this system, Friedman demonstrated similarities between schizophrenic patients and a group of 3-5 year old children, while he showed differences between both these groups and a group of normal adults. Friedman's concern with genetic theory and the Rorschach was only in devising scores that would distinguish general levels of

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perceptual-cognitive functioning. His success with these scores provided two simultaneous and important prospects. The first was that these scores could be used to study general developmental laws especially in relation to Werner's theory of development; and the second was the empirical demonstration of the viability of the Rorschach to investigate the structural development of the perceptual-cognitive organizing processes.

Friedman's study generated a variety of other studies using his scoring system to investigate differences of degree and kind between various psychiatric groups (Pena, 1953; Rosenblatt and Solomon, 1954; and Siegel, 1953). As well, some investigators such as Becker (1956) attempted to improve Friedman's scale with methodological modifications; while others such as Phillips, Kaden, and Waldman (1959) attempted to expand his scoring system in order to utilize more fully the rich range of the Rorschach data.

Nevertheless, the most important study in regard to the present research originating from Friedman's study was Hemmendinger's (1953) examination of Friedman's genetic level scoring in comparison to chronological age. This study parallels the present research in general focus and intent. Hemmendinger scored the Rorschach protocols of 169 normal children between the ages of three and ten with approximately 20 children in each group. His results

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confirmed the hypothesis that higher genetic level scoring increases with chronological age for Friedman's scale. Furthermore, the overall developmental pattern implied by Werner's theory seemed to be consistent in a number of regards with Hemmendinger's results.

As mentioned above, the success of Friedman's genetic scoring system utilizing the location scores of the Rorschach led Phillips, Kaden, and Waldman (1959) to attempt to extend genetic level scoring to other dimensions of the Rorschach. The location scores of the Rorschach are quite clearly seen in the literature as a strong indicator of the cognitive organizational activity of the subject, and it has been understood as the most apparent index to investigate the reciprocal interaction of differentiation and integration. Other determinants, however, such as form, F, human movement, M, and color, FC, and the like, also involve these reciprocal processes, but more importantly involve these processes in terms of personality factors. In this regard, Hemmendinger and Schultz (1960) make the following statement:

If psychologists were in possession of concepts relating motivating processes and externalizing processes by developmentally conceived Rorschach factors of 'determinants' as well as 'locations,' it would be possible to

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study some of the processes and products of thinking in various age and clinical groups.... Although there are other, in many ways better, observation techniques than the Rorschach for studying thinking, the congruence of intellectual, motivational, imaginal etc. factors already recognized in the determinants of Rorschach responses indicates that such a research program would be profitable (Hemmendinger and Schultz, 1960, p. 102).

Unfortunately, Phillips et al. (1959) in their attempt to extend genetic level scoring to the determinants introduce criteria into their scoring system which are unrelated to any specific developmental theoretical framework. This leaves Phillips' system without a rich, congruent, and heuristic theoretical foundation such as Werner's theory. As well, research with Phillips' system has not been extensive, and normative data is non-existent.

From Phillips' lack of success, it is evident that the need and the opportunity to construct a genetic level scoring system for the Rorschach involving all the dimensions of the test is still existent. Any such attempt also seems quite consistent both with Werner's organismic and holistic approach to development, and with the fundamental orientation of the Rorschach, its data, and its inherent holistic and integrative approach to personality assessment. Werner himself sees the progressive differentiation and specification of the organization of

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rudimentary action systems such as sensory and motor systems as well as perceptual-cognitive systems as a major interest of genetic level explication. The formal Rorschach determinants such as human and animal movement (M and FM), color (FC), shading (FK, FC'), and texture (Fc), all have an inherent structural relationship to such potential explication. Werner, however, does not develop any explicit theoretical and conceptual basis for this potential explication in terms of the Rorschach.

The requirement that Hemmendinger and Schultz (1960) saw as necessary for the extension of genetic level scoring to the determinants, ie. "the concepts relating motivating processes and externalizing processes by developmentally conceived Rorschach factors of 'determinants' as well as 'locations,'" appears to be met by the work of Ernest G. Schachtel (1959, 1966). Schachtel has not only explicated a directional and dynamic developmental theory of perceptual relatedness that attempts to take motivating processes as well as externalizing processes into account, but also he has analyzed all of the Rorschach determinants from a perspective of perceptual relatedness. His developmental analysis of perceptual relatedness has provided important genetic concepts that offer the basic building blocks for any effort attempting to link the Rorschach determinants

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with the development of affect and motivation.

Schachtel's (1959) description of an 'autocentric-allocentric' continuum in development is quite compatible to Werner's conceptualization of developmental movement as increasing differentiation and hierarchical integration. At the autocentric pole there is little or no objectification; sensory quality and pleasure-unpleasure are little differentiated; passive reaction to impinging stimuli is characteristic. The affective attitude is correspondingly called "embedded." It is characterized primarily by a need for withdrawal and by dependence. As the child develops, the child naturally wants to explore the world and its relationship to himself. The boundaries between himself and the world become increasingly differentiated and structured. This is the process of an orthogenetic progression to the "allocentric" mode. The end of the continuum is characterized by activity, approach, exploration, and mastery. Affective energy is organized into goal-directed perceptions, and the person sees himself not only as differentiated from his world but also dynamically integrated with it.

The purpose of this present research is to test the discriminatory ability of a new and expanded Rorschach rating system. This rating system, based on the theoretical frameworks of Heinz Werner and Ernest Schachtel, was

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constructed by Bertha Mook (1977) of the University of Ottawa. It was constructed primarily as a developmentally oriented clinical instrument and as such was designed to be maximally sensitive to individual variation and clinical use. Nevertheless, because of its implicit theoretical bases, the question of how sensitive and applicable to a nomothetic and empirically based measurement of genetic levels is a logical question of importance in regard to its utility as a developmental instrument. It is the expressed intent of this research to put this new and expanded Rorschach rating system to a similar test as Hemmendinger (1953) did to Friedman's scoring system. The new rating system has not yet been subjected to any empirical investigation. In this regard it seems essential that before any fruitful investigation of the nature of genetic levels can be made utilizing such a rating system, that rating system must have demonstrated its ability to be sensitive to and discriminating of genetic levels. As the differentiation of developmental levels and development in general is often associated with different age levels, the task of this research becomes the answering of the basic question: Can the new Rorschach rating system differentiate between different age levels of normal children? It is the hypothesis of this study that the new Rorschach rating

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system developed by Mook can differentiate between different age groups of children in the appropriate orthogenetic direction. In effect, this hypothesis states that increasingly higher scoring on the various Rorschach indices as determined by the newly constructed rating system will reliably parallel increasing chronological age.

This task, briefly stated, is the object of this dissertation. Literature relevant to this investigation is reported in the first chapter. Chapter I offers a review of the developmental theories of Heinz Werner and Ernest Schachtel and attempts to outline the natural affinity and complementarity that the works of these two investigators have with the basic theoretical rationale of Hermann Rorschach's inkblot test. The integration of Werner's and Schachtel's developmental perspectives constitutes the theoretical foundation upon which the new Rorschach rating system was built. Chapter I also offers a detailed review of the empirical literature relevant to genetic level Rorschach scoring systems, presents the rationales underlying the new rating system, and poses the specific hypotheses of this investigation. Chapter II describes the research methodology, the instruments employed, the subjects, the specific procedures of the research, and the methods of data analysis. The results are presented in the third chapter, while the fourth and final chapter deals

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with discussion of the results, suggestions for further research, and a summary of the findings.

## CHAPTER I

### THE REVIEW OF THE LITERATURE

The relevant literature of this investigation, both theoretical and empirical, is presented in Chapter I. In subsection A of section one the major theoretical points of Heinz Werner's developmental theory are summarized. In subsection B those of Ernest Schachtel are discussed while section two discusses the basic theoretical premises underlying Herman Rorschach's inkblot test. A resume of the literature utilizing the Rorschach in genetic level investigation is then presented in section three. Section four introduces the theoretical and genetic rationales of the new Rorschach scoring system while section five concludes the chapter with this investigation's goals and specific hypotheses.

#### 1. The Theoretical Framework

The theoretical work of both Heinz Werner and Ernest Schachtel are fundamental to this investigation. Werner's organismic developmental theory has been the essential

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foundation of the most recent and successful developmental studies using the Rorschach Inkblot Test. In addition, Schachtel has not only elucidated the Rorschach determinants in terms of their ability to reveal the subject's relatedness to and experience with the world, but he has also separately formulated a developmental description of perceptual relatedness which is complimentary to Werner's developmental theory. Mook's (1977) integration, as applied to the Rorschach, of the theoretical postulates of these two men is the foundation of the new Rorschach rating system. As the global discriminatory ability of this new rating system along the developmental parameter of chronological age is the main investigative focus of this research, it seems essential to describe the rating system's underlying developmental foundations.

### A. Heinz Werner's developmental theory

The developmental theory of Heinz Werner is vast. As first explicated in his Comparative Psychology of Mental Development (1940, 1948), Werner's comparative analytical method attempts an extensive investigation of ontogenesis through the integration of the phenomena of child psychology, ethopsychology, animal psychology, and human psychopathology. Furthermore, the path charted in the

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Comparative Psychology of Mental Development has since been continually refined and further elaborated by Werner himself (Werner, 1957; Werner and Kaplan, 1963) and by his associates and students such as Seymour Wapner (1964, 1965), Bernard Kaplan (1966a, 1966b), Jonas Langer (1969a, 1969b, 1970), and by the work of many others at the Heinz Werner Institute of Development at Clark University, Worcester, Massachusetts. The attempt at a substantial exposition of this rich body of work is much beyond the scope or needs of this paper, but a brief overview of the basic theoretical framework is quite relevant for the present study.

The most global characterization of Werner's developmental theory is that it is an organismic one. It emphasizes the unity, integration, consistency, and coherence of the organism. Development is the process of change, but such change occurs in relation to the natural state of the organism which is characterised by its organization. Mind and body are not separate entities. The mind is not constructed from separate elements or independent faculties nor is the body a summation of independent organs or processes. "The laws of the whole govern the functioning of the differentiated parts of the whole. Consequently, it is necessary to discover the laws by which the whole organism functions in order to

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understand the functioning of any member component" (Hall and Lindzey, 1978, p. 243).

If the natural state of the organism is organization, then the developmental process is not just a process of change. As Jonas Langer (1970) states: "The central theoretical issue is dialectical: how does a developing organism change qualitatively and at the same time preserve its integrity" (p. 733). No adequate developmental formulation can only concentrate upon one pole of the dialectical process (the nature of adaptive change) and disregard the other (the nature of organizational stability and integrity). At the extreme of such disregard, development has been seen as nothing but the continuous, gradual, quantitative acquisition and slight modification of bits of behavior over time (Bijou and Baer, 1961; Staats, 1968). The fact still remains, however, that if one wants to understand the integrative nature of a organism while it is altering through an ordered sequence of change, a theoretical and empirical focus on both poles of the developmental process, both transformation and conservation, is necessary. Werner's fundamental thesis is that evolution is a synthetic process that interweaves two antithetical organismic tendencies: (1) to maintain continuity in order to conserve one's integrity (survival

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and organizational coherence); and (2) to elaborate discontinuity in order to develop (Langer, 1970).

There is, on one hand, the tendency of organisms to conserve their integrity whether biological or psychological: in the face of variable and often adverse, external or internal conditions, the organism tends to maintain its existence as an integrated entity. There is on the other hand, the tendency of organisms to develop towards a relatively mature state: under the widest range of conditions organisms undergo transformation from the status of relatively little differentiated entities to relatively differentiated and integrated adult forms. (Werner and Kaplan, 1963, p. 5)

Werner (1940, 1948) found in the embryogenetic principle of orthogenesis a means to characterize these two dialectical but concurrent processes. Adapting this well established principle of biology and applying it to mental life, Werner formulated his orthogenetic principle of development. It asserts that development is a process of increasing differentiation and specification of the organism's relatively diffuse and global organization, concurrently coupled with a process of progressive centralization and hierarchic integration of the more individuated systems so that progressive equilibrium is achieved (Werner, 1948, 1957).

These two dialectical tendencies, change and stability, create an inevitable dynamic tension which Werner (1957) characterises by three concepts central to his

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orthogenetic principle. These three concepts are discontinuity, continuity, and synthesis.

1. Discontinuity is the process of change itself and is the process of differentiation, the altering of a relatively global organization into individuated parts.

2. Continuity is the process of progressive centralization and hierarchic integration which serves to maintain the organism's integrity over time in the face of change. Some forms of the organism's structures and functions become integrated into the more centralized and individuated systems; but not all primitive systems are lost or altered by development.

3. Synthesis is the process where the ongoing dynamic flux between differentiation and integration become reorganized into a new organization. The total pattern is new but continuous with the previous one. The new organization with its "new" structures and functions is dominant. Further differentiation correspondingly occurs leading to further individuated systems, and concurrently, preserved primitive systems operate differently due to the increased centralization and to their regulation by the more differentiated and integrated systems (Werner, 1948, 1957; Langer, 1969a, 1969b).

The progressive equilibrium of the orthogenetic principle is thus hardly a state of homeostasis. As

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increasingly differentiated and individuated systems develop, they give rise to new functional competence which in turn changes the organism's relationship with its world, and this in turn provides the setting for further differentiation and reorganization. Life and being in the world thus requires constant and reciprocal interaction between the organism and his environment. According to Werner (1948), integrity is achieved not by a stability that can disregard such interaction (for without it differentiation and adaptation could not occur) but by an organism that can effectively and reciprocally respond.

Flexibility of response, however, is not inherent in primitive systems of action. Diffuse global action is action as a total response. It is a rigidly defined all-or-none reaction, and a small variation can disturb the whole event such that the entire action must commence anew from the beginning. The whole of the activity is rigid, inseparable into relatively self-subsistent parts, and not susceptible to a division into members forming a series (Werner, 1948). One could consider the diffuse gross motor systems of the neonate and observe that no matter what the specificities of the situation, the response is diffuse, global, and rigid. The inflexibility and rigidity of primitive means and ends suggest that these means and ends

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are never <sup>more</sup> totally satisfying or adaptive. Such an insufficiency further implies a functional disequilibrium that necessitates means-ends reorganization.

...wherever functional shifts occur during development the novel function is first executed through old, available forms; sooner or later, of course, there is a pressure towards the development of new forms which are of a more function specific character, ie. that will serve the new function better than the older forms (Werner and Kaplan, 1963, p. 63).

Such reorganization of the organism can be conditioned either by the introduction of a new function or by a change of function dominance in a given process pattern (Werner, 1948). As reorganization and development does occur, however, the more primitive systems are not necessarily lost, but they do change, are used less, and can even deteriorate in efficiency as the more sophisticated systems become dominant.

...lower levels of functioning (both in terms of means and ends) are subordinated to the more advanced levels of functioning; they may come to the fore again under special internal or external conditions, for example in dream states, in pathological states, under intoxication by certain drugs, or under various experimental conditions. They also, and characteristically, may come to the fore when the organism is confronted with especially difficult and novel tasks: in such cases one often finds a partial return to more primitive modes of functioning before progressing towards full-fledged higher operations; we may refer to this tendency as a manifestation of the genetic principle

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of spirality... (Werner and Kaplan, 1963, p. 8).

The genetic principle of spirality thus reflects the dynamic and dialectical relationship between the maintenance of the organism's integrity and the tendency to develop towards a relatively more differentiated and mature state. As Gesell (1946) describes it:

The organism at times seems to retreat from a locus of maturity which it has already attained. Temporarily such a retreat may look like an abandonment. It would be abandonment if it continued on one tangent. The course of development, however, being spiral, turns back toward the point of departure and it does not return precisely to this point. It returns to the same region but at a higher level. The neurological result is an interwoven texture which expresses itself in progressive patterns of behavior. The unity of the ground plan of the organism is preserved. It is a process of reincorporation and consolidation (p. 317).

From both the principle of spirality and the orthogenetic principle, it is clear that development is not a homogeneous linear process of change. The manifestation of change, its quality, its direction, and its extent are inherently and dynamically bound to the organismic necessities and environmental conditions involved in the maintenance of the organism's integrity. Changes may involve saltatory leaps forward or backwards, and the attained developmental level of an organism at any

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particular time is characterized by a high degree of variability of functioning. Furthermore, the achievement of various individuals may result from quite different developmental processes. The investigation of these processes of change, their quality and nature, rather than the accurate measurement of achievement, is thus more revealing of an individual's development.

To understand such processes of change in a truly developmental context, these processes must be investigated fully in the context of the "organism embedded in its own vital field or Umwelt" (Werner and Kaplan, 1963). Given the organism's innate biological and hereditary functional structures at birth, the key to further development (stability and change) is interaction. The nature of the organism's organization selectively determines the character of its interaction and the significance of its experiences, and such character and significance eventually lead to the qualitative alteration of the organization of the organism and to subsequent reorganizations. Thus, the organism is a vital actor in his Umwelt. The analysis of development consequently requires the investigation of the lawful changes in subject-object relations that occur in progressive or regressive evolution (Werner, 1948; Langer, 1970).

In his Comparative Psychology of Mental Development

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(1940, 1948), Werner specifies four sets of formal coordinates which are highly useful for the analysis of the structural-functional dimensions of mental life and for the determination and definition of genetic levels. They are the four polar pairs briefly alluded to in the introduction to this paper: (1) syncretic-discrete; (2) diffuse-articulated; (3) rigid-flexible; (4) labile-stable.

The central set of coordinates for functional analysis is that of the syncretic-discrete polarity. "If several mental functions or phenomena, which would appear as distinct from each other in a more mature state of consciousness, are merged without differentiation into one activity or one phenomenon, we may speak of a syncretic phenomenon" (Werner, 1948, p. 53). This syncretic fusion can be seen in the perceptual fusion of modalities in synesthesia or in the emotional undifferentiatedness during infancy and childhood. The syncretism of affect and imagery found in the confabulation of dreams and hypnogogic images is also an example. Further, the functionally undifferentiated subject-object relations of the young child is illustrated by the child's egocentrism.

Orthogenetic development implies increasing functional discreteness and differentiation. The various emotions and perceptual modalities acquire their own distinct and

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separate qualities. The fusion of the sensory-motor-affective systems and processes of the young child become increasingly discrete functional systems. This can be seen in how the anthropomorphic attributions of affect, of living movement, and of "willing" to external inanimate objects and events become differentiated as the child's own functional life-space and internal biopsychological systems themselves become more discrete and differentiated. Werner and Kaplan (1963) speak of the representation function as developing out of a "primordial sharing situation" where the human infant is "sharing" rather than "communicating" an experience (the object of reference) with the mother. This primordial sharing situation is a sensorimotor affective "presymbolic situation in which there is little differentiation in the child's experience between himself, the other (typically the mother), and the referential object" (p. 42). This original fusion and primordial sharing situation with the mother becomes increasingly and functionally more discrete as the act of reference to the object itself becomes more differentiated through the social interaction and sharing of the child and the mother. The initial sharing (touching, looking, and pointing) of the object remains "stuck" or fused with the concrete situation until the characteristic features of the object are lifted out in reference by

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symbolization and given form in another material medium (auditory, visual, and gestural expression etc.). "From the early situation in which symbolic vehicles (names) are intimately bound to the concrete situation and shared by persons intimately linked to each other, there ensues in the course of ontogenesis an increasing distance between the four components [addressee, addressor, object, and symbol] of the symbolizing activity" (Werner and Kaplan, 1960, p. 44).

In distinction to the above central set of functional coordinates, the central set of formal coordinates for the structural analysis of development is that of "diffuse to articulated." Werner conceives "articulated" as a term denoting a formal construction of such a nature that distinguishable parts constitute the whole. "Diffuse" structure on the other hand represents a relatively uniform and homogeneous formal construction ---one in which the parts have become more or less indistinct and are not characterized by a clear self-subsistence (Werner, 1948). For action systems, diffuse activity can be either global, such as the wholly integrated mass activity of the newborn infant, or it can be the lack of coordination and of hierarchical integration among the different parts of a total movement. Prior to the second half of the first year

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of life, legs, hands, mouth, and feet are all used by the infant in the movement of grasping. In terms of mental forms, the lack of structural differentiation is coincident with the lack of functional differentiation in the primordial sharing situation. The lack of articulated symbols and their referents in word realism is representative of diffuse structures.

Structural articulation, on the other hand, can be seen in the differentiated but integrated way that different parts of the body are used in well executed sports play, or between parts of mental forms, when a symbol can become relatively detached from what it refers to in conventional linguistic usage. In terms of subject-object relations, the articulated distinction of mother, object, and child in symbolic terms as well as in the various gestural, auditory, and visual expressions of reference are all part of structural articulation.

For Werner, the distinction between the syncretic-discrete and the diffuse-articulated coordinates is one of a functional perspective versus a structural perspective. "The genetic transformation of the syncretic units into the discrete occurs as a singling out of function or content, whereas the transformation of the diffuse into the articulated occurs as a dividing up, a progressive disjunction of the whole into related parts" (Werner, 1948,

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p. 54). With the formulation of these two central sets of formal coordinates, Werner provides the dynamic conceptual tools with which to analyze the organization of the sensorimotor, affective, and perceptual-cognitive systems of the organism and to analyze the structural and functional levels of its interaction with its world.

The other sets of formal coordinates are those of "rigid to flexible" and "labile to stable." These sets are relevant to the assessment of both structural and functional development. At the early levels of orthogenetic development, the biopsychological systems are rigid but unstable and labile. With increasing differentiation and hierarchical integration and centralization, the organism achieves increased flexibility and stability.

As Werner (1948) points out, any phenomenon known primarily in terms of qualities-of-the-whole, ie. in a syncretic, diffuse, and global sense rather in terms of articulated qualities, is most apt to be perceived as being radically and completely transformed if no more than a minor detail in the situation is changed. A young child, for instance, may see himself and others as transformed in essence by wearing different clothes (DeVries, 1969). Or the young child may fail to recognize his mother if she's

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wearing a new hat or his father if he is wearing a new black suit (Werner, 1948). The child's ability only to recognize the global whole singularly binds him to a rigid and inflexible grasp of the situation. The change of even a small part changes the quality-of-the-whole, and transforms the entire perception. As the parts become more differentiated and articulated, changes in minor details can be incorporated as changes in a few of the articulated parts of the perception, and the overall perception remains stable and intact. Langer (1970) describes how these two sets of coordinates similarly can be applied to the development of the child's self-concept. The creation of imaginary friends and of the good and bad self further exemplifies this stability in childhood. The orthogenetic goal, however, is to articulate these various parts of the self and to integrate them into a stable but flexible self-concept.

In human ontogenesis this means that the child's self-constructive activity is directed toward (1) differentiating himself as a stable, subjective entity that is discrete from others so that he feels and acts like a distinct individual and at the same time (2) integrating himself as a participant in and member of his social order, thereby acquiring the same objective status as others (p. 746).

In summary, Werner's developmental theory is essentially a structural-functional theory centered on the orthogenetic principle. Its emphasis on the unity and integrity of the organism in a process of change

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conceptualized as progressive differentiation and hierarchical integration and centralization provides a richly dynamic framework from which to investigate the interactions of the individual with his world and to investigate the vicissitudes of the dialectical tension between change and the individual's maintenance of his organization and integrity. The four formal coordinates provide structural and functional criteria of assessment and methodological tools by which such interactions can be mapped, compared, and more fully understood in the context of the unity of the organism and his Umwelt.

Werner's theory, however, centers for the most part on a perceptual cognitive window of experience, and his scientific investigations center on development of the sensorimotor, perceptual, and cognitive systems of man as they interact with the external world. The theory attempts a dynamic structural and functional analysis of these systems, but the ontogenesis of motivation and the corresponding experiential development of affect are not accounted for in his structural-functional theory. On the whole, the theoretical distance and ambiguity between the two perspectives of ontogenesis is most likely the reason why the initial genetic level investigations using the Rorschach and based on Werner's theory limited their

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investigations solely to the location scores. The locations themselves are much more clearly and directly amenable to a structural-functional analysis whereas the determinants and their rationales are strongly centered on the dynamics of affect, motivation, imagination, and other personality factors as well as on structural and functional considerations. It is precisely the lack of "...the concepts relating the motivating processes to the externalizing processes..." (Hemmendinger and Shultz, 1960) in Werner's theory that isolated the Rorschach determinants from a role such as that held by the location scores in genetic level investigation.

With the publication of his Metamorphosis (1959) and later his Experiential Foundations of the Rorschach Test (1966), Schachtel provided a rich description of genetic concepts which related the development of affect to the development of perception. Schachtel's work is highly complimentary and quite consistent with Werner's theory. Together, the work of both men offers the context within which one can link genetic concepts to the basic rationales of the Rorschach determinants and thus provide the basis for the extension of genetic level investigation to the determinants. The next subsection describes these genetic concepts of Schachtel.

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### B. Schachtel's genetic view of perceptual-relatedness

Ernest Schachtel (1959, 1966) has devoted considerable attention towards understanding and analyzing the phenomenology of the individual's interaction with the world in general and with the Rorschach test in particular. Schachtel (1959) has conducted an extensive phenomenological analysis of the human senses. Emphatically, the senses are Schachtel's starting point because it is through the sense organs that man makes his initial and sustaining contact with the external world. The nature of these organs cannot but highly qualify and determine the nature of man's interaction with the world. From his investigations, Schachtel has formulated a dynamic continuum that attempts to describe the perceptual relatedness of the human sense organs to the world, and he has elucidated the various phenomenological and experiential implications of different forms of relatedness. He further has related parallel sequelae in the phylogenesis of the sense organs, their structure and function, to the ontogenetic development of human perceptual relatedness and human interaction with the world.

Schachtel's two basic modes of perceptual relatedness are the autocentric mode and the allocentric mode. The autocentric mode has little or no objectification; by

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objectification, Schachtel does not mean objectivity but rather the degree to which the external object is perceived as existing independently of the perceiver. The autocentric mode then is characterized by a lack of discrimination between the perceiver and the object. Such a lack of discrimination, of course, extends to a lack of any knowledge or experience of the richness or distinctiveness of any of the object's various qualities. The senses that predominantly utilize the autocentric mode are the gustatory, olfactory, thermal, proprioceptive, and pain senses. They are the basic senses and the phylogenetically old ones. Correspondingly, the autocentric mode of perception is characterized by a close relation and fusion with feelings of pleasure-unpleasure, comfort-discomfort, attraction-repulsion. Because of this fusion of the senses with the organism's feelings, the autocentric mode is subject-centered. The emphasis is on how and what the person who is perceiving feels, and the person's perceptions are syncretically fused with the organism's feeling state. As the organism's interaction with the environment in this mode is highly interwoven with the feelings of the organism, the perceptual relatedness in this mode is more directly and compellingly controlled by the environment. The perceiver's interaction with the world in the autocentric mode is primarily a reaction to something impinging on him, and in

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this sense it is a passive one (Schachtel, 1959).

The allocentric mode, on the other hand, is characterized by a high degree of objectification. Its emphasis is on what the object is like, and there is "either no relation or a less pronounced or less direct relation between the perceived sensory qualities and pleasure-unpleasure feelings --that is, such feelings are usually absent or less pronounced or of a different quality" (Schachtel, 1959, p. 83). As the organism's feelings are less fused with and more differentiated from sensory stimuli, the allocentric mode becomes "object-centered." "The perceiver ususally approaches or turns to the object actively and in so doing either opens himself toward it receptively or, figuratively or literally, takes hold of it, tries to grasp it" (Schachtel, 1959, p. 83). Thus interaction in the allocentric mode is characterized by an active and open exploration and experiencing of the environment.

The senses that are associated with the allocentric mode by Schachtel are the auditory and visual sense. The tactile sense is less clearly predominantly allocentric or autocentric but in its nature fluxuates frequently between the two modes. In fact, the autocentric senses can on occassion function in a limited allocentric capacity while

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the allocentric senses can frequently operate in the autocentric mode. Nevertheless, because of the specific type of relatedness between subject and world characteristic of each of the human senses, the autocentric and allocentric modes represent the predominately different ways of communication and interaction between subject and world.

The two modes, then, become Schachtel's polar coordinates of a dynamic continuum of perceptual relatedness. They have phylogenetic and ontogenetic significance, and as such, they provide a dynamic framework for perceptual development.

...in the neonate and during early infancy the autocentric senses (taste, smell, proprioception, visceroreception, and touch) play a much more important role than the allocentric senses (sight and hearing), while in the adult the reverse is the case. The other fact is that all the senses including sight and hearing, function in the newborn in the autocentric mode, without objectification, mostly reacting passively to impinging stimuli, and largely with pleasure-unpleasure-boundedness (Schachtel, 1966, p.83).

Early infancy is characterized by global, diffuse, and undifferentiated perceptions bounded by subject-centered pleasure-unpleasure feelings. Schachtel characterizes the affective attitude associated with the autocentric mode as being "embedded."

The more nearly complete the state of

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embeddedness of the organism, the more strongly negative is the reaction of the organism to any change in the significant environment and the less does the organism want to stir from a state of quiescent equilibrium in relation to the environment (Schachel, 1959, p. 60).

As characteristic of the autocentric mode, the embedded affective attitude is characterized by passivity, by strong dependent needs, and by the tendency for withdrawal from new or intense stimulation or change in the environment. As the child develops, however, the boundaries between himself and the environment become discrete, articulated, and organized. His mode of perceptual relatedness becomes more open and object centered. With increasing objectification, the perceptual mode becomes predominately allocentric; and the affective attitude correspondingly is more active, exploratory, and competent. There is thus the progressive emergence of a different affective and emotional attitude which Schachtel calls "activity affect" (Schachtel, 1959). Affective energy becomes organized into goal-directed perceptions, and the child begins to see himself as not only differentiated from his world but also dynamically integrated with it. As the articulation, differentiation, and integration of his perceptual relatedness and of his affective attitude develop, the individual acquires "an increasing capacity to become interested in the totality of any object and not merely in the immediately need-satisfying

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aspects of need-related objects" (Schachtel, 1959, p. 221). This increasing openness to interaction with the environment, its fullness and richness, leads to a corresponding expansion of the individual's Umwelt and of the individual himself. In the fullness and openness of interaction, the human personality develops its full potential for being.

The complementarity of Werner's theory of development and Schachtel's phenomenological description of the development of perceptual relatedness is quite apparent. Both men see development progressing from an undifferentiated diffuse, and global state where the organism is embedded and fused in the totality of existence to a progressively differentiated and integrated state where the organism becomes more articulated and organized. Werner's theory is much more extensive and formal as a theory. His focus lies on the development and growth of the organism and is therefore called an organismic developmental theory. Schachtel's interest, on the other hand, is primarily focused on a phenomenological description of man's relatedness to and experience with the world.

In terms of the research of this paper, Schachtel compliments Werner's theory in two ways. The first is that his considerations of the development of affect (embedded-affect and activity-affect) provide an important

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perspective and dynamic coordinate in analyzing development. Although Werner describes the principle of spirality and elucidates the process of temporary regression in maintaining the stability of the organism in the face of "overwhelming" change, he provides little means or criteria for approaching and analyzing the emotional and affective concomitants of maintaining stability. Werner speaks of conservation and the maintenance of environmental equilibrium in relation to the capacities of the biopsychological systems. Schachtel, on the other hand, describes the role of affect, motivation, and the subjective phenomenological experience of maintaining stability or risking change. Schachtel thus provides a perspective for the development of the affective attitude in terms of progressive differentiation and integration.

The second way that Schachtel compliments Werner's orthogenetic theory for this research is that he (1966) has formulated developmental concepts which can be related to the Rorschach determinants, ie. relating the affective-motivating processes with the externalizing processes. He has analyzed all of the Rorschach determinants from a perspective of perceptual relatedness (differentiation, integration, and objectification). It is this integration of the motivating processes with the

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externalizing processes which forms the theoretical rationale for Mook's (1977) extension of genetic level scoring to the Rorschach determinants.

The next section of this chapter provides a brief description of the basic rationale of the Rorschach inkblot test itself. Consideration of the genetic concepts and underlying rationales of the new rating system will be considered in section 4 after the review of the empirical literature in section 3.

### 2. The Rorschach inkblot test

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Hermann Rorschach (1942) in his Psychodiagnostics made it quite clear that the main aim of his test was to uncover how rather than what the person experiences. He was looking for the perceptual modes or processes by which psychic events come about, and this concern led him to concentrate on the formal (structural) or functional aspects of personality rather than on the content or material aspects of personality. Rorschach felt that an individual's perceptual responses to the ink blots were capable of serving as clues to understanding how a person experiences his world. His original scoring categories are formal categories, ie. location, form, color, movement, and are intended to help elucidate the basic structure and

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organization of the formal personality configuration. In this regard, Rorschach viewed his test as a test of perception, but implicit in the term perception were the cognitive and organizing processes of 'apperception."

Rorschach explicitly stated that "the test does not induce a free flow from the subconscious but requires adaption to external stimuli, an action of the function du reel" (Rorschach, 1942, p. 123).

Rapaport (1946) considered the Rorschach test as a perceptual-conceptual test and placed specific emphasis on the cognitive and mediational aspects of the Rorschach experience. Rapaport argued in a manner complimentary to Rorschach's original formulations that perception is not a photographic product but rather is actively mediated and structured by the perceiver. "...the subject's reaction to the Rorschach inkblots is a perceptual organizing process" (Rapaport, 1975, p. 273). Rapaport felt that the unconventional and ambiguous nature of the inkblots provided a special opportunity to study this perceptual organizing process. "While everyday perceptions allow conventions, specific memories, and familiarities to obscure the active nature of the perceptual process, the Rorschach inkblots bring the active organizing aspects of perception into the foreground..." (Rapaport, 1946, p. 90). Rapaport was still concerned with the how of experiencing. He further

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elucidated the perceptual-cognitive dimensions of the Rorschach response.

Essentially, Rapaport's clarification and conceptual extension was not new to Rorschach's meaning of "perception." Rorschach quotes in the Psychodiagnostics Bleuler's theory of perception which states that perception can be called an associative integration of available engrams (memory images) with recent complexes of sensations. Following from this conceptualization, the Rorschach response (the communicated interpretation of the inkblots) may be called a "perception in which the effort of integration of sensation complex with engram is so great that it is realized consciously as an integrative effort" (Rorschach, 1942, p. 18). Rapaport significantly differentiated and clarified this mediational role of cognition in the test experience and elucidated the perceptual-cognitive rationales behind the determinants.

In addition to this perceptual cognitive aspect of the test, Rorschach further distinguished another dimension of experiencing which is the most original and profound of his work. In investigating the data and formulating the rationales underlying the formal perceptual categories of human movement and color (in distinction to the locations and pure form scoring), Rorschach discovered that a large

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number of either human movement or color responses in a protocol could be associated with different but pronounced modes of experiencing. Human movement seemed markedly associated with an internal responsiveness and an orientation to experiencing which tended to structure the world relative to the individual's own needs. This orientation was further characterized by personal imagery, fantasy, creativity, and long term personal goals. The experiencing "apparatus" of these subjects who gave a large number of human movement or "kinesthetic" responses to the inkblots was significantly different from subjects who gave a large number of color responses. The latter group of subjects seemed to have an orientation which was highly responsive to the environment either in terms of overt emotional expression, or affectional warmth of feeling, or a mere passive submission to forces coming upon them from without. Further characteristics of this orientation were resourcefulness in personal relationships and a striving towards external goals. These two different orientations towards experiencing Rorschach designated as the "Erlebnistype." And in the Rorschach protocol the "Erlebnis" balance is revealed by the ratio between the human movement responses and the color responses. Rorschach believed that this relationship could provide an indication of the experiencing type of the individual. Rorschach

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called the internally oriented experiencing type, indicated by a predominance of movement responses, the introverted type. The externally oriented subject as indicated by a predominance of color responses he called the extratensive type.

As Rorschach states:

The introversive and extratensive features of a subject comprise independent groups of psychisms, the relations of which determine the experience type of the individual. These features must have an entirely different mental basis from the conscious, disciplined thinking of the subject. Disciplined thinking is an acquired faculty; introversive and extratensive features are not acquired but inherent primary qualities of the constitution (1942, p. 87).

Cognition can thus interact with the more "constitutional" experiencing orientation. If one or the other dominates then either the experiencing apparatus weakens the cognitive processes or the strong control of cognition minimizes the experiencing apparatus which then becomes coartated, stereotyped, and may even lose its ability to experience. Furthermore, Rorschach sees the individual as endowed with an experiencing apparatus which can be used for "assimilating experiences in a much broader, more extensive way than that which he uses in living" (p. 88). The harmonious and adaptive interaction of disciplined thinking and the experience type of the individual can

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develop towards a maximal level of experiencing capacity. As Rorschach states, "The normal ambiequal type represents the ideal result of the development of the experience type" (Rorschach, 1942, p. 119).

Today, the Rorschach test is generally considered a test of personality, and indeed this is the case because of its recognized power to provide insight into the ways an individual personality is dynamically structured and into the degree to which it is differentiated, articulated, organized and integrated at different levels and in different dimensions. These various structural and functional personality processes as elucidated by the Rorschach experience are closely interwoven and strongly inter-related. In the true sense of the word, they constitute a veritable "unitas multiplex" and can be seen as the experiencing "apparatus" of personality.

Schachtel (1959) comments:

...it will become also more apparent that perceptions and associations are not clearly separated in reality but that what we see is already co-determined by our associative bent (expectation, structural emphases of the total experience of reality, idiosyncratic perspectives, and preoccupations, etc.) and what we associate is co-determined by the individually characteristic ways in which we are impressed by the world. Or more accurately, both perception and association bear the stamp of the individually characteristic ways of experiencing and

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reacting to experience, of relating to the world and self (Schachtel, 1966, p. 44).

The interaction of the individual with the unknown and ambiguous perceptual forms of the inkblots present the subject with the necessity and opportunity of differentiating and integrating the micro-world of the blots. With the presentation of the first card, the blots begin to impinge on the Umwelt of the organism, and correspondingly such a new and ambiguous change in one's world calls on the organism to respond. Depending on the degree to which the individual is open to the interaction, the blots are differentiated, organized, and integrated as part of his world, his Umwelt. That organization and quality of the response is a reflection of the active organizing processes and structures of the individual as he interacts with and experiences the external world.

This section has given a brief description of the underlying rationales of the Rorschach inkblot test and has attempted to provide a general impression of how the test provides an immense opportunity to investigate the quality and organization of an individual's personality as he interacts with the world. The next section will now consider the empirical literature as it relates to Rorschach genetic level research.

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### 3. The empirical research -----

This section is devoted to a resume of the previous use of the Rorschach inkblots in the assessment of genetic-level functioning. The existent studies range from comparisons between various groups of children to assessments and comparisons of genetic level functioning among various psychopathological groups. For the most part, previous Rorschach studies in this area have been "normative ones" of a general nature or have specifically involved the use of various Rorschach genetic level scoring systems utilizing only the location scores.

Klopfer and Kelley (1942) trace the earliest recorded use of inkblots as psychological material for the study of group or individual differences back to 1857 in Germany. In 1895 Binet and Henri suggested the use of inkblots for the study of psychological traits, and in 1895 Sharpe reported a study of children's reactions to non-symmetrical inkblots in the American Journal of Psychology. She felt that the childrens' reactions were due to "passive imagination." It was over 20 years later that Parsons (1917) reused the Sharpe plots in a study with 97 boys and girls ranging in age from 7 to 7:6 years of age. Although Parsons was primarily concerned with content, she did note the presence of Whole (W) and Detail (D) responses. Using a schema based

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on W. Stern's genetic-stages of description, Parsons investigated these part-whole differences. Stern's four genetic stages are described by Parsons as follows:

(1) up to 8 years old, the "thing stage" in which objects are delineated singly. (2) 8 and 9 years, the "action stage" in which objects are seen as active, e.g. "man crying." (3) from 10 to 13 years, the beginning of the "relation" stage, e.g. "a table in the center of the room." (4) after 13, the beginning of the "quality stage," where the child describes as follows: "a ceiling with the beams across it, probably of oak" (Parsons, 1917, p. 84).

Interestingly, Parsons further analyzed her subjects' responses in terms of two categories, "non-constructive" and "constructive" associations, construction being the combination and naming of two or more objects or things. Both the constructive and non-constructive categories were further divided into four subclasses: (1) without actions or qualifications; (2) with action; (3) with qualification; and (4) with both action and qualification. Parsons noted that there were more associations of the non-constructive type (30.7%) than the constructive type (6.4%) for her seven year old group. Furthermore, she found no sex differences within the group. She also reports that 69% of her subjects "either covered part of the blot with the hand, or pointed to one particular portion at a time" (p. 86), e.g. responded exclusively to the details of the blot. Parsons' study is particularly noteworthy because it not only attempts to

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analyze the significance of the part-whole distinctions (the D's and the W's), but it attempts a further analysis of the quality of the integrative effort.

It was in 1921, of course, that Hermann Rorschach first published his report and test material of his experiment with the inkblots. In his report, Rorschach presented his tentative scoring criteria as well as the series of 10 inkblot stimuli which are the standard series of today. Rorschach's report makes no specific mention of children or of any genetic level scoring or analysis. Rorschach only provides normative data for normal adults and for some abnormal adult groups. He does, however, speak of the differentiation and organization of the blot material and how these processes are an action of the "function du reel." An example of this orientation can be seen in his analysis of the types of whole responses, their kind and quality.

(1) "confabulated" wholes: "In this type of answer a single detail, more or less clearly perceived, is used as the basis for the interpretation of the whole picture, giving very little consideration to other parts of the figure."

(2) "successive-combinatory" wholes: in which "...the subject first interprets a few details and then combines them into a whole answer."

(3) "simultaneous-combinatory" wholes: these wholes differ from the

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successive-combinatory wholes "only in the greater rapidity of the associative process."

(4) "primary or immediate" wholes: where the card is immediately seen as a whole single object or as objects in some relation.

(5) "confabulatory-combined" wholes: where the responses are "amalgamations in which the forms are vaguely seen and the individual objects are combined without real consideration for their relations positions in the picture" (Rorschach, 1942, P. 37-38).

A similar process of evaluating the quality and organization of the responses is used by Rorschach throughout his scoring criteria. Again, however, Rorschach makes no mention of his test regarding children, nor of how his scoring criteria might be used in genetic-level evaluation.

From the initial publication in 1936 of the Rorschach Research Exchange, the need for substantial normative data both for adults and for children became apparent. Davidson and Klopfer (1938) published a review of previous work with children which showed a significant deficiency in the area. This review stimulated a diverse group of studies over the next few years (Klopfer, Margulies, Murphy, and Stove, 1941; Stavrianos, 1942; Kay and Vorhaus, 1943; and Vorhaus, 1944).

Klopfer et. al. (1941) sampled 200 children from 2 to 7

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years of age. Unfortunately, there was no attempt to equate IQ between groups, and 80-90% of their subjects were high average to superior in intelligence. The main developmental trends they noted were that: (1) children under 3 tend to persevere to the cards, repeating the same name for each card, (a phenomenon called "magic repetition" by Klopfer); (2) between 4 and 5, various modified repetitions and rejections seemed to slacken; and (3) from 5:6 to 6:0 years of age, the children almost entirely gave the cards "sufficient attention to merit a variety of responses."

Klopfer and his colleagues suggested the possibility of some sex differences, but they made no statistical tests of significance on any of their data. In addition, Hertz (1942) in the same year reported research with 150 boys and 150 girls, 6 years of age, which failed to substantiate any sex differences.

Stavrianos (1942) conducted a study specifically aimed at sex differences and published some normative data on her children. The children were divided into three groups as follows: I, 5:0- 7:0 years of age; II, 7:1-9:0 years; III, 9:1-11:0 years; there were approximately forty children in each group. Stavrianos noted that: "At the youngest age level, the W response is almost invariably a crude and undifferentiated, immature response, e.g. "rock," "pieces of land," "animal head," with little or no attempt to specify

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further..." (p. 171). Stavrianos' youngest group (the 5 to 7 year olds) gave a large number of such W responses (W=61%, D=35%) while her oldest group (the 9-11 year olds) showed a decrease in W (39%) and an increase in D (50%) and d (5%). These percentages were straight frequency counts and there was no attempt to measure or distinguish numerically the quality of the W responses described above. Furthermore, although Stavrianos reported sex differences, she made no statistical evaluation of these trends. This study is of interest here because it does provide a general demonstration of changes for the age groups studied. The age groups of Stavrianos' study and the number of subjects per group are quite similar to the research of this investigation.

Kay and Vorhaus (1943) report data from a study of 183 children, ages 2 to 7 years. These authors were among the first to analyze the whole responses by qualitative class. They made the following distinctions: (a) "W+": accurate outline, good organization, and reasonable (or good) determinant responses; (b) "crude": inaccurate or vague outline and crude determinant responses; (c) "arbitrary or perseverated": very poorly organized in terms of form level, and also perseverations based on the outlines and determinants; and (d) "pseudo-psychotic": confabulations

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(DW), contaminations, fabrications and confabulatory contaminations. The authors observed that with increasing age there is an increase in "W+," no change in crude wholes, a decrease in "arbitrary or perseverated" wholes and an increase in the "pseudo-psychotic" responses. Kay and Vorhaus explain this latter increase by the suggestion that "the disturbances reflected in the "pseudo-psychotic" responses might need some form of perceptual or intellectual development before they emerge" (p. 75).

The Kay and Vorhaus (1943) study is a significant attempt to classify responses into type, but similar to many studies at this time, it suffers from two major faults: (1) the types of responses are not clearly defined for reliable scoring; and (2) there are no data on intelligence or socioeconomic status for their subjects.

Finally, one other similar North American study of this time period might be mentioned. Ford (1946) using the Hertz scoring system conducted a normative study of 123 children from 3:0 to 7:11 years of age. Their mean IQ was 124.35 with a range from 90 to 157, and 89% of the children came from high socioeconomic status. Anderson comments on her results in the forward to Ford's monograph: "The results obtained by Dr. Ford show that some determinants (including location scores) increase significantly with chronological age, others show only small increases, and

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still other show decreases or no variation" (Ford, 1946 p.v). Ford noted the apparent differences in the types of whole responses and comments on some developmental trends, but again there are no tests for statistical significance of these differences. She further noted that the scoring categories R, D%, and DR% increase with age and W% and F% decrease with age.

All of the studies mentioned thus far, for the most part American studies in the forties, represent early attempts to look at genetic patterns in the Rorschach protocols of children, but because of methodological problems they present significant problems of generalization and comparability. They often use different Rorschach scoring systems (Beck, Klopfer, Hertz, etc.); they possess significant dissimilarities among samples; and they seldom test for the statistical significance of their results. Finally, none of these studies seem to ask their questions from an elaborated developmental theory. The data are collected, patterns are noticed in the process of collection, and these patterns are reported. The findings in terms of W, D, and Dd are interpreted according to adult oriented and adult developed schemes of interpretation rather than as an attempt to check specific genetic concepts themselves. This leads to a rather unmeaningful circular

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route for genetic studies where the research simply confirms what is already assumed, ie. that children become progressively more like adults. Furthermore, the use of many Rorschach scoring systems, age levels, dissimilar samples, and diverse methodological procedures has led to a pot-pourri of empirical findings which possess dubious inferential significance and little heuristic or organized meaning. As a result of all these factors, one cannot pool the data and look for genetic-level patterns; the vast discrepancies disallow such a pooling. At best and in the broadest sense, one could say, however, that the relatively consistent patterns of change in W%, D%, in the types of perseveration, and in the qualities of the whole responses found in these studies seem to suggest the existence of genetic-levels in the Rorschach data. Systematic investigation of these trends and the development of a reliable scoring system based on Rorschach locations and on elaborated genetic concepts had to wait until the work of Friedman (1951) and others.

In Europe, studies utilizing the Rorschach in the investigation of perceptual development were making some important contributions as well. Van Krevelen (1948), studying 20 children from 4 to 6 years of age, noted a sequence of developmental stages in perception from vague, disjointed wholes to details to organized wholes. He also

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noted some intelligence differences in the use of details in favor of the more intelligence children. Unfortunately, van Krevelen's sample was quite small.

The most relevant and ambitious European study of this time period was Meili-Dworetzki's (1939, 1956) "Le test de Rorschach et l'evolution de la perception."

Meili-Dworetzki's study investigated the development of perception and importantly made a comparison of some adult types with age types. She formulated two hypothesis along these perspectives: (1) that the type of perception (in the Rorschach, the quality and elaboration of forms) depends on the level of mental evolution; and (2) that the characteristic tendencies, in perception, of certain groups of adults resemble the characteristics of certain age levels. Meili-Dworetzki was impressed by a wide variety of phenomena in child psychology: the distinction between global and analytical perception, the preference for color or for form, and the polarities, receptive- active, subjective-objective and imaginative-realistic. She used Rorschach's test to study the development of perception because the Rorschach was a clinical technique for studying the personality in its entirety. Yet the test could be scored in terms of structure (the degree and quality of the elaboration of the perceived forms) and in terms of the

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general form of adaption to the test (the expected attitudes of the subject and his use of the locations and of the impressive qualities of the blot --form, color, shading, movement etc.). In an English adaptation of her earlier French publication Meili-Dworetzki comments: "Our aim was not to establish norms for different ages, but to study the basis of the Rorschach test by means of genetic analysis" (1956, p. 104).

The study analyzed the Rorschach protocols of 210 subjects from 2:4 years of age to adulthood. There were ten children between the age of 2:4 to 3:6, 20 children at each half year level up to 15 years of age, 20 uneducated adults, and 20 educated adults. Male and female were generally represented in each group, and sex differences were disregarded in the analysis. No information was reported in regard to socioeconomic status or intelligence.

The results of the study found a predominance of wholes in the youngest children. This W% decreases until about 9 or 10 years of age and then increases again slightly. The D% increases to a high point where the W% is the lowest, and then increases slightly. Dd% (unusual details) increases up to 5-7 years and then decreases. Unfortunately, as often is the case with Rorschach studies, Meili-Dworetzki's definitions of the D and Dd locations differ from other studies, but the trends are familiar.

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Summarizing, she reduced the typical developmental sequence for locations to an emphasis on W, then Dd, then D, and then W again. Following Claparede (1911), she delineates the following three stages of perception:

1. globalization (syncretic in quality): "a general and confused view of the whole."

2. analysis: "distinct and analytic perception of the parts."

3. synthesis: "synthetic recomposition of the whole with awareness of the parts" (Meili-Dworetzki, 1955, p. 110).

In regard to the determinants, Meili-Dworetzki found form (F) represented as the dominant determinant. Before the age of three, her children showed little response to color while after 4:6 there was a strong increase in color reaction but this increase was often unspecified in form and without any integration of color quality. From 5 to 6 the color responses involved more specific form elements (CF, FC) with a decrease in pure color responses (C). This trend continued until approximately 8 years of age with an accompanying marked increase of color in popular form. After 8 years of age, however, Meili-Dworetzki found a decline in the relative dominance of color responses. Color later again regained its influence in non-constricted

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adults.

For shading (K and c), Meili-Dworetzki found a large number of primitive or undifferentiated shading responses in the younger groups and a gradual appearance and increase of differentiated shading responses in the older groups. Her data show a very pronounced inverse relationship between the frequencies of these two qualities of shading.

Considering the development of movement responses, the author notes a general overall increase in movement responses with increasing age. After an extensive discussion, she further concludes that the tendency to produce "M" responses depends on: (1) the mental capacity to change structures; (2) the construction of a differentiated image of man; and (3) the integration of impulses into the self.

The most significant contribution of Meili-Dworetzki's study is its general demonstration that development seems to show a quantitative and qualitative change of all the main groups of Rorschach determinants (not just the location scores). Her study also describes an increase in the mutual integration of all the main determinants. Although the study alludes to many interesting possibilities and hypotheses for further study, it suffers the complaint of relying on a posteriori analyses. The further fact that even these a posteriori analyses were not subjected to

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statistical tests of reliability limits considerably their validity and reliability. In fact, some of the differences to which much discussion is addressed seem fairly suspect statistically given the reported differences between groups. Nevertheless, Meili-Dworetzki's study was an original and innovative work in its day, and it pioneered the way for more systematic and rigorous studies in the area.

Friedman (1951, 1952) was influenced by Meili-Dworetzki's study, especially by her observations of the similarities between certain types of adults and certain observed developmental stages. Focusing his concern not on the characterological but on the formal perceptual similarities, Friedman compared the Rorschach protocols of 30 normal children between 3 and 5 years of age, 30 hebephrenic and catatonic schizophrenics between the ages of 20 and 40, and 30 normal adults between the ages of 30 and 40. He advanced the hypothesis that the schizophrenics would exhibit a regression to a developmentally earlier functioning with regard to the structural aspects of perception. To investigate this hypothesis he developed a scoring system which analyzed the response locations in terms of differentiation and integration. His scoring system is based upon previous work by Beck (1949), Meili-Dworetzki (1939), and Rapaport (1951), but it is

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explicitly framed within the genetic framework elaborated by Werner (1942, 1948). The specificities of Friedman's location scoring system will not be elaborated here as his system is incorporated into the first scale of Mook's scoring system utilized in the present research and consequently will be elaborated upon in the next section.

Friedman's results showed that the schizophrenics and the children were not distinguishable statistically with respect to the percentages of Whole responses and Usual Detail responses. The schizophrenics and the children also produced significantly more "Amorphous," "Confabulatory," and "Minus Whole" responses than did the normal adults. Furthermore, "Fabulized Combination," "Contamination," and "Perseveration" responses were found to exist significantly more in the children and schizophrenics than in the normal adults. Particularly relevant to this research, Friedman divided his seven types of Wholes and seven types of Detail responses into two classes: (1) the "genetically-mature," or "high;" and (2) the "genetically-immature," or "low." After analyzing the occurrence of these responses in his group of young children as compared to the adult group, Friedman showed that there were significantly more genetically low responses among the children. Characterizing the perception of both the schizophrenics and children as compared to the adults, Friedman states:

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Like children and unlike normal adults, their [schizophrenics] perceptual functioning is predominantly of a global, diffuse, vague, syncretic, rigid, and labile nature, and marked by a relative lack of differentiation and integration (Friedman, 1951, p.84).

Friedman's study was a turning point in developmental investigations using the Rorschach. As mentioned above, earlier studies from diverse directions had demonstrated the existence of genetic level distinctions in the Rorschach responses of different age groups. The methods of investigating such distinctions as well as the meaning of such distinctions had remained rather unsystematic, vague, and undeveloped. Furthermore, the lack of an underlying developmental theory behind these previous studies left the genetic implications of their results and the direction of future research quite undefined. Friedman's location scoring system and the success of his study (1951) meant the emergence of a viable genetically oriented measurement tool which was consistent with the underlying perceptual basis of the Rorschach and which was also grounded in a heuristically rich and elaborated developmental framework e.g. that of Heinz Werner.

Friedman's study gave impetus to an extensive number of validation studies using his Rorschach genetic level scoring. The initial group of studies descendent from Friedman's and using his scale in an unmodified form can be

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classed into three main categories. The first type of study and the study of most relevance to the research of this paper involved an examination of the relationship of genetic level scoring to chronological age (Hemmendinger, 1953). The second type involved increasing the tachistoscopic exposure time of the Rorschach cards and studied the microgenetic emergence of percepts (Framo, 1952; Fried, 1952). The third type and by far the most extensive involved using Friedman's scoring system to measure the degree of psychiatric impairment in various clinical groups (Frank, 1952; Pena, 1953; Rosenblatt and Solomon, 1954; and Siegel, 1953).

Hemmendinger's study (1953) is the first and only study in the literature to examine the relationship of Friedman's scoring system to chronological age in normal children. There are other studies of children's Rorschach responses in relation to chronological age but these have been descriptive and normative ones. Meili-Dworetzki's study with children from 2 to 15 years of age (20 children per age group) has been mentioned. Ames, Learned, Metraux, and Walker (1952, 1974), Francis-Williams (1968), and Hertz (1942, 1961) have also collected substantial normative data on children's Rorschach responses. These normative data are mainly descriptive in terms of frequency and percentage

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reporting; and the work of these authors has remained outside any particular developmental perspective, statistical assessment, or systematic genetic level measurement...

Particularly significant to this proposal, Hemmendinger's study places its focus and intent on the demonstration of chronological discrimination between age levels and on the building of a normative base for Friedman's scoring system. The research of this paper parallels both the focus and intent of Hemmendinger's study but utilizes a Rorschach rating system which has been expanded to include the genetic level analysis of the determinants as well as the locations.

In his study Hemmendinger administered the Rorschach to 190 white American born males of average intelligence (IQ range of 85-120). The subjects were 160 children between the ages of 3 and 11 years and 30 normal adults between the ages of 20 and 40 years. The children were grouped into eight groups of 20 at each age level. Using Friedman's location scoring system, the Rorschach responses were divided as in Friedman's study into genetically-immature and genetically mature responses. Consistent with Werner's theory, genetically low or immature perception was reflected in percepts of a formless, amorphous, confabulatory, or poor form (F-) quality in Whole or Usual Detail areas (Wa, Dw,

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W-, Da, DdD, and D- scores) and in Rare Detail percepts of a physiognomic (things of action) and schematic quality (pDd and dDd scores). Genetically mature or high perception was reflected in percepts involving an adequate differentiation of area into wholes and sub-wholes, or in the perception of separate areas integrated together to make a whole composed of relatively self-contained parts (W++, W+, Wm, D++, D+, and Dm scores). It should be noted that Beck's list of Usual and Rare Details was used.

The results showed that genetically high scores, within all Wholes and within all Usual-Detail scores, increased steadily from 3 to 8 years, at which age these mature scores had become statistically predominant over immature scores. From 8 to 10 there were no marked changes. The adults earned somewhat more mature scores than did the 8-10 year olds.

Hemmendinger concluded that the structure of perception becomes less global, less diffuse, and more differentiated with age. He found that "the younger children reacted largely to the entirety of the blot in a vague and diffuse manner, while the older children reacted predominantly to the parts, using these parts either separately or as portions of a whole to which they are subordinate" (Hemmendinger, 1951 p. 122). Hemmendinger

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further explicated three well defined stages of perceptual development as it progresses from relatively undifferentiatedness to hierarchically integrated differentiatedness. The first stage (3-5 years) is characterized by primitive global functioning, the second stage (6-10 years) by an increase in differentiation, and the third stage (adults) by an increase of synthetic (integrative) functioning. He stated that the evidence shows perceptual development to be typified by saltatory growth, sudden qualitative and quantitative change, as well as by gradual and regular change (Hemmendinger, 1951).

Hemmendinger's study not only significantly demonstrated genetic levels in perceptual development, but it substantially validated, together with the studies below, Friedman's scoring system and the use of genetic theory in understanding how the Rorschach reflects levels of psychological functioning. In addition, the study provided important normative genetic level data and important developmental implications for understanding the clinical problems presented by perceptual regression, for instance the influence of emotional pressures and brain injury.

The second major type of study using Friedman's scale was those (Framo, 1952, Fried, 1952) which studied the microgenetic emergence of percepts. In Framo's (1952) study, the Rorschach cards were administered

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tachistoscopically at exposure intervals of .01 of a second, .10 of a second, 1.0 second, and 10.0 seconds to 80 normal adults. Framo found that with the increase of exposure time there was a shift from genetically lower responses to genetically higher responses. Comparing the patterning of his responses with the results of Hemmendinger's (1953) study, Framo concluded that the basic developmental sequence holds whether it is consummated over a period of years or over a period of seconds.

Fried (1952) employed a design similar to Framo and showed the Rorschach cards at the same tachistoscopic intervals to a group of 60 hebephrenic-catatonic schizophrenics, 15 at each exposure time. He found that these groups did not utilize as did the normal adults the increase in exposure time to improve the perceptual adequacy and integration of their responses. Even though their performance at the shortest intervals was not significantly different from that of the normal adults, the increase of exposure time was not paralleled by the development of perceptually more mature responses.

The third type of study directly descendent from Friedman's initial study (1951) was a series of studies comparing the genetic level functioning of various clinical groups (Frank, 1951; Pena, 1953; Rosenblatt and Solomon,

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1954; and Siegel, 1953). Frank (1951) compared the performance of neurotics with normals, predicting that the neurotic groups would obtain fewer developmentally high scores than the normals. He found that the neurotic group functioned at a level somewhere between normal adults and 10 year old children. The neurotics obtained fewer developmentally low D scores than the 10 year olds but not as many W++, D++, W+, and D+ scores as the normals. Frank concluded that neurotics in comparison to normals are mainly deficient in their organizational capacities.

Siegel (1953) tested and confirmed the hypothesis that paranoid schizophrenics are less rigid than hebephrenic and catatonic schizophrenics. He found that whereas the hebephrenics and catatonics resemble children between 3 and 5 years of age, his paranoid schizophrenics resembled children between 6 and 10 years of age. The paranoid schizophrenics performed closer in practically all factors tested to the normal adults than did the children and the more deteriorated schizophrenic group.

Pena (1953) hypothesized that adults with brain damage tend to function at lower levels. His study in which he compared the Rorschach protocols of brain-damaged adults with those of normal adults confirmed this hypothesis. Pena concluded that while the level of differentiation and integration of the cerebral damaged adult resembled that of

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children between the ages of 6 and 10, this was accomplished at the expense of a decided increase in rigidity and an impoverishment of outlook highly reminiscent of very young children.

The developmental level of mental defectives of different mental ages was studied by Rosenblatt and Solomon (1954). They studied a sample of 80 adult male and female mental defectives of the "familial" type, which were divided into five groups of increasing mental age ( 5:1, 6:11, 8:5, 9:11, and 11:11). Rosenblatt and Solomon were able to discriminate among levels of mental deficiency in this way, as well as demonstrate that normal children of the same mental age reveal higher levels of differentiation and integration on the Rorschach than do defectives.

The nature of the samples for all the above three types of studies does reflect some obvious limitations. Except for Rosenblatt and Solomon's (1954) study of mental defectives, the samples were comprised of white males which were American born. The questions as to sex differences and whether or not the normative data provided by these studies can be appropriately used with females cannot be answered unequivocally. In a general normative sense, Hertz (1941), mentioned previously, found no significant differences between her boys and girls at 6 years of age. Furthermore,

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although Ames et al. (1952, 1974) report sex differences and discuss the results of their survey of male and female children (fifty children per age group), their study is purely descriptive and non-interpretive. Most importantly, Ames et al. (1952, 1974) make no statistical tests of these reported differences; and consequently, one cannot be at all sure of their statistical reliability much less their interpretive or developmental meaning. Only one study (Wilson, 1954) has compared males and females as to their developmental level of functioning. Wilson's study found that boys and girls did not differ on overall developmental level of functioning. The overall index in his study was an average weighting for the entire protocol and therefore a modification of Friedman's scoring system: Wilson's study makes no comparisons between the sexes for each of the separate scoring categories.

Sample size for the above studies also is a limitation. Thirty and even fewer subjects is somewhat of a small size to allow for confident generalization to each of the separate populations. One may also note that the I.Q. scores reported were based on a variety of intelligence measures. Nevertheless, this is not a very serious limitation because the general I.Q. range of the subjects in each group would have probably been only minimally affected by the use of a uniform measure (Goldfried, Stricker, and

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Weiner, 1971). The above studies descendent from Friedman, however, do exhibit a considerable improvement over the earlier studies cited in experimental design and in the measurement of important sample characteristics such as intelligence and social economic status.

The publication of Friedman's scoring system led not only to the specific use of his scoring system in several studies but also to other studies using methodological modifications of his system (Becker, 1955; Lane, 1955; and Grace, 1956) or to studies attempting to expand genetic level scoring to encompass some of the determinants (Phillips et al., 1959). As Goldfried, Stricker, and Weiner (1971) comment: "The use of the Rorschach as a measure of developmental level probably represents both the most original and useful application to which the test has been put" (p. 19).

On the basis of developmental theory as well as previous research findings, Becker (1956) devised a system of weighting the developmental scoring categories. Each of the scores in a protocol was assigned a weight from 1 to 6 and the average weighting for the entire protocol produced an overall developmental level index (DL score). Becker demonstrated the usefulness and validity of such an index in research, but for clinical use the index is too gross an

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average and obscures the differential patterning within each protocol. Other attempts at devising a single developmental score have been made by Lane (1955) and by Grace (1956). Lane has formulated a composite index (CI) which provides a general index based on location responses. Grace (1956) devised a genetic score (GS) which includes the weighting of form-level and organizational quality of the location scores on a 25 point scale. She as well developed a determinant score (DS) which weights the quality of form dominance and movement. Both Lane's and Grace's indices had no subsequent effect on later research, and both suffer the same clinical limitations for which Becker's index was criticized.

Phillips et al. (1959) represent the only systematized and major attempt to extend genetic level analysis to the determinants of the Rorschach. Although their paper makes specific reference to Werner's orthogenetic principle and draws heavily on his developmental theory, most of the revisions to Friedman's scoring system were made on the basis of the past experimental findings of the Rorschach in general. Their revisions eliminated Friedman's two highest levels, eg. W++/D++ and W+/D+, and replaced them with integration scores which differentiated the responses on the basis of whether the integration involved movement, spatial position, color etc. (Goldfried, Striker, and Weiner,

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1971). Their scoring criteria are summarized by the following four categories of response evaluation.

- (1) Adequacy and specificity of form: mediocre, minus, vague, or amorphous.
- (2) Determinants used in combination: F dominance and F subordination or absence.
- (3) The perception of activity: movement responses, M, FM, and m.
- (4) The organization of blot elements.
  - (a) Adequate organization: subdivided into functional, collective, positional and structural integration.
  - (b) Inadequate organization: subdivided into fabulized combination, contamination, confabulation (Goldfried, Stricker, and Weiner, 1971).

Phillip's categories, however, are rather arbitrary in reference to Werner's theoretical framework. Phillip's system lacks a rich, congruent, and heuristic framework such as Werner's, and this may in part explain why it has not been extensively researched. There were only a few follow-up studies and normative data is non-existent for all practical purposes.

Following on the wake of the initial nucleus of studies generated by Friedman and intermixed with the methodological changes by Becker (1956) and revisions by Phillips et al. (1959), a great number of studies utilized some form of genetic level evaluation. The studies by Fowler (1957), Lane (1955) and Zigler and Phillips (1960) investigated social achievement, social adequacy, and genetic level. Lofchie (1955) studied stress using the developmental

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approach. Becker (1959), Levine (1960), Levine and Cohen (1962), Wilensky (1959), and Zimmet and Fine (1959) further researched schizophrenic perception and cognition. The vast majority of this research firmly demonstrated the existence and usefulness of genetic levels and their assessment using the Rorschach. Furthermore, it firmly validated Friedman's scoring system as a good measure of the developmental level of psychological functioning.

Since the above extensive research in the Fifties and early Sixties, little research has been published concerning Rorschach genetic level scoring. Those studies published have been few, sporadic, and diverse in their areas of concern. Shubert and Bergman (1974) investigated developmental level (DL) in emotionally disturbed children. They studied the Rorschach protocols of 248 disturbed children using 14 genetic categories. Their results showed that the disturbed children exhibited more extreme DL scores than their normal control group. The differences between the normals and the disturbed children were greater than the differences between disturbed children of varying ages. O'Neil, O'Neil, and Quinlan (1976) studied DL as well as other measures in a study considering chronological age and mental age. The Rorschach protocols of 60 children (6, 9, and 12 years old) were scored for form accuracy.

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complexity, movement and developmental level (DL). Their results suggested that the DL scoring did not assess MA independently of CA, but that this was accounted for primarily by their form accuracy measure. In another 1976 study, Gerstein, Brodzinsky, and Reiskind compared clinical white and black children in relation to low I.Q. and DL. They found that low I.Q. blacks (70-89) had higher perceptual integration scores than low I.Q. whites, suggesting that I.Q. tests do not adequately tap the cognitive capacities of the same I.Q. level children. Finally, Workland (1979) studied Rorschach developmental levels in the offspring of parents with schizophrenic and manic depressive illness. Her children had either one schizophrenic, one manic depressive, one physically ill, or two normal parents. She found that the children of one schizophrenic parent had lower DL scores than the subjects in the other three groups.

These 1970 studies have all used various versions of Friedman's location scoring system. For instance, the Gerstein, Brodzinsky and Reiskind (1976) study used Willensky's (1959) modification of Becker's (1956) weighting of Friedman's (1952) scoring categories. Furthermore, the results of the 1970 studies are all generally consistent with the earlier studies. Unfortunately, because of their vast diversity and limitations of numbers, the studies are

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of little importance here other than to illustrate some replicatory recent evidence of genetic level scoring on the Rorschach and some of its applications.

In addition to the above empirical review which strongly attests to the validity and usefulness of genetic level Rorschach scoring in general and of the Friedman system in particular, the interscorer agreement of Friedman's system as reported by various studies has been quite high. With two judges independently scoring the same protocols the mean percent of agreement is 93.5, with a range of 89.7-96.0 (Friedman, 1953; Goldfried, 1961; Hurwitz, 1954; Lofchie, 1955; Misch, 1954; Zimmet and Fine, 1959). For three independent judges, the mean percent of agreement is 93.6 with a range of 91.3- 95.6 (Frank, 1951; Siegel, 1953). In most instances, then the interscorer agreement is above 90% agreement. Thus, Friedman's scoring system is relatively easy to learn, and the agreement among judges is quite consistent (Goldfried, Stricker, and Weiner, 1971; and Lerner, 1975).

As another adjunct, Friedman's system has afforded the means for a number of researchers (Mardsen, 1970; Friedman and Orgel, 1964; Kissel, 1965; Blatt and Allison, 1963; and Spiegelman, 1956) to clear up a long ranging controversey and to validate finally the relationship between the

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Rorschach Whole (W) response and intelligence. The W response was found to be correlated with intelligence in the range of .42 to .55 ( $p < .01$ ) if the W response was a genetically high well-integrated W. Amorphous, confabulated, or undifferentiated W's (genetically low responses) were not correlated with intelligence for adult populations.

Finally, one of the best indications of the validity and usefulness of Friedman's approach to the Rorschach can be seen in the fact that a revised version of his scoring system has been incorporated into Exner's Comprehensive Rorschach System (Exner, 1974). Again, the incorporation of genetic level scoring into the Comprehensive System applies only to the locations. Friedman's system has been compacted to contain only four criteria levels instead of the original seven, but its inclusion does acknowledge the substantial recognition and the importance of genetic level scoring with the Rorschach.

This section has presented a detailed scrutiny of the major research studies to date attempting to utilize Rorschach genetic level scoring. It has shown that there is substantial evidence indicating the usefulness and validity of such a scoring approach to the Rorschach. The most prominent and successful of the scoring systems is Friedman's (1952) based on the developmental framework of

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Werner (1948). Overall, these studies have offered quite convincing demonstrations that genetic trends can be observed with the Rorschach, and they seem to give every intimation that the extension of a similar genetic level scoring approach to the Rorschach determinants might be likewise fruitful.

The following section will give a brief description of the new scoring system and will define more explicitly the relationship of the theoretical frameworks of Werner and Schachtel with the theoretical rationales behind the Rorschach determinants and the structure of the new scoring system.

#### 4. The rationales of the new rating system

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The new rating system constructed by Mook (1977) attempts "to provide a quantitative index of the main interrelated dimensions of personality as reflected by the Rorschach test." The rating system consists of eight 5 point rating scales which aim to assess three major aspects of personality development. These three aspects are the developmental levels of: (1) cognitive integration; (2) emotional and affective integration; and (3) personalization.

It should be noted here that the five point rating

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scales designate a score of one as the lowest developmental score and five as the highest developmental score. If development is conceived as directed alteration rather than as unlawful flux, then its study requires an elaborated conception, even if a tentative one, of the ideal or most mature organization that an organism may achieve. In its most simple context then, a mature and high developmental Rorschach protocol will have much in common with the general Rorschach adults norms for a mature well integrated and differentiated person. For adults, obviously, many of the adult interpretations relative to indications of psychopathology and developmental impasse etc. are appropriate. At any other genetic level, although the rationales of the determinants in relation to perceptual cognitive or affective integration remain the same, the adult interpretations of the interrelationships of the determinants are generally not appropriate to assessing the well being or developmental success of a child. Neither are there adequate children norms available, nor has there been adequate research done attempting to assess the normal range of variation of determinant interrelationships at particular genetic or age levels. Furthermore, this work seems highly necessary before child and developmental psychologists can fully assess the role and meaning of those particular

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interrelationships for a particular genetic level. Stated as gross simplification, what is abnormal in an adult is often not abnormal in a child.

### I. Cognitive integration:

As mentioned above, both Rorschach (1942) and Rapaport (1975) recognized the interpretive or mediational aspects of the Rorschach response. As Mook (1977, p. 7) further states: "cognitive functioning in the Rorschach is revealed mainly by the dynamic structuring, organization, and integration of the perceptual cognitive act evoked by the forthcoming of a response." The approach to the inkblots and the organization of the percept is indicated by the location scores while the form giving processes are reflected in the pure form and form integrated determinants. The organizational and mediational aspects of the response to the stimuli are, of course, very interdependent and interwoven. They are, however, also distinguishable in themselves and merit distinct consideration. Scales 1 and 2 are concerned with the structure and organization of the response in reference to the locations, and Scale 3 is concerned with the solely form determined responses (F) while all of the other scales consider form in relation to its integration with the other determinants (C, K, C', c, M, FM, and m).

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### a. Perceptual-conceptual structure and organization:

Scale 1 evaluates the whole responses (W) while Scale 2 evaluates the usual (D) and unusual (Dd) detail responses. Rorschach (1942) postulated that W had a direct relation to intellectual operation and to the ability to organize components of one's environment into meaningful concepts. Beck (1932) and Rapaport (1975) also speak of the abstracting, surveying, and integrating abilities indicative of the W response. As mentioned in the empirical review, however, these interpretations of the response apply only to developmentally high W's. Global and diffuse W's such as smoke or clouds indicate a much more undifferentiated response lacking structure. They would be developmentally low W's. Werner's formal coordinates, diffuse and global, are quite applicable to such responses. As another example, the confabulatory whole response (DW) illustrates well Werner's "pars pro toto" perception where the recognition of a part of the blot rigidly defines the whole of the blot, eg. "It's a church cause here's the steeple" (D6, Card II): The specific scoring criteria for Scale 1 as well as for all the other scales can be found in Appendix A-I.

Scale 2 evaluates the usual (D) and unusual detail (Dd) locations. Rorschach (1942) hypothesized that the D responses represent an ability to perceive and react to the

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obvious characteristics of the environment. Rapaport (1975) speaks of D as expressing a concrete and practical approach to the blot. The developmental rating of D is chiefly concerned with the degree of differentiation and integration of D within itself or in relation to another D location. The Dd response, Rapaport (1975) sees as indicating a sharp perceptual articulation and hence as also having a correspondingly high form level articulation. Developmentally such a response would represent the ability of fine articulation, but as the blot area is already tiny and such articulation is often a concrete and literal fit to the area, the Dd responses are seldom structured beyond an ordinary level. See Appendix A-I.

Mook's Scales 1 and 2 are modified versions of Friedman's scoring system. Instead of Friedman's seven levels, Mook only differentiates five levels. Friedman's initial study investigating schizophrenic regression was particularly interested in differentiating developmentally low responses. As Mook's system is primarily concerned with normal development, the lower developmental categories of Friedman's have been collapsed to comprise only two categories instead of four. The additional modification to Friedman's scale has been the inclusion of the unusual locations (Dd) in scale 2.

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### b. Perceptual conceptual form giving activity:

Form is basic to all Rorschach responses. Nevertheless, Scale 3 only evaluates the pure form responses. The form controlled determinant responses are considered on other scales. Rorschach (1942) postulated that the manner or quality in which form is used reflects the subject's ability to perceive things conventionally or realistically. Rapaport (1946, p. 344) suggests that the use of form denotes a "process of formal reasoning, wherein the mediation of the stimulus calls attention to the contours of the stimulus area." Korchin (1960) speaks of a process of selective organization of that which is perceived. This filtering of the perceptual stimuli and the consequent selection of the perceived object have been, further referred to as an indication of perceptual accuracy, of perceptual fit, and of reality testing strength. Schachtel (1959) perhaps more than others emphasizes the dynamic quality of this "form giving process." For him, the form perception function in man is essential to the process of "objectification." This objectification visually, "rests primarily on the capacity of sight to perceive the form and Gestalt of a virtually infinite variety of objects" (Schachtel, 1959, p. 89). It is a process of actively grasping certain salient features of the environment, critically evaluating them, and then

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interpreting them. Schachtel sees this active adaptive function as indicating an individual's capacity to approach and to relate to the world. Both Werner and Schachtel see the perceptions of children as more global, diffuse, syncretic, and autocentric in nature. The sensorimotor, cognitive, and affective qualities of the child's personal state are more fused and interwoven with his perception of the external world. As the child grows older, this autocentric perceptual experience develops gradually towards the allocentric mode where his perceptions become more articulated, discrete, and differentiated. The individual is no longer rigidly tied to his own personal sensorimotor and affective state but can open himself to the external world and more flexibly acknowledge what he finds. When the child's form perception becomes more objectified, his emotional and dynamic involvement is increasingly reflected by the determinants.

Scale 3 attempts to measure a theoretical continuum of form perception such as autocentric to allocentric, or of diffuse and syncretic to articulated, differentiated, and integrated. It incorporates considerations of structure, accuracy, and dynamics. The scoring criteria for the scale are adapted mainly from the work of Rapaport (1975) and Schachtel (1966). The specific criteria for Scale 3 are in

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### Appendix A-I.

#### II Affective integration:

Mook's rating system attempts to measure the degree of affective integration through the evaluation of the color and shading determinants. The structuring of affect and emotional experience is complex and multidimensional. Additionally, the rationales for these Rorschach scoring categories are less clear than those for the location and pure form categories. In general, however, the most important factors in the rating of the affect related determinants are the degree of cognitive control of impulses and feelings (indicated by the level of form integration) and the degree of intensity and strength of the color and shading responses. The affective integration scales of the system like the cognitive integration scales are three in number. Scales 4, 5, and 6 deal respectively with color (C), shading as darkness, diffusion, and achromatic color (K, C'), and finally, shading as texture (c).

#### a. The color responses:

Rorschach (1942) originally proposed that the color responses of the test related directly to affect. In fact, he saw the relationship between color and its integration with form as an index of excitability or lability. Similarly, for Schachtel (1966), the perception of color, if

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it is not accompanied by and integrated with form perception, occurs typically with a passive more autocentric perceptual attitude. Rickers-Ovsiankina (1943) and Shapiro (1956, 1960) agree with this perceptual passivity of the pure color experience. The pure color perception represents the immediate impact of color on the experiencing subject with a corresponding lack of delay for form integration on the subject's part. Color and light by themselves permit no objectification. They impinge on the eye and the subject reacts to their impact. In its most positive sense, such color sensitivity can represent a passive and affective receptivity towards the world. If, however, a subject's response is predominantly of such a nature, such color sensitivity becomes representative of a lack of cognitive structuring and a loss of control. For Schachtel as color perception develops toward the allocentric mode and toward increased objectification, color becomes increasingly integrated with form, and a corresponding degree of cognitive activity and control accompanies the experience.

Meili-Dworetzki (1939, 1956) noted a strong increase in undifferentiated color reaction from 4:6 to 5 years of age with the increase of more specific color-form elements (mostly CF and some FC) from 5 to 6 years and a

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corresponding decrease in pure color (C) responses. These trends continue until 8 years of age after which time Dworetzki found that color responses in general decline in frequency in later childhood and only later resume a similar level in nonconstricted adults. Ames et al. (1974), Ford (1946), Halpern (1940), Klopfer and Margolies (1941) and Rabin and Beck (1950) report the predominance of pure C in very young children. Ford points out as well a frequent phenomenon of coloring naming in very young children. In her qualitative analysis, Ames (1952) reports findings which are somewhat in agreement with Meili-Dworetzki's study. In Ames' research of children from from 2-10 years of age (approximately 50 children per age group), Ames finds that color intensity up until 5 to 7 years of age increases but then declines after this period. She further reports that the number of all color responses shows a general increase until the age of 7. After this age, C declines in an uneven pattern, CF declines more gradually, and FC maintains its level, more or less. This level of FC is not large, is smaller than CF, and only becomes equal to the CF level at age .11.

Inherent within Rorschach's original scoring categories is a consideration of the degree of form-color integration. C is a pure color response; CF is a color dominated response; and FC is a form dominated color response. The

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new rating system further attempts to rate these categories in terms of the degree and quality of form-color integration and in terms of the degree of color intensity (see Appendix A-I). In relation to the theoretical discussion above, a well-integrated form dominated color response with a high level of intensity would be the most demanding and highest level of color response. Werner's coordinates of articulated and discrete would apply to the structure and function of the perceptual response corresponding with Schachtel's allocentric objectification. At the same time, the integration of strong color intensity with the formal elements of the response would indicate the subject's openness and receptivity to a full interaction with the stimuli of the blot.

### b. The shading responses:

The rating of the shading responses like the color responses is complex and multidimensional. Rorschach (1942) did not include shading in his original scoring categories. Klopfer (1936) was the first to establish a special scoring for 'texture (c)', and then again in 1938, he was the first to provide a separate scoring category for the achromatic responses (C'). Finally, although Rorschach (1923) makes a brief reference to the dimensionality of some shading responses, it was not until 1942 that Klopfer introduced his

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K category, shading as diffusion and vista. The many different types of shading responses and the lack of agreement in the literature as to their meaning further increases the difficulty of the genetic rating of shading responses. On the whole, the meanings and rationales for the various shading responses have received little research or validation in the research literature. Schachtel, however, cites Binder's shading system as an exception, and derives his rationales for shading partly from Binder's chiaroscuro system. Binder's Helldunkel determinant (Hd) is the perception of shading as darkness and diffusion. When darkness is predominant, Schachtel sees the subject's experiencing as being passively impressed with his attention to a dysphoric mood. When diffusion predominates the perception, the subject has no hold on the blot. The blot tends to dissolve, and the subject experiences overt, diffuse anxiety.

Binder further distinguishes another shading category (Fb) (similar to Klopfer's Fc used here) which Schachtel relates to the ability to feel and explore nuances in a situation. Although Klopfer (1936), Klopfer and Kelly (1942) see the the textural shading response (c) as directly related to a need for affection, Schachtel disagrees. Such a need may or may not be present. The important affective

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dynamic is the act of reaching out and exploring the external nuances be they in relation to the subtleties and textures of the environment or of ones interpersonal relations with others. A pure texture (c) response would be grossly global and diffuse with little definition or attention to nuance. Again as in the color response, the gross impinging of pure texture (c) on the subject seems to indicate a more passive and reactive perception than the more defined, tempered, and subtly focused perception of the Fc response. In the pure c response the global impression elicits a strong and immediate affective response which is not delayed and integrated with form.

Mook's rating system scores the Hd category of Binder and Schachtel as K, in accordance with Klopfer's (1942) diffusion response. The Fb category is correspondingly scored as Klopfer's c and the achromatic color response is scored as Klopfer's C'. Thus in the rating system, darkness, diffusion, and achromatic color (K and C') are rated on Scale 5, while textural shading responses (c) are rated on Scale 6. The rating criteria (Appendix A-I) for form-shading integration are essentially similar to those for form-color integration.

### III. The personalization scales:

Personalization "points towards the process of becoming

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a person, being distinct from others and from one's surrounding world" (Mook, 1977, p. 20). . In this personalization process Mook states that "a dynamic-structuring of the child's experience of himself and of others takes place" (p. 20). In this sense then, personalization, as an index, provides a holistic impression which focuses on the teleologic parameters of both Werner's and Schachtel's developmental processes. In terms of Werner's framework, personalization represents the development of increasingly discrete and articulate, flexible and yet stable organismic functions and structures which are differentiated and yet integrated with the external world and with themselves. It is not a static end point or state, but rather an increasingly richer, efficacious, and multidimensional interaction with the world. Considered in the light of Schachtel's developmental continuum of perceptual relatedness, personalization focuses on the extent to which an individual's perceptions are allocentric, active, and reaching out to explore and to grasp other people and the external environment. This is the process of objectification, but at the same time the person maintains the ability to be autocentric, passive, receptive, and more fully open to other people and the world if such relatedness is appropriate.

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On the Rorschach, the new rating system attempts to focus on the individual's developmental level of personalization through consideration of two somewhat global and complex parameters. The structuring of the experience of self is seen as being reflected in the Rorschach by the balance of the movement responses, while the structuring of one's experience with others and with the external world is essentially reflected by the "Erlebnis" balance. The two parameters respectively comprise the last two scales of the rating system, Scales 7 and 8.

### a. The experience of self:

Rorschach originally postulated that the human movement response (M) represents an "internalization" phenomena. This internalization phenomenon is linked to kinesthetic perception and reflects both the capacity for inner creation and the quality of the person's characteristic attitudes. Schachtel (1966) further extends this "kinesthetic perception" by suggesting that a person's kinesthetic experience of his own body is his only direct immediate physical experience of himself. It is in this sense that kinesthetic perception leads to kinesthetic empathy where the actual sensation of movement, tension, and posture seen in another person is "felt together" with that person. In the kinesthetic perception of the inkblots, the

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subject is believed to express his own basic attitudes towards himself and towards others.

Rorschach (1942) identified two major types of movement, flexor and extensor, which he saw as reflecting two opposite attitudes towards the world. Piotrowski (1947), however, has added blocked movement indicating indecisiveness, and Binder has enumerated numerous movements qualitatively different in expression. Schachtel (1966) concurs theoretically that movement responses, depending on their concrete quality, might refer to any attitude. Movement qualities such as active or passive, positive or negative, decisive or indecisive etc. when combined with the referent goal of the movement, ie. to self, to others, or to mutual interaction, concretely reflect the subject's basic attitudes towards himself, others, and the external world. In such movement analysis, however, trends throughout the entire protocol must be considered. Scale 7 not only attempts to assess such trends with the M responses but also their balance quantitatively and qualitatively with the animal movement (FM) responses and the inanimate movement (m) responses.

Rapaport (1975) and Klopfer (1942) view the animal movement responses as being more representative of the deeper instinctual layers of personality or repressed

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drives. However, Schachtel disagrees and sees the FM dynamic processes as essentially similar to the M responses. Mook (1977) basically agrees with Schachtel as long as the subject shows a degree of identification but still states that the human movement responses are superior to the animal movement responses. She further acknowledges that they are the most important single indicator of the nature of the perception of self and others (1977, p. 21).

The meaning of inanimate movement developmentally is unclear. For adults, the presence of small m is often interpreted as an inner awareness of the presence of hostile forces or threats to one's personality. It has been seen as a prognostic indicator of a higher adjustment capability which psychotherapeutically is very positive (Klopfer and Davidson, 1962). At earlier genetic levels, such responses may be more akin to physiognomic perceptions or other developmental phenomena yet unclarified.

### b. The experience of others:

Rorschach (1942) spends almost a third of his Psychodiagnostics discussing and elucidating the interrelations of the movement and color responses. These interrelations he categorizes as reflecting the "experience types," introversion, extratension, and coartation (p. 72). His profound perception and elucidation of the

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"Erlebnistype" is indeed a tribute to the real nature of his goals and of the test. Similar to Schachtel's phenomenological investigation of the senses, Rorschach in his test was seeking to understand the quality and nature of the individual's experience of his world. When Rorschach speaks of the development of the experience type, his affinity with Werner and Schachtel is clear.

In other words, the optimal goal of development is the harmonious relationship of three principles, rationality, capacity for inner life, and emotional willingness to adapt. Various relationships are possible, which though different, may be called harmonious (1942, p. 118).

Scale 8 attempts a global assessment of not just the quality, differentiation, and integration of the movement responses, nor of just the quality, differentiation, and integration of the affective responses (color and shading), but also of the quality and harmonious balance of the two aspects with one another. Obviously, because of the complexity and multidimensionality of these interrelated determinants, quantitative rating is more difficult than on the other scales. The criteria are not as clear cut, and inevitably there will be a loss in the richness of meaning from the protocol to the quantified index. The specific criteria are likewise found in Appendix A-I.

This section has briefly described the new rating system and defined more explicitly the relationship between

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the developmental frameworks of Werner and Schachtel with the theoretical rationales behind both the Rorschach and the new rating system. The eight rating scales were described along with their particular content and rationales.

It should be noted that in addition to the average scale scores for each scale, the scales under each of the three major aspects of personality, ie. cognitive integration, affective integration, and personalization, are combined to provide a composite index for each grouping. The dependent variables of this investigation are precisely these indices. Their derivation will be explained in Chapter II. The following and final section of Chapter I includes a summary of the chapter, this investigation's goals, and its specific hypotheses.

### 5. Summary, goals, and hypotheses

The foregoing sections of Chapter I have summarized the relevant literature concerning: (1) Werner's developmental theory; (2) Schachtel's formulations on the development of perceptual relatedness; (3) the general rationales of Hermann Rorschach's inkblot test; (4) the empirical genetic level research to date using the Rorschach; and (5) the basic rationales and genetic concepts

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underlying the new rating system.

Ames et al. (1974), Meili-Dworetzki (1939, 1956) and many others have demonstrated developmental trends utilizing the Rorschach scoring categories, and Hemmendinger (1952) utilizing Friedman's system has demonstrated particular developmental sequences for the location scores. There has not, however, been any systematic and successful extension of genetic level scoring to the Rorschach determinants. Recently, Mook (1977) has constructed a Rorschach rating system which attempts to extend genetic level scoring to the determinants. The present investigation is the first of any systematic attempt to investigate the construct validity of this new "developmental" rating system. The simple goal of this research, it will be recalled, is to answer the question as to whether or not Mook's (1977) new Rorschach rating system can discriminate between different age levels of children in the appropriate developmental direction.

Before any specific considerations as to the developmental validity and reliability of the many genetic concepts and rationales behind the new rating system can be entertained, it seems appropriate to assess the new system's ability to provide a global indication that it may indeed be measuring and elucidating developmental phenomena. The three composite indices of Mook's system discussed in the

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previous section of this chapter should be able to provide such global indications of the new system's developmental assessment capabilities. These indices are: (1) the Cognitive Integration Index; (2) the Affective Integration Index; and (3) the Personalization Index. These indices are weighted composites similar to Becker's (1956) DL score. In a manner similar to Hemmendinger's (1952) investigation of different age groups of children using Friedman's system, this investigation will investigate three age groups of children and their scores on the three composite indices of the new rating system. For a number of reasons explained in Chapter II, the three age groups of children chosen for this investigation are: Group 1 (5:0-6:3 years of age); Group 2 (8:0-9:3 years of age); and Group 3 (11:0-12:3 years of age).

Thus the goals of this research are now translated into the Null form as research hypotheses:

1.1 No significant differences exist at  $p < 0.05$  between the youngest, middle, and oldest age groups of children in terms of the composite Cognitive Integration Index as measured by the new Rorschach rating system.

1.2 No significant differences exist at  $p < 0.05$  between the youngest, middle, and oldest age groups of children in terms of the composite Affective Integration Index as measured by the new Rorschach rating system.

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1.3 No significant differences exist at  $p < 0.05$  between the youngest, middle, and oldest age groups of children in terms of the composite Personalization Index as measured by the new Rorschach rating system.

The following chapter, Chapter II, presents the research design and methodology employed to test these hypotheses.

## CHAPTER II

### THE METHOD

This chapter presents the methodology and research design of this investigation. It begins in section one by describing the structure and general format of the new Rorschach rating system. Section two describes the intelligence measure used in sample selection while section three describes the structure and criteria of two questionnaires which had an important role in defining the "normality" of the research sample. Section four discusses the socioeconomic status (SES) criteria utilized to further characterize the sample. Section five describes the final research sample used in the analysis after the selection process was complete. Then, section six, the procedures section, provides a detailed account of the sample selection process, its sequence, the administration of the psychological instruments, the specificities of other data collection and scoring procedures, and as well the procedures utilized in assessing the inter-rater reliability of the new Rorschach rating system. Finally, the seventh

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section concludes the chapter by presenting the statistical and computer procedures employed to analyze the data of this research.

### 1. The Rorschach Rating System

The Rorschach rating system used in this research was devised by B. Mook (1977). It consists of eight five point rating scales. A detailed description of the rating criteria for each of the scales as well as sample rating forms appears in Appendix A. An overview of the basic structure of the rating system and the means of deriving the three composite indices [(1) the Cognitive Integration Index (CI); (2) the Affective Integration Index (AI); and (3) the Personalization Index (PI)] is given below. These three composite indices (CI, AI, PI) are the dependent variables of this research.

The new Rorschach rating system attempts to evaluate the formal scoring categories of the Rorschach in terms of the theoretical processes of differentiation and integration. The first three scales of the rating system are associated with the Cognitive Integration index (C.I.). Scale 1 concerns the quality and organization of the Whole responses (W); Scale 2 concerns the quality and organization of the detail responses (D, Dd, d); and Scale 3 concerns the

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quality and organization of the solely form determined responses (F)..

The score for each scale is arrived at by summing all of the ratings for that particular scale and dividing the sum by the number of ratings to calculate the rating scale average. The rating scale averages for Scales 1-3 are then combined into the CI composite index. To calculate the CI index, the rating scale averages of Scales 1 and 2 were further averaged and then summed with the Scale 3 average. This is done in order to equalize the weights of the separate scales as they are represented in the composite index. A schematic example of this process of combining the scales is illustrated in Appendix A-II.

Scales 4, 5, and 6 determine the Affective Integration index (AI). Scale 4 rates the quality and organization of the color responses (FC, CF, C). Scale 5 evaluates the shading responses that involve the diffusion and achromatic determinants (FK, KF, K, FC', C'F, C'). The final scale involved in the AI index, Scale 6, rates textural shading responses (Fc, cF, c). In a manner similar to the calculation of the CI index, the AI index is derived by averaging together the shading scale averages (Scales 5 and 6) and summing this combined average with the Scale 4 (color responses) average. Again, a schematic example of this computation is shown in Appendix A-II.

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The third composite index, the Personalization Index (PI), is determined by the last two scales of the rating system, Scale 7 and Scale 8. The evaluation of the appropriate rating for each response on both Scales 7 and 8 is considerably more complicated than for the other scales of the system. The reason for this is that each rating on both Scale 7 and 8 not only takes into account the quality of the particular response being rated but also takes into account the inter-relationship and balance of these responses throughout the whole protocol. For instance, Scale 7 evaluates the quality and organization of a movement response (M, FM, Fm, mF, m) not only in relation to the particular response but also in relation to the quality and balance of movement responses for the whole protocol. Scale 8 is the most complex scale of all because most previously rated determinant responses (M, FM, FC, CF, Fc, cF, c, and C) are rated again but this time in the context of the quality and balance of all these main determinants in the whole protocol. Appendix A-I gives a more detailed description of the quality and balance criteria for Scale 8. Both Scale 7 and Scale 8 provide average scale scores, and the Personalization index (PI) is computed simply by adding these two scale averages. A schematic example of this computation is likewise shown in Appendix A-II.

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### 2. The Lorge Thorndike Intelligence Test

As seen in the review of the literature, intelligence is an important variable to be controlled for in developmental studies making comparisons between groups. Empirically, Blatt and Allison (1963), Friedman and Orgel (1964), Kissel (1965), Mardsen (1970), and Spiegelman (1956) have demonstrated the correlation between intelligence and genetically high and well integrated whole responses (W's). It further seems reasonable to assume that intelligence has a general effect on the perceptual organizing capabilities in regard to the determinants. Clinicians, for instance, have stressed repeatedly their observations between well-articulated M responses and intelligence (Klopfer, 1942; Mayman, 1977; Rapaport, Gill, and Schafer, 1975).

The instrument utilized to measure intelligence in this project was the Lorge Thorndike Group Intelligence Test. In addition to the fact that it was being currently used by the Ottawa Separate School Board's (O.S.S.B.) second language research program, the Lorge Thorndike exhibits a considerable reputation in the literature and offers particular features that were very useful. The Separate-level edition (the 1957 version of the test) provides tests for five grade levels, kgn-1, 2-3, 4-6, 7-9,

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10-12. The first two levels are wholly non-verbal while the remaining levels have both verbal and non-verbal subtest.

Upon restandardization in 1963, the Multi-level edition of the Lorge Thorndike was introduced with two equivalent forms for grades 3 to 13, offering a verbal, a non-verbal, and a composite score. The primary non-verbal battery for level 1 (kgn-1) of the Separate-level edition was not included in the Multi-level edition because of its strictly non-verbal nature (Buros, 1959, 1972).

Obviously, for this project, the reading incapacities of the 5:0-6:3 year old group required a non-verbal test and the Lorge Thorndike Separate-level edition met such a requirement. In addition, it seemed reasonable to administer only the non-verbal subtests of the Lorge Thorndike to the other two age groups of the sample in order to better maintain the equivalence between groups as to the kind of I.Q. measure used. Secondly, the non-verbal I.Q. test seemed to have a greater face validity with the perceptual-cognitive organizing nature of the Rorschach task. Following the same procedure as the O.S.S.B.'s second language research program, levels I and II of the Separate-level edition were administered to the 5:0-6:3 and 8:0-9:3 year old groups respectively. Level C of the Multi-level edition was administered to the 11:0-12:3 age group.

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The Primary Battery, form A, for levels I and II consists of three subtests of approximately 8 minutes each in length. All three subtests for each level involves only pictorial items respectively asking the testee: (1) to circle the drawing named; (2) to circle the drawing that does not belong with the others; (3) to circle the two drawings that go together out of five choices. Each item of all three subtests consists of five drawings. For level I and II, the standard error given in raw score form is 10.70 and 5.38 points respectively.

The non-verbal level C, Form 1, of the Multi-level edition of the Lorge Thorndike was administered to the 11:0-12:3 age group. This non-verbal battery likewise consists of three subtests. The 25 items of the first subtest require the testee to choose a drawing from five choices which goes with a separate series of three drawings. The choice involves completing the organization of the separate series by recognizing the various relationships implicit in the series. The second subtest, again consisting of 25 items, presents a series of 4 related numbers or letters where the testee chooses one of five possible choices to complete the first four. Finally, the third subtest, consists of 30 items. Two drawings that go together are presented along with a third different one.

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The testee is then asked to select one of the five other drawings which has a similar relationship to the third drawing as the first two drawings have to each other. The testees have nine minutes to complete each of the subtests. The standard error given in raw score form for the non-verbal Multi-level edition is 10.00 points.

Most data on the validity of the Multi-level edition are based on the previous Separate-level edition of the test. The Lorge Thorndike correlated with the Stanford Binet and the WISC at a level of .60 or higher for 46 coefficients out of 52. Freeman (1959) cites the first grade children as generally showing lower correlations with the Stanford Binet and the WISC, eg. .63 and .54 as opposed to .71 and .77 for grades 7-9. Correlations of the test with the Differential Aptitudes tests show that the non-verbal I.Q.'s have higher correlations with Space Relations, Abstract Reasoning, and Mechanical Reasoning. Finally, the non-verbal test generally provides the lower correlations within any set (Buros, 1959, 1972).

Reliability data on the Separate-level edition show that the odd-even reliabilities are generally high. Pidgeon (1959, p. 483) further cites the alternate form coefficients for levels I and II of the Separate-level edition at around .79. The reliability coefficients of the Multi-level edition are .80 to .88 for the non-verbal battery for

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different grades (Buros, 1972, p. 360).

An indication of the overall assessment of the test is given by the critics themselves. "On the whole the Lorge Thorndike series is among the sounder group instruments available, from the point of view of psychological insight (with regard to both the content and concepts of intelligence) shown in selecting and developing the materials and from the point of view of statistical standardization" (Freeman, 1959, p. 481). Milholland (1978, p. 482) comments: "The Lorge Thorndike should be accorded a place among the best of our group intelligence tests."

### 3. The Screening Questionnaires -----

While previously mentioned genetic level research mostly controlled only for past psychiatric history in their normal samples, it was felt that this project could extend substantially its criteria by utilizing the records, experience, and resources of school board personnel. Two major problems, however, confronted such an effort. The first problem, involving both theoretical and practical considerations, centered directly upon the meaning and measurement of normality in general. Neither the dimensions of normality nor the specific limits along such dimensions nor the instruments to obtain such measurements are clear

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and established in the literature. Furthermore, because the Rorschach addresses itself to the whole personality, a piecemeal approach for defining normality seemed inappropriate and undesirable. The second problem entailed the issue of how to utilize the school board's resources in a reasonable and appropriate manner. The Rorschach and intelligence testing of this project would entail a substantial commitment of school resources and a significant disruption of school routines, and it became rapidly apparent from discussions with the principals and school board researchers that any selection measures to define normality would have to be clear, simple, and not very time consuming. The solution to both problems seemed to be a global description of normal behavior and adjustment which would distinguish atypical children. To this end, the researcher and his supervisor, B. Mook, constructed two screening questionnaires, one for the class teacher and one for the principal of each subject.

The Teacher's Screening Questionnaire, TSQ, (appendix B) consisted of 12 questions, each soliciting a yes/no response from the teacher. The questionnaire explained to the teachers that the project required "a relatively normal population of children for testing in order to establish an approximate average kid baseline," and that towards this

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end, it was important to the study "to exclude any child that had any obvious or easily identifiable problem." The teachers were then asked to identify any children who seemed to them to be clearly atypical by answering yes to the appropriate question. The first ten questions inquired as to any atypical adjustment or difficulty in four general areas: (1) scholastic functioning, including the presence of learning disabilities; (2) social interaction; (3) emotional behavior; and (4) known familial difficulties. The last two questions of the questionnaire enquired as to the presence of any known psychiatric history and of any known medicated behavioral treatment programs.

The Principal's Screening Questionnaire, PSQ, (appendix B) was comprised of two basic questions. The first question inquired as to the frequency that each subject had been sent to the principal's office. The principal concerned was asked to rate such frequency along a four point continuum: (1) Never; (2) Seldom; (3) Frequently; (4) Very Frequently. The second question asked the principal to note for each subject, the number of unexcused absences for the current year. Both questions were meant to serve as additional indicators for behavioral adjustment in school and to supplement the TSQ. On hindsight, however, the PSQ added little new information about any particular subject to that previously provided by the TSQ. In its present form, the

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PSQ seemed to serve little useful purpose for the present research.

### 4. The Socioeconomic Status (SES) Measurement

The effects that enriched as compared to impoverished environments have on many aspects of development are quite evident in the literature (Dennis, 1960; Skeels and Dye, 1939; Skeels, 1960; White, 1971). Furthermore, much past research utilizing genetic level scoring for the Rorschach has considered it quite important to report the various samples' SES characteristics. Nevertheless, the effect of SES on genetic level scoring or on the quality of the Rorschach responses seems to be multifaceted and far from clear. Very little definitive empirical research is available in this regard. The most recent and substantial in terms of sampling size is John Exner's (1978) work where he reports normative data from 2545 children, 5 years of age to 16 years of age. For each year throughout this age span, his subjects have been classified into three groups: (1) nonpatients; (2) behavioral problems; and (3) withdrawn or socially isolated. With such a large sample collected by more than 200 examiners and with many cells at or near the 100 mark, Exner states that "...Significance testing comparing varieties of socioeconomic groups has yielded

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essentially negative findings among the structural data" (Exner, 1978, p.6).

It is not clear then what effect, if any, socioeconomic status (SES) might have on the findings of this research project. Exner's structural data in his Comprehensive System is predominantly a quantitative analysis of the formal categories whereas Mook's rating system which rates each formal category on a 5 point scale and arrives at an overall average for each category or grouping of categories is a predominantly qualitative analysis. It is, of course, possible that SES factors may have a greater affect on the qualitative rather than on the quantitative aspects of the Rorschach protocol, especially in regard to developmental considerations. The literature has not dealt with this matter. Genetical level research projects using the Rorschach for the last thirty years have simply reported the SES of their subjects in whatever ways they could: occupation; educational level; neighborhood; income; etc. Exner's findings represent the first major attempt to investigate the matter, but they are far from conclusive. In addition, Exner does not report what criteria he used to measure SES, and throughout the literature there is considerable variance as to what criteria are seen to be appropriate or practical.

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In view of the above considerations, it seemed highly appropriate for this project to attempt some measurement of SES even if its only use for the present appears to be to provide descriptive rather than predictive information about the sample. Unfortunately, external contingencies much beyond the control of the project have limited even the descriptive value of the SES parameter. The only avenue for acquiring SES data on subjects that was acceptable to most school principals was to ask the parents to volunteer information about their occupation and home address. Some principals refused to participate at all even if the actual family income was requested on a volunteer basis. They considered such a request unethical and an invasion of privacy. Even in regard to the information that could be requested, the responses by parents to the occupation request was quite sporadic while most all parents (only 3 declined) submitted their home address.

This being the case, this research project adopted the same measurement of SES that the Ottawa Separate School Board's own second language research program was currently utilizing. Each home address was matched with its appropriate 1971 Census tract location and information on the average family income for that area was transcribed from the 1971 Census Tract Bulletin, Series B (1974), for the Ottawa-Hull region. Income figures were then grouped into

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15 categories with intervals of \$1000, ranging from \$6000-\$6999, \$7000-\$7999, to \$20,000++. The results of this classification scheme are reported in the description of the sample.

The limitations of this means of SES measurement, however, should be noted. In the first place, the Series B bulletin reports information on a 33.33 percent sample basis. The Series A bulletin of the 1971 Census reports information on a 100 percent basis, but it reports no economic characteristics. In the second place, and by far the most detrimental to the accuracy of the information, the socioeconomic picture of the Ottawa-Hull area has changed tremendously in the last ten years. Urban development has been considerable, and substantial fluctuation of income levels has occurred. Urban planners for the City of Ottawa (Kellestine and McColgan, 1978) felt that although from 1971 to 1976 there was only an increase in municipal population of 2,000 inhabitants, from 1971 to 1980 there has been a major shift from the city core to the outer census tracts. Furthermore, there have been no major city surveys since 1971. A mini-census of 1976 is available, but it provides no information on income. Therefore, with the shifting of populations between census tracts and the redevelopment of downtown areas where many of this project's subjects lived,

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the utility and validity of these measures of socioeconomic status are questionable.

### 5. The Subjects

The subjects used in this research were 120 normal children comprising three age groups of 40 children each. The age range for the first group was 5:0 to 6:3 years of age; for the second group, 8:0 to 9:3 years of age; and for the third group, 11:0 to 12:3 years of age. Each group was equally divided as to sex, 20 males and 20 females. The subjects were enrolled in the elementary schools of the Ottawa English Roman Catholic School Board. In all, four schools were utilized in collecting the sample. Each school is simply represented here by a different letter of the alphabet. Tables 1 and 2 give the overall school representation and the school representation by group respectively. Table 3 gives the school grade level representation by group.

The three age groups above were chosen for empirical, theoretical, and practical reasons. Empirically, Meili-Dworetzki (1939, 1956), Friedman (1951) and Hemmendinger (1951) have shown that when utilizing location scores, there are discernably different perceptual organizing patterns between these three age groups, and any

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TABLE 1

Sample Characteristics: Frequency Table  
of Overall Sample Representation  
by School

School	Absolute Frequency	Relative Frequency	Cummulative Frequency
School A	17	14.2	14.2
School B	15	12.5	26.7
School C	51	42.5	69.2
School D	37	30.8	100.0
Total	120	100.0	

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TABLE 2

Sample Characteristics: Frequency Table  
of Group Representation by School

School	Group 1		Group 2		Group 3	
	N	Rel. %	N	Rel. %	N	Rel. %
School A	9	22.5	3	7.5	5	12.5
School B	4	10.0	5	12.5	6	15.0
School C	17	42.5	11	27.5	23	57.5
School D	10	25.0	21	52.5	6	15.0
Total:	40	100.0	40	100.0	40	100.0

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TABLE 3

Sample Characteristics: Frequency Table  
of Group Representation by Grade

Group	Grade	Absolute Frequency	Relative Frequency
Group 1	Kindergarden	37	92.5
	First	3	7.5
Group 2	Second	8	20.0
	Third	18	45.0
	3/4	11	27.5
	Fourth	3	7.5
Group 3	Fifth	5	12.5
	Sixth	34	85.0
	Seventh	1	2.5

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newly proposed developmental rating system should be able to do likewise. Theoretically and practically, these three age groups are appropriate because most five year olds are just entering formal schooling, and the eleven year olds are preparing to leave elementary school to attend the seventh grade. The 11:0 to 12:3 year old group is on the verge of entering adolescence. According to a variety of developmental theories and empirical findings, the period from 5 to 12 years of age represents a period of significant development and consolidation of the perceptual organizing processes. In Piagetian terms, the 5 to 6 year olds are towards the upper limits of the preoperational stage (2-7 years) where objects can be represented by images and words, but such representation is primarily egocentric and tends to be determined by single salient features. The 8 to 9 year olds and the 11 to 12 year olds are at the beginning and end of Piaget's concrete operation stage (7-12). In this stage, the child becomes capable of logical thought, can classify and order objects, and can understand relations between objects. In addition, the 11:0 to 12:3 group is on the verge of Piaget's formal operations stage (12 years and up) where abstract thinking, reasoning by hypothesis, the isolating of problem elements, and the systematic exploration of solutions become part of the cognitive processes (Hilgard, Atkinson, and Atkinson, 1979).

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Furthermore, these three age groups represent the beginning, the middle, and the end of the age groups in the elementary school system. From an educational and a social standpoint these three groups have a natural and meaningful relationship to one another; and together they represent a major period of childhood. Finally, as each age group would be represented in each elementary school sampled, the number of schools sampled, the time and number of school officials involved in the project as well as the various organizational difficulties in data collection could be minimized.

The overall range of intelligence as measured by the Lorge Thorndike Nonverbal Intelligence test for the entire sample is 85-136 with a mean of 106.7 and a standard deviation of 10.8. The overall distribution was slightly positively skewed, 0.33, and slightly leptokurtic, 0.45. The mean age and I.Q. by group are given in Table 4. A oneway analysis of variance was calculated to compare the three groups and to insure that the groups were equatable in regard to I.Q. Table 4 provides the results of such an analysis.

As can be seen from Table 4, there are no significant differences (at  $p > 0.05$ ) between groups for I.Q. The significance level ( $p = 0.07$ ) is close to the critical level,

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TABLE 4

Sample Characteristics: Table of Mean  
Ages and I.Q. Ranges, Means, and  
Standard Deviations (S.D.) by Group

Group	N	Mean Age	Range	I.Q. Mean	S.D.
Group 1	40	5:10	86-131	109.4	10.9
Group 2	40	8:7	94-127	196.9	8.2
Group 3	40	11:6	85-136	103.8	12.5

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TABLE 5

Sample Characteristics: Summary Table  
of Oneway Analysis of Variance for  
I.Q. by Group

Source	SS	df	MS	F	p
Between Groups	619.32	2	309.66	2.70	0.07
Linearity	616.05	1	616.05	5.37	0.02
Deviation from Linearity	3.27	1	3.27		
Within	13,416.68	117	114.67		
Total	14,036.00	119			

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but it fails to reach it. There are as well three factors that tend to minimize consideration of this close proximity to the 0.05 significance level. The first is that the standard error in raw score points for the Lorge Thorndike test (for Levels 1 and 3) is approximately 10 points, and the group mean difference between these two most extreme groups is 5.55 points. Secondly, the Eta squared in the analysis is 0.04 which indicates that the size of the relationship between group and age is quite small, 4.0%. Thirdly, and in a more speculative sense, there is a significant ( $p=.022$ ) linear relationship between the groups and this relationship has a small negative correlation of  $r=-0.21$ . This trend can be seen by comparing the group means in Table 3. The linear relationship, however, may simply indicate that the youngest group is more practiced at their own level in nonverbal skills than the oldest group whose main orientation and formal training at their level involves verbal skills. As the nonverbal form of the Lorge Thorndike was given to all three groups, the slight differences of the group means may simply be indicative of a practice effect. In any event, the differences between groups for I.Q. did not reach significance ( $p<0.05$ ), and they are therefore attributable to random chance factors rather than to actual differences of intelligence between groups.

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The frequency distribution of the overall sample of children in relation to the socioeconomic status (SES) criteria discussed above is shown in Table 6. The table illustrates three fairly discrete clusters in the distribution of income categories. The overall mode for the sample is the \$10,000-10,999 category while the other two distinct clusters center on the \$15,000-15,999 and the \$20,000++categories. A chi-square analysis of the SES by age groups resulted in a significant chi-square of 33.67 with 18 degrees of freedom,  $p < 0.05$ . This indication of the independence among the three groups in reference to SES is difficult to interpret and assess for two reasons: (1) as mentioned, the validity of the SES criteria themselves is questionable; and (2) recent developmental research (Exner, 1978) reports that SES has no reliable effect on the structural data of the Rorschach. From the above descriptive and nonparametric findings it does, however, appear that the five subjects in group 2 in the \$20,000++ category contributed to the differences among the groups on this measure. From Table 6, it can also be seen that 52.5% of Group 2 was comprised of subjects from School D close to the Rockcliff Village area, a very financially privileged Ottawa area, and all five of the subjects in the \$20,000++ category were from School D. Another point of notice is

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TABLE 6

Sample Characteristics: Frequency table  
of Group Representation by SES

Income Levels	Group 1		Group 2		Group 3	
	N	Rel. %	N	Rel. %	N	Rel. %
\$ 7,000	2	5.0	2	5.0	1	2.5
\$ 8,000	6	15.0	3	7.5	3	7.5
\$ 9,000	8	20.0	3	7.5	4	10.0
\$10,000	7	17.5	8	20.0	16	40.0
\$11,000	4	10.0	4	10.0	1	2.5
\$12,000	1	2.5	2	5.0		
\$13,000						
\$14,000	2	5.0	6	15.0	4	10.0
\$15,000	9	22.5	4	10.0	5	12.5
\$16,000			2	2.5	5	12.5
\$17,000						
\$18,000						
\$19,000						
\$20,000++			5	12.5		
Missing	1	2.5	1	2.5	1	2.5
Total	40	100.0	40	100.0	40	100.0

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that 40% of Group 3 lies within the \$10,000-10,999 category. Other than these general descriptions, further analysis and interpretation of the SES data seem unwarranted because of the reasons stated above.

### 6. The Procedure -----

After approval of the project by the Ottawa Separate School Board (O.S.S.B.) solicitations were made to various principals seeking their participation in the project. After the four schools mentioned above agreed to participate, parental permission for each child's participation in the project had to be obtained. A standard letter (Appendix C) was drawn up by the researcher and signed by the principal of each school concerned. This letter was then sent to every child in the appropriate age groups of the four schools. Besides a brief description of the research and a request for the participation of the child, the letter included a post script requesting the following voluntary information: (1) date of birth of the child; (2) the home address; (3) the father's occupation; and (4) the mother's occupation.

All children whose parents approved of their participation then became subject to the selection screening process. The total number of children who participated in

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the project in some form or another before the research sample was complete, ie. all subjects meeting selection criteria, was 169. Table 7 gives the total breakdown by selection criteria of the screening and elimination of subjects from this initial group of 169 children. After the receipt of parental permission, the Teacher's Screening Questionnaire (TSQ) and the Principal's Screening Questionnaire (PSQ) were filled out (Appendix B). The TSQ was the most comprehensive and sensitive of the two devices. Children who were in special education and remedial classes as well as children who showed a past history of psychiatric intervention or of a medicated behavioral treatment program (questions 3, 11, and 12 of the TSQ) were immediately dropped from the project. Depending on various time factors, however, a number of children did take part in the intelligence testing before they were excluded by the TSQ. Children who received two or more atypical affirmations on the other nine questions of the TSQ were categorized as questionable. In the case of the Principal's Screening Questionnaire (PSQ), the 'frequently' and 'very frequently' categories were cutoff categories marking atypical behavior. Subjects with ten or more unexcused absences were also noted. Between both the TSQ and PSQ, a total of two or more atypical affirmations placed that subject in the "questionable category." Subjects thus noted as questionable

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TABLE 7

Screening Process Summary: Subject  
Elimination by Selection Criteria

Selection Criteria	Group 1	Group 2	Group 3
Below 85 IQ	0	6	4
Moved or Sick	2	0	1
TSQ & Review	6	3	5
Epileptic	1	0	0
Previous Psychiatric History (TSQ)	1	0	0
Rorschach Responses <10	2	0	1
Remedial Classes	3	1	1
Language Problem	0	1	0
Total	15	11	12

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were then referred to Dr. W. Barry, Chief Psychologist of the O.S.S.B., and the respective school psychologist for review. These personnel reviewed the case of each child using their records and experience of the child in regard to the project's guidelines of atypical behavior. From this review the questionable children were either approved for participation or eliminated from further consideration. It should be noted that it was not always possible to complete the screening process before the scheduled testing in a particular school. Five children, in fact, had completed all of the testing before being eliminated. The total number of children eliminated by the TSQ and the PSQ was 16.

After the receipt of parental permission to participate in the project and most of the screening had been completed, each subject was administered the appropriate level of the Lorge Thorndike Nonverbal Intelligence Battery. Such testing was done in small groups of approximately four children for the 5:0 to 6:3 age group, and of no more than ten children for the older age groups. Testing for the youngest age group was always split into two sessions, most often on separate days, and an ample break involving games or songs occurred between subtests.

Hemmendinger (1951) and Ford (1946) in their Rorschach

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studies report I.Q. ranges of 85-120, and 90-157 respectively. The accepted range of this project was 85-++, using 85 as a bottom cutoff to restrict the lower range. As intelligence could be controlled statistically between groups if necessary, it was felt that any instances of atypically high I.Q. would allow some individual post hoc heuristic comparisons perhaps of interest for future research. Overall, ten children were eliminated from the project because their I.Q. scores fell below 85. The overall actual range for the sample of 120 children was 85-136.

The Rorschach Ink Blot test was then individually administered to the children generally a week or so after the intelligence testing. In an attempt to control for experimenter bias, three Rorschach examiners each collected approximately one third of the sample protocols. This procedure follows that used by Hemmendinger (1951). The three examiners were all M.A. graduate students in the clinical psychology program at the University of Ottawa, and with the exception of the experimenter, were naive as to the specific objectives of the project. Administration of the Rorschach was patterned after the standard procedure as developed by Exner (1974) and Klopfer and Davidson (1962). The procedural details were written out by the researcher and discussed with both the two other examiners. This standardized procedure for the Rorschach administration is

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fully described in Appendix D. Of particular interest here, it may be noted that contrary to Hemmendinger's (1951) study and a few other investigators such as Ames et al. (1974), the inquiry for the Rorschach with children was conducted after the entire performance proper instead of after each card. For the last thirty years there has been sporadic debate for and against each procedure. Klopfer, Fox, and Troup (1956) and Exner (1974) recommend that the inquiry be conducted after the complete performance, and their recommendation is followed here as most present. research seems to be following such a procedure (Exner, 1974). As well, it should be noted that a minimum of ten responses per protocol (average of one response per card) barely constitutes a valid and representative protocol statistically (Exner, 1974); and consequently, protocols with fewer than ten responses were eliminated from the study. Three subjects were so eliminated.

Because of the nature of the selection process as well as numerous other data collection problems, such as summer vacation, subject elimination, volunteer examiners with scheduling problems, etc., a total of 131 valid Rorschach protocols were gathered. Fifty-six of these were originally administered by the experimenter and 39 and 37 were administered by the naive examiners. In order to balance

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the examiner proportions as well as balance the number of subjects in each group at 40 per group, eleven protocols were randomly eliminated from the 131. As the bulk of those eliminated were drawn from those administered by the present researcher, the final proportions were: 46 collected by the experimenter, and 37 collected by each of the naive examiners.

The protocols were then coded randomly from 1 to 120 and scored by the researcher according to Klopfer's method of scoring the Rorschach. Responses which were in doubt as to scoring were decided by either A. Celovsky or B. Mook of the University of Ottawa. After the 120 protocols were thus scored, the protocols were rated according to the criteria of the new rating system. Just prior to rating, both the experimenter and a fellow graduate student were trained by B. Mook in the use of her rating system. This training involved the rating of 17 practice protocols and various discussions as to the use and interpretation of the rating criteria. Upon completion of these training sessions, both the experimenter and the fellow graduate student rated a random third of the protocols approximately divided equally by group. These data were then analyzed for inter-rater agreement. The agreement percentages by scale are as follows: Scale 1 (87.0%); Scale 2 (94.0%); Scale 3 (91.0%); Scale 4 (89.0%); Scale 5 (98.0%); Scale 6 (98.0%); Scale 7

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(76.0%); and Scale 8 (83.0%). The overall percentage of agreement was 90.0%.

As recommended by Tinsley and Weiss (1975) the nonparametric chi-square test of significance of inter-rater agreement formulated by Lawlis and Lu (1972) was utilized. This nonparametric test takes into account the probability of chance agreement given the number of raters, the number of points on the scale, and the criteria for disagreement, eg. a one point discrepancy between rater or a two point discrepancy etc. For the five point rating scales of this project with two raters, and with agreement defined as a one point discrepancy, Lawlis and Lu (1972, p. 19) calculate the chance agreement probability to be 0.2. Using these criteria, all of the chi squares calculated for each of the nine scales were strongly significant ( $p < 0.0001$ ) indicating that these results are reliably attributable to an actual agreement between raters and not due to chance. Both the high percentages of agreement for the nine scales and the strength of the reliability of these percentages attest favorably to the utilization of the new rating system.

After the rating of the 40 protocols used in the inter-rater agreement, the experimenter then rated the remaining 80 protocols himself. Any disagreements in the first 40 protocols (ie. those utilized in the inter-rater

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agreement analysis) were decided by B. Mook who acted as arbitrator. After the rating of the protocols, the scale averages were combined in a manner previously described to arrive at three composite index scores for each protocol: (1) the Cognitive Integration Index (CI); (2) the Affective Integration Index (AI); and (3) the Personalization Index (PI). These three indices were then analyzed statistically as described below.

### 7. Analysis of the Data

The principal technique of analysis to assess whether or not the three composite indices (CI, AI, PI) could differentiate between different age groups of children was a three group direct multiple discriminant analysis. The discriminant analysis served as parametric statistics to assess trends in the Rorschach indices in relation to membership in a particular age group. All analyses were formulated from the Statistical Package for the Social Sciences (SPSS, 2nd Edit., Nie, Hull, Jenkins, Steinbrenner, and Bent, 1975), and executed with a Burroughs 6700 computer at the Queen's University Computing Center.

The discriminant and classification analysis was carried out in the following manner: (a) means and standard deviations of the composite indices for all three groups

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were computed; (b) mean differences among groups for each index were tested for significance by univariate F ratios; (c) covariate and correlation matrices were calculated; (d) prior probabilities of group membership were established by assessing the relative number of subjects in each group within the analysis; (e) discriminant function analysis was then conducted in a direct (as opposed to step-wise) fashion; (f) Wilk's lambda (Cooley and Lohnes, 1962) was derived and tested for significance by a chi-square approximation to determine whether vectors of the means for the indices, across groups, were sufficiently different from each other to warrant separate functions; (g) unstandardized discriminant coefficients were produced to enable probable group membership to be determined; (h) group dispersions and centroids on each discriminant function were ciphered to locate each group centroid relative to each function; (i) every subject's score on each of the three indices was weighted by discriminant function coefficients to arrive at a discriminant score for every subject; (j) each subject, treated as a point in the discriminant function space was predicted to be and classified as a member of that particular age group nearest to which his discriminant score fell; and (k) accuracy of prediction was assessed in terms of percentage of subjects correctly classified.

The findings of the multiple discriminant analysis were

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then cross-validated through the use of an SPSS discriminant analysis subprogram, "Splithalf." This additional subprogram procedure is specifically designed to compensate for an inherent flaw in the process of employing the same sample data to determine the validity of the prediction equations generated by the discriminant and classification analysis. The incestuous nature of this flaw can be seen in the fact that the discriminant function coefficients are calculated from a population sample, and then they are used to derive the classification function coefficients for that very same sample. In other words, the same data that is used to derive the classification function is then classified by that function. The chance errors encountered during the equation phase of the analysis are thus capitalized upon in the classification stage, generally providing spuriously inflated prediction accuracy figures.

The cross-validation procedure of the SPSS Discriminant analysis subprogram, "Splithalf," simply involved the use of only one half of the sample data (ie. 20 instead of 40 cases per group) to derive the discriminant and classification coefficients. These coefficients derived from the first half of the sample were then used to classify the second half of the sample. The accuracy of classification as calculated on the cross validated sample was expected to be

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generally lower than the original full sample classification figures because the chance factors that tended to maximize the original classification figures were not capitalized upon in the cross validation procedure. Importantly, the extent of the discrepancy between the two sets of classification figures allow for further estimation of the empirical reliability of the original discriminant and classification analysis.

Chapter II has outlined the methodology and research design in detail. It should be noted once again that for all tests of statistical reliability, ie. significance, the 0.05 level of probability was accepted to imply a reliable statistical finding. The next chapter presents the results of this investigation's analyses, followed by Chapter IV with a brief discussion of these finding and suggestions for further research.

## CHAPTER III

### THE PRESENTATION OF RESULTS

This chapter documents the results of this investigation's analyses. The results of the discriminant analysis are presented first, followed by the prediction accuracy analysis. Concluding this chapter, the results of the cross validation procedures are given.

The major hypotheses of this research regarding differences among the composite indices of the new Rorschach rating system in comparison to age group membership were tested by multiple discriminant analysis. To test specifically the null hypothesis, stating that no significant differences exist in the Cognitive Integration Index (CI), the Affective Integration Index (AI), and the Personalization Index (PI) among the three groups of children, the three composite index scores for all 120 children in the sample were entered into the computer analysis. Tables 8 to 13 summarize the data of the discriminant analysis and present the results for the CI, AI, and PI by age group.

## PRESENTATION OF RESULTS

Table 8 provides the group means and standard deviations for the "Age Group by Composite Indices". Table 9 gives the univariate F ratios. On examination of the two tables, Table 9 indicates that all of the three composite indices, CI, AI, and PI, resulted in significant differences between the three age groups. Specifically, the group means of Table 8 show the oldest age group, Group 3, to score the highest on all three composite indices, while the youngest group, Group 1, scored the lowest on all three composite indices. Thus, the means of the indices for the groups progress from lowest to highest for each index in a direct relation to groups of increasing chronological age. It should be mentioned here that these F ratios are similar to the omnibus F ratio of the analysis of variance technique. Although significant differences thus exist between age groups in relation to the three indices, this does not necessarily mean that each and every paired comparison between age groups for each index is significantly different.

With evidence that group differences exist on all of the composite indices, discriminant analysis was performed to determine whether the three indices could be employed to maximize group discrimination. Table 10 summarizes the discriminating power of the indices in union. Because the number of functions possible to differentiate groups is

PRESENTATION OF RESULTS

TABLE 8

Rorschach Rating System: Means (M) and Standard Deviations (SD) of Age Groups by Composite Indices Discrimination

Composite Index		1 (N=40)	Group 2 (N=40)	3 (N=40)	Total (N=120)
CI	M	4.50	5.52	5.88	5.30
	SD	0.73	0.43	0.54	0.83
AI	M	2.07	3.44	3.55	3.02
	SD	1.15	1.49	1.76	1.62
PI	M	2.52	4.52	5.49	4.18
	SD	1.63	1.50	1.70	2.03

CI=Cognitive Integration Index  
 AI=Affective Integration Index  
 PI=Personalization Index

PRESENTATION OF RESULTS

TABLE 9

Rorschach Rating System: Univariate  
F-tests for the Age Groups by  
Composite Indices Discrimination

Composite Indices	Wilk's Lambda	F-ratio	p
CI	0.502	58.09	0.0000
AI	0.826	12.34	0.0000
PI	0.621	35.68	0.0000

df= 2; 117

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always one less than the total number of groups, two functions are calculated in the case of three groups. Function 1 which accounts for 98.2% of the variance between the three age groups, is highly significant ( $p < .0000$ ), while function 2, accounting for only 1.8% of the variance between groups is not statistically reliable and does not make any meaningful contribution to the analysis' discriminating power. These data indicate that group differences of this magnitude might occur by chance only once in more than 10,000 times, and that discrimination between the three age groups appears possible on the basis of the three composite indices of the new Rorschach rating system.

The differences of the composite indices between age groups can be observed more precisely in Tables 11 and 12. Table 11 presents the standardized discriminant function coefficients for the age groups by composite indices discrimination. These coefficients are scale weights which indicate the relative contribution (positive or negative) of each index to the function. In this sense then, they are comparable to the beta weights utilized in multiple regression. From Table 11 it is clear that the CI (+0.763) contributes the most to the discriminant function. In fact it contributes more than twice as much discriminating power as the next strongest contributor, the PI (+0.325). The

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TABLE 10

Rorschach Rating System: Discriminant  
Function Summary Data for Age Group  
by Composite Indices Discrimination

Function	Rel. %	Cannonical Correlation	After Function	Wilk's Lambda	Chi-Square	df	p
			0	0.447	93.28	6	0.0000
1	98.2	0.736	1	0.979	2.46	2	n.s.
2	1.7	0.144					

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TABLE 11

Rorschach Rating System: Standardized  
Discriminant Function Coefficients for the  
Age Group by Composite Indices Discrimination

Composite / Indices	Function 1
CI	0.76
AI	0.16
PI	0.33

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least powerful contributor is the AI (+0.166); the CI contributes to the discriminant function over four times more discriminating power than the AI.

The group centroids, presented in Table 12, serve two purposes. First, they are criteria for the classification of individuals as to age group membership. Utilized in this way, the relative proximity of an individual's discriminant function score to each group centroid determines which group he will be classified into, and constitutes the basis to assess the extent of classification accuracy (ie. predictability) of the discriminant function. Secondly, the group centroids serve to establish the relative position of each group along the discriminant function.

Thus, from Table 11 it is apparent that the age groups are the most clearly separated by the Cognitive Integration Index (CI) in comparison to the other two indices. This dominance of the CI essentially defines the function as a cognitive integration function although the Personalization Index (PI) and the Affective Index (AI) do make reliable contributions as well. Combining this information with Table 12 which provides the group centroids, the direct linear relationship between increasing chronological age (as evidenced by group membership) and position along function 1 is apparent. The relatively strong negative weighting to function 1 given by Group 1, the youngest

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TABLE 12

Rorschach Rating System: Group  
Centroids in Reduced Space for the Age  
Group by Composite Indices Discrimination

Age Group	Function 1
Group 1	-1.28
Group 2	0.26
Group 3	1.02

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group, and the relatively strong positive weighting of Group 3, the oldest group, indicate the functional relationship between low indices scoring and the lowest chronological age with high indices scoring and the highest chronological age. The middle group, Group 2, lies almost in the middle between the two at a point approximately 62% of the distance between the Group 1 and 3 centroids and is closer in this regard to Group 3 than to Group 1.

Discriminant analysis success, or lack thereof, is gauged by the degree of prediction accuracy when individuals are classified into age groups solely on the basis of their composite indices, regardless of their actual age group membership. In the previous chapter (Chapter II, section 7) the need for cross validation of discriminant analysis results was discussed. The main reason for cross validation is that the utilization of the same sample in the classification phase that was used in the construction of the discriminant function invariably capitalizes on chance errors and generates spuriously inflated prediction accuracy figures. Table 13 documents the original prediction accuracy analysis of "CI, AI, and PI by Age Group Discrimination." Tables 14 and 15 present the first and second cross validation prediction analyses. Comparisons of Tables 13, 14, and 15 attest to this spurious inflation to

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TABLE 13

Rorschach Rating System: Original Analysis  
 Prediction Results for the Age Group by  
 Composite Indices Discrimination

Actual Group	Prior Probability	Predicted Group Probability		
		Group 1	Group 2	Group 3
Group 1	N=40 %=33.3	33 82.5%	4 10.0%	3 7.5%
GROUP 2	N=40 %=33.3	4 10.0%	25 62.5%	11 27.5%
Group 3	N=40 %=33.3	4 10.0%	7 17.5%	29 72.5%
Total	N=120			
Correctly Classified cases = 72.5%				

Note: Prior probabilities were based upon relative group size.

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TABLE 14

Rorschach Rating System: First Prediction  
 Results of SPSS Split-Half Cross Validation for  
 the Age Group by Composite Indices Discrimination

Actual Group	Prior Probability	Predicted Group Probability		
		Group 1	Group 2	Group 3
Group 1	N=20 % = 33.0	17 85.0%	2 10.0%	1 5.0%
GROUP 2	N=20 % = 33.3	3 15.0%	15 75.0%	2 10.0%
Group 3	N=20 % = 33.3	1 5.0%	7 35.0%	12 60.0%
Total	N=60			

Correctly Classified Cases = 73.3%

Note: Prior probabilities were based upon relative group size.

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TABLE 15

Rorschach Rating System: Second Prediction  
 Results of SPSS Split-Half Cross Validation for  
 the Age Group by Composite Indices Discrimination

Actual Group	Prior Probability	Predicted Group Probability		
		Group 1	Group 2	Group 3
Group 1	N=20 %=33.0	16 80.0%	3 15.0%	1 5.0%
GROUP 2	N=20 %=33.3	1 5.0%	6 30.0%	13 65.0
Group 3	N=20 %=33.3	1 5.0%	3 15.0%	16 80.0%
Total	N=60			
Correctly Classified cases = 63.3%				

Note: Prior probabilities were based upon relative group size.

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some extent but not as strongly as might have been expected. Table 13, for instance, presents the original prediction results using the entire original sample of 120 children. The overall prediction accuracy is 72.5% with group accuracies of 82.5% (Group 1), 62.5% (Group 2), and 72.5% (Group 3). Utilization of the SPSS discriminant cross-validation procedure "Split-half" gave rise to the results in Tables 14 and 15. The overall prediction accuracy in Table 14 is surprisingly slightly higher than the original analysis. The overall prediction accuracy is 73.33% with group accuracies of 85.0% (Group 1), 75.0% (Group 2), and 60.0% (Group 3). Because the "Split-half" procedure randomly divides the original sample into two halves (N=60 per half), calculates the discriminant function using the first half, and then classifies the second half using this function, it was possible to simply reverse the order of the two random halves in the procedure and to run a second cross-validation procedure. The first cross-validation procedure results were so surprisingly consistent with the original classification analysis that this second analysis seemed a useful means, other than performing a complete replication of the cross-validation, to assess the extent of spurious inflation. The results of the second cross-validation analysis, is seen in Table 15. Indeed, the evidence of chance factors even in the

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cross-validation procedure itself (ie. which random half is chosen to construct the discriminant function) is quite evident as the result of the second prediction accuracy analysis, 63.3%, is approximately 10 percentage points less than in the original analysis. The group classification accuracies for the second cross-validation analysis are 80.0% (Group 1), 30.0% (Group 2), and 80.0% (Group 3). For all prediction analyses, Group 1 is stable at 80.0% or higher while Groups 2 and 3 fluctuate. Group 2 does so considerably. It is difficult to assess what the population mean of a sampling distribution of cross-validation results (full replication) for these data would be. Nevertheless, it is apparent that the accuracy prediction results of both cross-validation analyses employed, 73.3% and 63.3% are respectable results in the light of the prior probabilities. If the three composite indices bore no relation to age group membership other than pure chance or random relationships then the expected prediction accuracy would be 33.3%. In other words, the possibility of correct classification merely by chance is 33.3% for each group. All of the prediction accuracies of the present analysis, 72.5% (original analysis), 73.3% (first cross-validation), and 63.3% (second cross-validation) are substantially greater than the prior probabilities.

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Thus, the discriminant analysis results suggest that the null hypotheses of this research, which state that Group 1, 2, and 3 would exhibit no reliable differences on the composite indices, are not tenable. The alternate hypotheses which state that Groups 1, 2, and 3 would exhibit reliable differences on each of the composite indices are thus accepted. The following chapter, Chapter III, presents the discussion of these results.

## CHAPTER IV

### THE DISCUSSION OF RESULTS

Chapter IV is divided into three sections: (1) discussion of the results; (2) post hoc analyses; (3) suggestions for further research; and (4) summary.

#### 1. Discussion of the results

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The results suggest that the three Null hypotheses of this research be rejected. Reliable differences between the youngest, middle, and oldest age groups were found on the Cognitive Integration Index, the Affective Integration Index, and the Personalization Index. The results provide reliable confirmation of the ability of Mook's (1977) new rating system to discriminate between the three age groups of children. Specifically, the salient findings of this study, vis a vis the hypotheses posed, are as follows:

- (1) Significant differences were found between the three age groups for each of the composite indices of the new rating system.

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(2) The group means do show a consistent progression from developmentally low scoring to developmentally high scoring, a progression which parallels increasing chronological age for each of the indices. This observation is further evidenced by the dispersion pattern of the group centroids. These data coupled with the significant group differences on the indices indicate that the overall observed and appropriate orthogenetic progression is present.

(3) Regarding the discriminant function coefficients, it is quite evident that the Cognitive Integration Index provides substantially greater discriminatory ability than the other two indices.

(4) The original prediction analysis showed that the prediction of correct group classification, using scores on the three composite indices as predictors, was increased from the a priori pure chance probability of 33.0% to 72.5%. Cross-validation analyses using half of the sample to predict classification of the opposite half achieved the correct classification levels of 73.3% and 63.3%. The a priori pure chance probabilities in both cases were also 33.0%. Taking spurious chance factors into account, these results

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substantially cross-validate the original prediction function.

The implications of these findings are obvious in relation to the goal of this research and to its specific hypotheses. The new rating system does provide a global discrimination among the three age groups of children, but the specific meaning and quality of its discriminatory abilities are not elucidated to any great degree by the discriminant analysis. Such an analysis is itself an omnibus statistical procedure, a correlational one, which provides only general parameters of association. When the predictor variables are correlated with one another and are non-orthogonal, as the indices are, the specific relationships of the variables to the discriminant function and to each other become even more difficult to discern. Furthermore, the composite indices themselves are composite averages which greatly obscure not only individual but also group differential patterning on the individual scales. These realities are acceptable for this investigation; the defined task was to query the existence of the system's discriminatory ability, in preparation for future research. Discussion of issues of construct validity other than that of the global discriminatory ability of the new rating system is inappropriate to such an analysis. For instance,

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information referring to specific genetic concepts of a particular scale is substantially obscured by the calculation of the composite indices, and then the discriminant analysis only assesses the nonorthogonal indices in relation to each other. Besides the very general external criterion of chronological age and correct age group membership utilized by this investigation, the quantitative statistics of this analysis remain primarily self-referent and dependent unit measurements.

Nevertheless, the global nature of the discriminant analysis and the indices themselves, especially when supplemented by further analytical data, can provide insight as to the extent of the system's discriminatory ability.

In looking at the findings directly presented by the analysis, it is apparent that the bulk of the discriminatory ability of Mook's rating system is provided by the Cognitive Integration Index. It will be recalled that the first two scales (the location scales) of the CI are modified versions of Friedman's (1953) scoring system. The third scale evaluating the pure form (F) responses is a new scale, particular to Mook's (1977) system. On most occasions, the rating assigned to the F responses will be developmentally equatable to the location ratings. Because the CI discriminant coefficient, (0.76), as compared to the PI (0.33) and AI (0.16) coefficients, is the best

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discriminator, it is somewhat difficult to assess the degree of contribution that the extension of Mook's genetic level scoring to the determinants has made in this particular investigation. The discriminatory contribution of the CI is approximately 2.5 times as important as that of the PI in the discriminant function and 5 times as important as the AI. Unfortunately, because the indices are correlated with one another, it is difficult to assess the proportion of variance accounted for by them. The discriminant function accounts for 98.2 % of the total variance, but as the sum of the discriminant coefficients (=1.25) is well over 1.00, the overlap among them is obvious. Nie et al. (1975) have compared the discriminant function coefficients to the Beta weights in multiple regression. In orthogonal multiple regression the Beta weights represent the proportion of variance accounted for by a particular factor. In non-orthogonal multiple regression, the Beta weights are not independent estimates. Correspondingly, because of the variance overlap, the Beta weights in the latter case are difficult to assess. It is a similar case with non-orthogonal predictors in discriminant analysis. The discriminant coefficients give only a vague indication of the relative importance of each variable, but no definitive estimate of their independent size in relation to the total

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variance in the sample.

In order to assess further the success of the genetic level scoring of the determinants, consideration of two important qualifying perspectives will be helpful. The first concerns other data derived in the process of determining the inter-rater reliability, and the second involves the findings of previous research. During the reliability analyses of 40 randomly selected protocols, the rated response totals for each of the eight scales were calculated. From these calculations, the F%, or percentage of the total number of responses that were scored as pure form, was calculated to be 70.0%. As the F responses on the new rating system are rated only for location (Scales 1 or 2) and for form (Scale 3), it is quite clear that 70.0% of all the Rorschach responses for these 40 protocols were rated only on the Cognitive Integration Index.

Furthermore, as all the determinants rated on the other indices have at least one location score as well, the Cognitive Integration Index also receives some input from every response. The relative percentage of responses applicable to the AI was 17.0% and those applicable to the PI only was 13.0%. All of the responses rated on the PI, with the exception of the movement responses (the 13.0%), are rated previously on the AI. These frequencies, based on the 40 random protocols used in the inter-rater reliability

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assessment, should be representative of the total sample of 120 protocols. If this is the case, it is apparent that the CI not only is the best discriminator, but it is also representative of the most frequently used Rorschach categories, ie. the location scores and the pure form (F) responses, and is in some way representative of every response.

In the literature Meili-Dworetzki (1956) acknowledges that form is the dominant determinant at all ages. Ames et al. (1974) lists the F% as ranging from 90.0% for 2 year olds to 63.0% for 10 year olds. Ames (1960) also reports a further slowing of the F% from 60.0% to 52.6% in the age period from 10 to 16 year of age. Her subsequent studies of old age (Ames, 1966) show a steady rise in F% for normal old people from 54.5% to as much as 84.0%. Her sample consisted of 46 females and 26 males between the ages of 70 and 90 at the time of the first testing; each subject was tested again after an interval of 3 years. Considering the human lifespan then, the F% begins at the 90.0% level (2 year olds), decreases steadily to reach its lowest levels in late teens and adulthood, and then increases with old age. At all times, however, form remains the dominant determinant. Even at 16 its mean percentage is 52.4% with its lowest value at 38.0% for 30 year old males. Consequently, the

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Cognitive Integration Index would seem to be, at all genetic levels, the index of greatest response frequency. As in any averaging procedure, especially one which averages the ratings for each response, it would seem that increased frequency of sampling, for whatever reason, increases the accuracy of the average estimates. Such increased frequency would certainly tend to decrease the variance for each individual and for the index, as a whole. Correspondingly, because of its high base rate frequency, all else being equal, the CI should be the most accurate; and the AI, because of its low base rate, the least accurate. Vague, amorphous, or even minus form level responses occasionally may be given without such responses significantly lowering the overall scale averages on the CI. If, however, out of five color or shading responses, two CF or cF responses and a pure shading or color response is given, the scale averages are considerably affected. With low frequency responses, high developmental scoring must be maintained on a very consistent level or the scale average can be quite variable. To some extent consistent with this overall picture is the observation that the CI has the lowest variability within groups compared to the other two indices. Recalling Table 8, the standard deviations on CI for Groups 1-3 is 0.73, 0.43, and 0.54; on AI the pattern is 1.15, 1.49, and 1.76; and on PI it is 1.63, 1.50, and 1.70.

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Contributing to this increased variability for AI and PI is the fact that an absence of color, shading, or movement in a protocol could provide scale ratings of zero, and in a number of cases either the AI or PI or both could be zero. Zero is in fact the actual lower range for these indices for all three groups. The CI is never zero.

These above statistical considerations of the increased variability of the AI and PI in relation to the CI (and the further statistical considerations to follow) are not meant, however, to imply that such increased variability is largely a product of statistical artifact and sampling or measurement error. It is true that low base rate phenomena are more difficult to sample and measure accurately. Undoubtedly these realities do affect the discriminatory accuracy of the AI and PI. On the other hand, the low base rate and increased variability of AI and PI which is so evident in the data is a quite accurate replication of the findings of past research on the determinants. It is correspondent with the research of Ames et al. (1952, 1966, 1974), Meili-Dworetzki (1939, 1956), and others who have shown that despite increasing age F is predominant and that the other main determinants, although showing a steady increase with age, remain relatively infrequent. Furthermore, both the AI and PI are strongly centered on

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personality variables. In any group of similar age children one would expect a much greater heterogeneity of personality variables than of perceptual cognitive ones.

Correspondingly, the indices would tend to reflect this heterogeneity.

Thus in congruence with these considerations, the statistics do seem to reflect the expectancies and empirical natures of the determinants of the AI and PI. Obviously, as is often the case with Rorschach research and the measurement of any phenomena involving subsets of considerably different frequencies of occurrence, there is no unequivocal explanation. The point to be emphasized here, nevertheless, is that the heterogeneity of personality at any age seems to be considerable, and the measurement of the development of personality would seem to be most reasonably understood in a similar context. This matter will be addressed again below.

In more specifically considering the low discriminatory ability of AI, the contribution of the color response especially should be explored. The color response is seen as being an indicator of emotional relatedness, and it is quite variant even in the normal range. Exner (1974), Klopfer and Davidson (1962), Schachtel (1959, 1966) and others see the capacity to spontaneously react to the environment as being an important and desirable capacity of

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maturity. This capacity is reflected in the CF and C responses. On the other hand, FC is believed to indicate a capacity for affective rapport and emotional adaptation, revealing the quality of one's relations with others. Despite the general developmental superiority of the FC response, a protocol completely limited to the FC response is seen as lacking this emotional spontaneity. Besides the fact that CF is never rated higher than 4 and C never higher than 1 on Mook's Scale 4, the color scale, the low frequency base rate of the color responses in most records means that the presence of CF or C significantly lowers the scale average. The situation is similar for Scale 6, the textural shading responses. Overall then, it seems that the frequency base rates of the various indices coupled with the inherent different variabilities of the CI and AI determinants may in part account for the limited discriminatory role played by the AI in the discriminant function in comparison to the CI.

In examining further the discriminatory ability of the various indices, it was necessary to look, a posteriori, at the statistical reliability of the groups means for the indices considering all paired comparisons. As mentioned previously, the F test in discriminant analysis is an omnibus F test like that of the analysis of variance.

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Significant differences may be found for an independent variable, but this does not mean that such reliable differences exist between each and every level of that variable. Such considerations as well refer to the reliability of such differences and not necessarily to their size, ie. the proportion of variance accounted for.

To investigate, a posteriori, paired comparisons between means of the three age groups for each index, Tukey's "honestly significant difference" (HSD) was calculated for each index utilizing a option of the SPSS subprogram "Oneway" (Nie et al., 1975). Tukey's HSD test was designed for making all possible pairwise comparisons among means, and it sets the experimentwise error rate at alpha (Nie et al., 1975). The alpha rate utilized in these comparisons was 0.05. For each index homogeneous subsets of groups, whose highest and lowest means did not differ by more than the shortest significant range for a subset of that size, were calculated. For both the CI and the PI, all three age groups formed separate homogeneous subsets indicating reliable differences for all pairwise comparisons. Analysis of the AI, however, yielded only two such homogeneous subsets. Groups 2 and 3 were members of the same subset indicating that their mean difference was not reliable. The AI group means were 2.07, 3.44, and 3.55 for Groups 1-3 respectively. Groups 2 and 3 have a mean

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difference of only 0.11. Recalling Table 8, it is interesting to note that Group 3 had the highest variance for AI.

Some further possible explanation for the greater variances of the AI and PI in comparison to CI as well as specific consideration of the unreliable differences of Groups 2 and 3 on AI may be found by considering previous developmental research findings for the Rorschach. The literature provides some helpful insights. Meili-Dworetzki (1956) comments particularly on the weakened and decreased use of color in her middle age group (7-9 years of age). It will be remembered that the pure color response (C) has been seen to mean capture by the stimuli and the loss of intellectual elaboration of meaning, which is principally related to form. As color generally does not guide the subject in understanding the objects of the environment, a strong attraction to color is often believed to indicate a lack of intellectual mastery of reality and a relative preponderance of emotional reactivity. Meili-Dworetzki reported that her middle group of children seemed to be "in a transition stage where both sides of the color response --namely interest in color and elaboration into a form fitting concept-- interfered with each other" (Meili-Dworetzki, 1956, p. 150). In other words, there

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appeared to be for her middle age groups not only a steadily decreasing interest in color compared to her younger children (ie. frequency of color responding) but also at the same time the capacity for the elaboration of color into a fitting concept (form) had not developed fully. Both the frequency and quality of the color responses were sporadic. Meili-Dworetzki further reports that the decreased interest in color of late childhood seems to be reversed by an increased influence of color during mental development in the nonconstricted adult (p. 157).

In light of Meili-Dworetzki's observation that her 7-9 year olds lacked a developed capacity for the the elaboration of color into a form fitting concept, it would be relevant to reconsider Hemmendinger's study and his findings regarding the integration and organization of form with the location scores. Scoring only the location scores, Hemmendinger (1953) found that from 6 to 8 years of age detail perception increased at the expense of any development of integration (whole perception). At age 9 some integration began to appear, and slightly increased throughout, his oldest age group, the ten year olds. Thus even at 10 years of age the strong analytical tendency of the 7-9 group was only beginning to accommodate and attend to more synthetic operations. Hemmendinger's findings related solely to the locations and to fairly straight

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forward cognitive organizational capacities. The integration of such capacities with affect and color seem to be an even more demanding developmental task, one which would logically stabilize even later than the strictly cognitive and purely form related synthetic operations. It may be that Groups 2 and 3 in relation to the AI tend to be on opposite ends of a transition period leading to a more developed and stabilized form-color integration. The often saltatory nature of development (Hemmendinger, 1953; Werner, 1953) and the frequent lack of isomorphic synchronicity between chronological age and developmental progression for individuals may further explain the variability in the AI for these age groups. In such transition periods, substantial variance even in the individual record would be expected. With the form-color integration capacities only beginning to develop but far from stabilized, downward, circular, and even new upward levels of responding are expected in light of the genetic principle of spirality (Gessell, 1946; Werner and Kaplan, 1963). If these genetic dynamics are present, the decreased frequency and sporadic performance would mean substantially increased variability on the AI.

The above tentative explanations of the different discriminatory abilities of each index are only possible

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suggestions gleaned from the data and the literature. The CI and AI provide some clear definition because they are extremes, ie. the highest and the lowest discriminators. Consideration of the discriminatory contribution of the PI and its possible explanations are even more difficult. This is, in no small part, due to the many dimensions and complexity of the PI. The PI includes the movement responses on Scale 7 and the color, shading, and movement responses on Scale 8. Scale 8 re-rates almost all of the responses on Scales 4 (C), 6 (Fc), and 7 (M, FM) in relation to the quality and balance of their total configuration.

Theoretically, the PI represents the integration of form-giving and perceptual cognitive aspects of experiencing with the individual's other dimensions of personality. As such, more than any other index the PI attempts to evaluate the whole range of the individual's experiencing. The focus of the PI is the main dimensions of the individual's structuring of his experience of self and of others. It assesses, therefore, not only the relationships between human movement and color, Rorschach's "erlebnis balance," but also those involving animal movement and shading. Furthermore, it is significant that the PI rates all of these variables qualitatively in terms of their overall degree of differentiation and integration and in terms of their balance to one another. Essentially,

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the PI seeks to provide a balanced and overall view of the subject's structuring of experience, and as such it involves both the perceptual cognitive and personality variables. Consequently, because of this holistic nature, one would expect the PI to reveal more strongly a developmental progression than would be expected of the AI.

The relative frequency in terms of the total scored responses is roughly twice that of the AI. Furthermore, the variability of the PI is high, perhaps in part because this overall rating tends to emphasize the extremes, eg. if the child's responses are homogeneously high or low, the overall ratings of the PI emphasize and extend his score in the respective direction. Also, the individual's scores, which may be heterogenous, are rated relative to the overall balance within the protocol. This latter procedure tends to reduce the heterogeneity within an individual's own subset of scores. Thus the variability within the group is increased by extending the extremes while the variability within the individual is decreased. This high group variability of PI does not decrease the discriminatory ability of the PI as has been proposed in the case of the AI. Obviously such variability is more consistently in the developmental direction rather than random. The overall assessment of the entire protocol may be a stabilizing

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factor in this regard. Furthermore, the PI is not just related to color and shading but also to movement. As Rorschach believed that both color and movement revealed the experience type dynamics, and since both color and movement are represented on the PI, one might expect the PI to show a more balanced view of personality. For instance, low developmental scoring on one scale could be balanced somewhat by higher developmental scoring on the other. In any event, the discriminatory ability of the PI remains roughly about 0.41 times as effective as the CI and twice as effective as the AI.

One more factor of particular importance, especially in regard to the PI, is that the CI and PI product moment correlation coefficient is 0.40; the AI and PI correlation coefficient is in a similar range 0.49; but the CI and AI correlation coefficient is only 0.12. These coefficients are reported from the pooled within-groups correlation matrix of the discriminant analysis. These data seem to indicate that whatever the AI and PI have in common, it is different than what CI and PI have in common. These relationships are quite interesting. CI and PI have a strong commonality which probably reflects the perceptual cognitive dimension. The coefficient of determination for CI and AI is 1.0% (nonorthogonal variance) which is effectively zero. To the extent that the determinants of AI

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and PI are associated with personality variables in the literature, one would expect them to have some commonality quite distinct from the recognized association of CI with the perceptual cognitive dimension. This obviously was why Mook has attempted to extend genetic level scoring to the determinants. How much input this AI/PI communality has in regard to the discriminant function is, however, difficult to assess. As the general rule in multiple regression is that the best predictors are highly correlated with the dependent variable but possess low correlations amongst themselves, could the PI's contribution to the discriminant function represent a substantial part of the AI/PI communality? A multiple regression analysis where the variables could be entered in different sequential order could help to clarify these relationships.

As a further clarification of this problem, it may be noted that while there is substantial evidence and reason to expect a fairly consistent relationship between perceptual cognitive development and chronological age, the relationship between chronological age and personality development is considerably more complex and unclear. Perceptual cognitive development is conscientiously reinforced and directed through each of the sequential steps of the educational system. The processes of physiological

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and psychological maturation in this regard are highly supplemented and molded by a schedule of fairly comprehensive and systematic external influences which are directly related to chronological age. Despite the inadequacies of the educational system, its effect on cognitive development may be called substantial and sequential. Personality development, on the other hand, is extremely more varied and complex. As mentioned earlier, the variance of the variables describing personality development for any similar age group of normal children is expected to be substantially greater than that for the perceptual cognitive dimension. This is in addition to the remarks by Werner (1948) and by Hemmendinger and Shultz (1977) which see development in general becoming more and more heterogeneous with increasing age. With personality variables, innate factors such as temperament and environmental factors such as birth order and family relationships can have great and varied effects all within the normal range. Theoretically, Schachtel (1959), Werner (1948), and Rorschach (1942) postulate higher development as being an articulated, flexible, adaptive, and increasingly maximized utilization of a person's capacities to interact with the world and other people. The range and heterogeneity of higher levels of development, however, will be quite varied, and the processes through which different

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individuals approach this goal may as well be quite different. A person who is essentially an extratensive experience type in Rorschach's terminology would, it seems, require some introverted capacities to approach a maximized interaction with himself and his world. When, if ever, how, and under what circumstances, such a person does develop his introverted capacities depends on many variables. The specificities of this process are not generalizable to everyone in such an individual's age group nor necessarily to all extratensive experience types. Such a process may be only indirectly related to chronological age. It is certainly not unreasonable to suspect that such higher order development may not be amenable or frequent to the tasks of childhood. Within homogeneous subgroups of personality variables, progression could be insidious, saltatory, or latent. Such progression could vary from group to group and average out or certainly diminish any measureable statistical trend. Furthermore, particular developmental steps may be dependent on previous development in other areas before the steps become measureably evident. As mentioned in the discussion of AI and the color response, the extensive variability characterizing Groups 2 and 3 seems to be accounted for in part by previous research findings. Form perception of a synthetic and integrated

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nature is only developing in this period of childhood, and in addition to a decreased interest in color, the integrative capacity of an even more difficult nature, the task of integrating both form and color, may require the previous stabilization of form elaboration. With the consideration of different experience type children, variation of the extent and of the temporal emergence of this capacity would be expected to be substantial. It seems evident that the sources of influence and variation for personality development are much greater than for perceptual cognitive development, the latter also being subsumed as part of the former. In this regard, the AI and PI would generally be expected to have considerably more variation than the CI. Along these lines of reasoning, the AI and PI would be expected to be less discriminative in relation to chronological age.

Summarizing the above discussion, it is clear that the three indices can reliably and effectively discriminate between the different age groups of children. Morrison (1969, 1974) takes the position that the percent classified correctly in discriminant analysis is somewhat analogous to the magnitude of R squared in multiple regression. The first datum tells how well the individual was classified, while the second reports how much variance is explained. From this perspective, the new rating system reliably

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doubles the a priori chance probability of classification (33.0%) to somewhere in the range of 63.3-73.3%. This investigation then quite amply attests to the discriminatory ability of the new system. The specific assessment of the quality and genetic nature of each index's relative contribution is, however, obscured by several factors. These factors are: (1) the non-orthogonal nature of the scales, and the consequent nature of the discriminant function coefficients prevent any assessment of the independent proportion of total variance accounted for by each index. The correlated overlap between indices and scales prevents discrete statistical assessment; (2) the superior discriminatory ability of the CI is accompanied by its overwhelming dominance of the response frequencies while the AI is minimally discriminatory and is accompanied by a low base rate frequencies. It is difficult to discern to what extent the discriminatory differences are accounted for by genetic explanations and to what extent they are accounted for by statistical and sampling realities; and (3) finally and perhaps most important, it is difficult to discern to what extent and how the above considerations of the relative contributions of CI, AI, and PI relate to the low variability of CI and the high variability of the AI and PI. For the latter two indices, the low base rate

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frequencies are confounded with high expected developmental variability. This investigation cannot further clarify these questions given the nature and task of the present statistical analysis. The next section will simply present some post hoc findings of interest.

### 2. Post hoc analyses

With 120 Rorschach protocols, the number of data points obtained using the new rating system is well over 10,000. As this is the case, exploratory post hoc investigations, if just in descriptive terms, are boundless. This section, however, will limit itself to two fairly straight forward parameters. The first is that of sex differences on the Rorschach, and the second is the question of the number of total responses per protocol.

It will be recalled that Hertz (1942), Parsons (1917), and Wilson (1954) found no sex differences in their studies while Klopfer et al. (1941) and Stavrianos (1942) suggest the possibility of some sex differences. Ames et al. (1974) devote significant space at each age level to sex differences in their normative report on the first ten years of life. None of these studies, however, make statistical tests of significance of these alledged differences. Given the extensive data of this project, it seemed appropriate to

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make a few informal investigations of sex differences in relation to the three composite indices. A number of oneway analyses of variance were conducted. Neither the overall Group by Sex analysis for each index nor comparisons of the male and female means for each group on each of the three indices yielded anything close to significance. Probability levels were often at the 0.50 level. These informal observations certainly support studies affirming no support for sex differences. It should be noted once again, however, that the composite indices are global averages and particular sex differences that may exist could have been lost in the averaging together of the various scales making up any particular index.

Ames et al. (1952, p. 287) particularly mention that boys give more responses than girls throughout the first ten years of life. As the number of actual Rorschach responses is related to the number of scale ratings and to the earlier discussion of the CI, AI, and PI discriminatory contributions, an informal investigation of sex and total response number was also performed. Three oneway analyses of variances for Response total by Sex for each group were calculated by the SPSS "Breakdown" computer program (Nie et al., 1975). Consistent with the other investigations regarding sex differences, no results were even close to significance levels.

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While looking further at response total and group membership, however, seemingly substantial differences were noticed. The mean number of total responses for Groups 1-3 were 23.2, 36.1, and 29.9 respectively. The corresponding ranges of total responses for the groups were 11-54, 13-85, and 11-60. A oneway analyses of the response total data affirmed significant differences between groups at  $p < 0.001$ . Exner (1974) gives the range of the average number of total responses for adults as 17-27 responses under the instructions of the comprehensive system. He, of course, cautions that the interpretation of the structural summary changes with longer or shorter protocols. For instance, in longer records, adult subjects tend to exhaust the W possibilities quickly and thus give a proportionally higher number of D and Dd type responses. If one recalls Hemmendinger's (1952) study, his 6-10 year old children concentrated on the D and Dd locations with a disregard to W responses and integration. The high response averages of the middle and oldest age groups in this investigation appear to verify further these observations. The D-Dd percentages as calculated from the random 40 protocols for Groups 2 and 3 were 72.0% ( $W\% = 28.0$ ) and 80.0% ( $W\% = 20.0$ ) respectively. (Group 1 produced 42%W and 58%D-Dd.) These figures generally reaffirm the high analytical orientation

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(and disregard of synthesis and integration) of these two age groups, and explain their high productivity. These percentages do not explain, however, why Group 2 was more productive than Group 3. In looking closer at the 40 protocols, it was found that Group 2 did have a higher percentage of amorphous and minus whole responses (30.0%) as compared to Group 3 (7%). As well Group 2 had 20.0% amorphous or minus detail responses while Group 3 had only 9%. On account of these differences, it seems quite reasonable that the higher productivity of Group 2 might be related to some degree to its corresponding lower attention to form quality and elaboration. Minus or amorphous responses indicate very little attention to form elaboration and integration. As evidenced by Group 1, a high percentage of minus and amorphous responses is not necessarily related to productivity. However, Group 2's comparatively higher percentages of such responses in correlation to an emerging analytical attention to the details may be. For Group 3 on the other hand, although the analytical bent is still increasing, there is comparatively more attention paid to form elaboration in both the detail and whole responses. This extra qualitative effort could possibly account for Group 3's diminished overall productivity.

The following section of Chapter IV offers a number of suggestions for future research.

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### 3. Suggestions for future research

The salient results of the present investigation are that Mook's (1977) new Rorschach rating system can differentiate between the three different age groups of children, and that such discrimination is primarily due to the discriminatory ability of the CI index. The discriminatory ability of the extension of genetic level scoring to the determinants such as color, shading, and human movement is globally evident. There also remain, however, many questions as to the specific discriminatory abilities of the different indices and scales of the rating system. Future research would definitely have to address this area and to specify the relationships more lucidly. All three age groups of children studied had members that showed no involvement with either color, shading, or human movement. Theoretically and even practically, high developmental scoring on the AI and PI may have some specific implications. At the very least, at any age level, the presence of such scores indicate a definite capacity, but the absence of scoring on these scales may be more related to personality development and other factors such as temperament than to chronological age, at least for the ages studied here. Furthermore, the emotional and affective

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development for children 5-12 years of age may be more difficult to assess by means of the Rorschach because of the limited representational ability and form elaboration of this period of childhood. Discrimination of genetic levels in reference to age groups may then be more effective from a cognitive structural perspective than an affective one, at least for this period of childhood. It would seem very useful in this regard to compare the results of this study with those from two age groups of adolescents and a group of adults to determine if such differentiation on AI and PI is more sensitive to the expected growth in emotional and personal development at these times.

Furthermore, as seen earlier in the overlap of Groups 2 and 3 on AI, genetic levels are not necessarily equatable with chronological age, especially in terms of arbitrarily discrete age groups. The use of such age groups masks both the saltatory and the continuous nature of developmental progress. It also often misses the actual or true range of a developmental phenomenon or genetic level. In this regard, studies of genetic level progression such as this one would profit considerably by analyzing development with the methods of multiple regression across the full continuum of chronological age in childhood, adolescence, and early adulthood. Consideration of genetic levels could then be

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made in terms of the homogeneity of a particular phenomenon over a time span that was not divided into arbitrary divisions, such as age groups, the discrete boundaries of which may not adequately describe or encompass the particular phenomenon in question. Such analysis may be particularly revealing for the AI and PI indices.

Obviously, this investigation is only a modest beginning in the exploration of a newly proposed rating system for the Rorschach. In essence, it has simply asked the first question of a very extensive list of questions required of any validated and reliable psychological instrument. The answer to this first question has been globally affirmative, and now the task becomes the asking of a variety of more specific questions. The investigation of the construct validity of the AI and PI, and their related scales seems of particular importance because it is here, in effect, that the extension of genetic level scoring to the main determinants takes place. To what extent can personality development and perceptual cognitive development be related in terms of the CI, AI, and PI? What is it that accounts for the high relationship between CI and PI but also appears to be quite distinct from the high relationship of PI and AI? Are some scales better discriminators than others at different time periods in development? Is too much specific information relative to

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genetic patterning lost in the calculation of the composite indices? Should the average scale scores for each scale be used instead? Can the rating system itself be further modified to better reflect developmental theory?

The foregoing suggestions constitute but a few of the possible research tangents stemming from this investigation's affirmation of the discriminatory ability of the new rating system. The following and final section of this chapter presents a brief summary of the study.

### 3. Summary

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The task of this study was to investigate the capability of Mook's (1977) Rorschach rating system to discriminate between three age groups of children. This task was seen as a necessary condition but not the only one for consideration of the rating system as a developmental instrument. Specifically, the three composite indices of the new rating system were hypothesized to differ not only in terms of age groups per se but also in the appropriate developmental direction. The new rating system was constructed in reference to the theoretical frameworks of Heinz Werner and Ernest Schachtel and represents the first attempt since Phillips et al. (1959) to extend genetic level scoring to the Rorschach determinants.

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The subjects were 120 normal children comprising 3 age groups of 40 children each. The age range for the first group was 5:0- 6:3, for the second group, 8:0-9:3, and 11:0-12:3 for the third. All children were attending elementary schools in the Ottawa Separate Roman Catholic School Board and were tested during the time period of 1978-1980.

Data analyses consisted of a multiple discriminant function analysis to assess age group differences; and two "Split-half" SPSS cross validation analyses to test the validity of the predictor equations derived from the discriminant analysis. Specifically, the analysis affirmed the ability of the new rating system to discriminate successfully between the three age groups of children. Further, the group means showed a generally consistent progression from developmentally low scoring to developmentally high scoring. Thus discrimination was in the hypothesized orthogenetic direction. The analysis showed that the bulk of the discriminatory ability of the new rating system was accounted for by the Cognitive Integration Index (CI). The Personalization (PI) and the Affective Integration (AI) indices also made reliable contributions, but these were of a lesser size. Possible explanation for the CI's greater discriminatory ability such

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as its high frequency base rate, its representation on every response, as well as its lesser variability and greater amenability to discrimination by chronological age were discussed. Further explanations for the lesser roles played in discrimination by the AI and PI were also suggested. The inherent and expected variability of such personality related variables as well as their low base rate frequencies were discussed. In addition, past findings in the research literature of Meili-Dworetzki (1956) and Hemmendinger (1953) seem to suggest that the extensive variability of the AI in part may be accounted for by the age of the groups sampled. This observation and others such as the nonorthogonality of the predictor variables, further seemed to suggest that neither the use of discrete age groups nor of discriminant function analysis was the most helpful in investigating the meaning of the contributions of the three indices. Instead, multiple regression analysis over a much greater and continuous time span was suggested.

Post hoc analyses of sex differences and average response rate by age group were informally reported. There were no reliable sex differences by age group for any of the three indices nor were there any sex differences by age group for response rate. These observations support previous studies by Hertz (1942), Parsons (1917), and Wilson (1954) which reported no differences by age group on the

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Rorschach. All three studies are in contrast to Ames et al. (1974) who report a variety of sex differences including differences of response rate. Further comparisons of response rate by groups (not considering sex), however, did affirm significant differences between groups. The high response rate of especially the middle group and to a lesser extent the oldest group was in agreement with the observation by Exner (1974) that longer records tend to give a disproportionately higher number of D and Dd type responses. These results further lend support to Hemmendinger's (1953) observation that his 6-10 year old children concentrated on the D and Dd locations with a disregard to W responses and integration.

A variety of suggestions for further research was also presented. The ability of the new Rorschach rating system to discriminate globally between the three age groups of children was seen as a first but affirmative step in establishing the developmental validity of the rating system. Among the many considerations proposed in such a process, it was suggested that a greater specificity and delineation of the contribution of the AI and PI is essential. Taking the inherent variability and complexity of these variables into account, investigation of their role in adolescence and adulthood is important. Correspondent

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with such an investigation would be the assessment of any homogeneous patterns of these variables over a continuous time span. For instance, perhaps greater clarity of measurement and strength of prediction may be achieved if personality types could be divided into homogeneous subgroups and developmental patterns investigated within the context of those subgroups. As well, numerous questions as to the utility and construct validity of the various scales of the rating system should be explored.

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APPENDIX A-I

The Rorschach Rating System

Criteria

# THE RORSCHACH DEVELOPMENTAL RATING SCALE

## A Description of Scale Criteria

Bertha Mook

University of Ottawa

### I. WHOLES: W

- Level 5: W++ : A response in which a unitary blot is perceptually articulated and re-integrated into a well-differentiated unifying whole where the specific form matches the blot. A W++ can only occur on unbroken cards. (I, IV, V, VI and IX).  
Ex. Card I: "Two figures holding on to a woman".
- Level 4: W+ : A response in which all the discrete portions of a broken blot are combined into a unifying whole and in which the form matches the blot. A W+ can be obtained only on broken blots.  
Ex. Card II: "Two men dancing and clapping hands".
- Level 3: Wm : A mediocre response in which the gross outline and articulation of an unbroken blot are taken into account where the form implied (fairly) matches the blot.  
Ex. Card VI: "Animal hide"; "large violin".  
Wm is usually obtained on unbroken blots, but can sometimes be found on broken blots.  
Ex. Card VII: "Responses which imply a definite "U" shape;  
Ex. Card II: "a butterfly".
- Level 2: Wv : A vague response in which there is a diffuse general impression of the blot. Some form element is present but almost any perceptual form could encompass the content.  
Ex. Card VII: "Clouds", "torn paper".
- Wa : An amorphous response in which the shape of the blot pays no determinable role. Such responses are based solely on chromatic or achromatic aspects of the blot, and no form element is included.  
Ex. Card-VIII: "Colors of the rainbow".

- Level I: W- : A response in which the content produced requires a definite, specific form which is not provided by the blot.  
Ex. Card III: "A spider".
- DW : A confabulatory response where the content is generalized to the whole blot as the basis of what is seen in a D area.  
Ex. Card IV: "A dog because here are the ears (D4)".
- Fab C : A fabulized combination response in which two or more separately interpreted areas are combined on the basis of their spatial relationship. The resulting response is a percept which does not occur naturally.  
Ex. Card V: "A rabbit (D7) with wings" (D4).
- Con R : A contaminated response in which two separate responses are fused and applied to the same area.  
Ex. Card V: Two people lying in a forest.  
(The whole is both the figures and the forest).

II. DETAILS: D,Dd

Level 5: D++ : A response to a D location where there is both the articulation and reintegration into a percept of good form level.  
Ex. Card IX, D2: "A clown about to throw a stick".

Level 4: D+, Dr+ : A response in which two or more D's are combined into one percept where the specific form matches the blot. These areas should be meaningfully integrated.  
Ex. Card II, D: "Two bears rubbing noses".

Level 3: Dm : A response to a D area with definite form but where the blot is not broken down and reintegrated.  
Ex. Card I, D1: "Woman with her hands raised".

d.Dd : Usual or unusual details with a definite and adequate form.

Level 2: Dv : A vague response where the content involves unspecific form demands.  
Ex. Card VI, D1: "A piece of land".

Da : An amorphous response.  
Ex. Card III, D2: "Fire".

d,Dd+ : Usual or unusual small details of poor form level.

Level 1: D- : A minus response according to form-level.

d,Dd : Usual or unusual details of a minus form level.

DdD : A confabulatory response where the response to a D area is generalized from what is seen in a Dd area.

Ex. Card II, D2: "A monkey because of his ear".

Fab C : The same scoring criteria apply as on the  
Con R : previous scale except for the use of detail areas. The localization used in these scores is secondary to their meaning, i.e., indications of primitive thought.

Ex. of FabC: Card II: A leg (D2) on the head of a bear (D1).

Ex. of ConR: Card VIII, D4: Flags flying in the sky, (D4, both flag and sky).

III. FORM-LEVEL: F

Level 5: F++ : A striking, personal and convincing form response which is well differentiated and articulated.  
Ex. Card I(V): A medieval crown.

Level 4: F+ : An accurate definite and convincing form response which is well differentiated and articulated. It is familiar in character.  
Ex. Card II S: An Apollo spacecraft.

Level 3: Fo : An ordinary, easily noticeable response of a conventional and acceptable form level. It includes most popular and non-popular responses.  
Ex: Card I: A bat.

Level 2: Two types of responses can be distinguished at this level.

Fs : An acceptable but simple response identified by a low level of differentiation and articulation.  
Ex. Card VII d2: Ear  
Card I S: Triangle

Fv : A non-specific but acceptable response which is essentially indefinite. The image itself is intrinsically variable and of indefinite shape.  
Ex. Card VIII: A map

Level 1: F- : A definite but inaccurate response which is mostly or totally arbitrary.  
Ex. Card VII: A house.

IV. COLOR: FC, CF, C

Five levels are rated in terms of the degree and quality of form-color integration and the degree of color intensity.

Level 5: FC : An accurate, well-differentiated and integrated form-color response, with a strong use of color, preferably seen in a large location.  
Ex. Card IX, D2: Two orange-dressed dwarfs having a sword fight.

Level 4: FC, CF : An integrated color response of a good form-level with a strong use of color usually seen in FC but also possible in CF.  
Ex. Card VIII, D2: A lovely red rose.

Level 3: FC, CF : An integrated color-response of a conventional and acceptable form-level. Different degrees of color intensities are possible.  
Ex. Card X: A flower garden.

Level 2: F/C, F-C, CF : A poorly integrated color response of a forced or arbitrary nature or a color response with an indefinite form. Color may be strong or weak.  
Ex. Card X: A colored painting

Level 1: FC-, C : Pure color responses where no single attempt is made to include form-elements. The color is usually strong but undifferentiated.  
Ex. Card II, D2: Blood.

V. SHADING AS DARKNESS, DIFFUSION AND ACHROMATIC COLOR: K,C'

Five levels are rated in terms of the degree and quality of form-shading integration, where shading includes darkness, diffusion and the use of achromatic color. The scoring criteria are essentially the same as those for the form-color integration. It should be kept in mind, that the K-type of shading responses are usually given on the basis of shading qualities, and form plays, even at the highest levels, a less prominent role than in form-color responses. Achromatic color responses can be rated at any level, when specific reference is made to achromatic color.

Level 5: FK,FC' : An accurate and well-differentiated form-shading response based on form integrated with a three-dimensional perception of darkness or diffusion preferably seen in a W location.  
Ex. Card IV: It looks like a giant lying on his back seen from below. He has big feet.

Level 4: FK,FC'  
KF,CF' : A well-differentiated use of shading integrated with a definite form element usually seen in FK but also possible in KF.  
Ex. Card VI: A country side seen from above with mountains and a river in the valley.

Level 3: FK,KF  
CF,FC' : An integrated form-shading or shading-form response with an ordinary but acceptable form-level.  
Ex. Card V: A black bat.

Level 2: KF,C'F : A shading-form response where the form is of a vague and indefinite nature.  
Ex. Card VII: It looks like clouds.

Level I: K,C,  
FK-,FC'- : A pure diffusion or darkness shading response with no form involved; or a definite but inaccurate, arbitrary form-shading response.  
Ex. Card IV: It looks like night.

VI. SHADING AS TEXTURE: c

The scoring criteria on this scale are comparable to the previous shading scale.

Level 5: Fc : An accurate, well-differentiated and integrated form-shading response, preferably seen in a large location.  
Ex. Card IV: A bit man with a fur coat.

Level 4: Fc,cF : A well-differentiated shading response where the object has definite form or where the texture itself is highly differentiated.  
Ex. Card IV, di: The face of a woman and a man.  
Card VIII, D3: A snake skin because of the design and the frail edge.

Level 3: Fc, cF : An integrated form-shading response with an ordinary form-level or a shading-form response with some degree of shading differentiation.  
Ex. Card VI: A bear rug.  
Card VI: A soft, furry rug.

Level 2: cF : A shading-form response where the form is of a vague and indefinite nature.  
Ex. Card VII: Rough rocks piled on top of each other.

Level 1: c, Fc<sup>-</sup> : A poor or undifferentiated use of shading with no form involved; or a definite but inaccurate, arbitrary form-shading response.  
Ex. Card VI: It looks like fur.

VII. EXPERIENCE OF SELF: M, FM and m

Five levels are rated in terms of the quality and the balance of movement responses.

Level 5: Responses are accurate and well-differentiated, seen in wholes or large details. Movements are predominantly active and positive.

M is in optimum relation to FM and m.

Level 4: Responses are of a good and convincing form-level. Movements are predominantly active in nature.

M is in balance to FM (and m).

Level 3: Form-level is ordinary and acceptable. Movement responses are active and passive in nature.

M and FM are present.

Level 2: Form-level is still acceptable but may be simple or weak. Movements tend to be predominantly passive. The balance of movement responses is poor.

M or FM may be absent.

Level 1: Movement responses are definite but inaccurate and arbitrary in nature.

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## VIII. EXPERIENCE OF OTHERS

The scoring criteria for this scale are the most complex because the quality and the balance of the main determinants has to be kept in mind. This scale can be seen as a composite scale because all the determinants are also rated on other scales. The scoring criteria are partly based on these other scales and they should be kept in mind when responses are rated on the present scale. No examples can be given because the scoring depends on the quality and balance of different responses. All the movement responses should be rated in terms of their relationship to color and shading determinants according to the following criteria:

Level 5: M,FM,FC, CF,Fc,cF : Movement and color responses are in balance and shading responses are present. Interaction of human movement is present and attitudes expressed should be active and positive.

Level 4: M,FM,FC CF,(Fc,cF) : Responses of movement, color (and shading) are present and integrated with good form-level. Human movements are preferably of an interactional nature. Attitudes expressed are predominantly active.

Level 3: M,FM,FC, CF,(Fc,cF) : Responses of movement, color (and shading) are present with an ordinary to good form-level. Human movements are active and passive in nature.

Level 2: M,FM,CF, C'(cF,c) : Poor balance of movement, color (and shading) responses where the form-level tends to be weak. Attitudes expressed through human movement are most of the time weak, conflictual and/or negative. Where M is absent good FM should still occur. If color responses are absent, movement (and shading) responses of an ordinary to good form-level should occur. If movement responses are absent, color (and shading) responses of an ordinary to good form-level should be present.

Level 1: (M),FM, DF,C : M absent or of minus quality. FM tends to be weak and/or negative. Color appears in poor balance to movement and is weakly or not at all integrated with form. Texture shading is usually absent. Movement or color responses may be absent where the existing movement or color responses are weak.

APPENDIX A-II

The Rorschach Rating System  
Scoring Forms

PROTOCOL # \_\_\_\_\_

RORSCHACH RATING SCALES

Total R.	Card No. & Resp. No.	<u>COGNITIVE INTEGRATION</u>			<u>AFFECTIVE INTEGRATION</u>			<u>PERSONALIZATION</u>	
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
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3.									
4.									
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30.									
31.									
32.									
33.									
34.									
Scale Total									
No. of Resp.									

RORSCHACH RATING SCALES

Total R.	Card No. & Resp. No.	<u>COGNITIVE INTEGRATION</u>			<u>AFFECTIVE INTEGRATION</u>			<u>PERSONALIZATION</u>	
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
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33.									
34.									
Scale Total									
No. of Resp.									



APPENDIX B

THE SCREENING QUESTIONNAIRES

Child's Name: \_\_\_\_\_

### Teacher's Screening Questionnaire

In our study of the development of the perceptual-cognitive functioning, we wish to select a relatively normal population of children for testing in order to establish an approximate "average kid" baseline. In a gross measurement sense then, it is important to our study to exclude any child that has any obvious or easily identifiable problem. The purpose of this questionnaire is to aid us in discerning those children who are clearly atypical in one of the following ways when compared to the difficulties encountered by a "normal" kid. Simply respond to these questions directly and to the best of your knowledge.

	YES	NO
1. Is the child's school achievement greatly below standard?		
2. Is the child performing significantly below his/her potential?		
3. Does the child suffer from some kind of learning disability?		
4. Is the child easily distractable and overactive?		
5. Does the child have difficulty in being socially accepted by his/her peers?		
6. Is the child often hostile or aggressive towards others?		
7. Is the child very inhibited or withdrawn?		
8. Is the child often unhappy or depressed?		
9. Does the child noticeably lack confidence, feel unwanted or disliked?		
10. Does the child come from an unstable or difficult home?		
11. Has any psychiatric or psychological disorder been identified in regard to this child?		
12. Is the child presently on any medicated behavioral treatment program?		

PRINCIPAL'S SCREENING QUESTIONNAIRE

As one of the indicators for behavioral adjustment in school, the frequency that a student is sent to the principal's office has been selected for this project. We are asking the principal of each school to rate his/her children in response to the following question:

For each of the children listed below, how many time this school year has the child been sent to you for disciplinary action?

Please indicate by marking the appropriate rating after each name.

Never \_\_\_\_\_ Seldom \_\_\_\_\_ Frequently \_\_\_\_\_ Very Frequently  
(N) (S) (F) (VF)

As a further screening measure, it would be helpful to our project to note any students which have a large number of unexcused absences from school. Would you please indicate beside each child below, the number of unexcused absences this year.

APPENDIX C

THE LETTER TO THE PARENTS

Canadian Martyrs School

February 21, 1979

Dear Parents,

The purpose of this letter is to respectfully request your permission for the participation of your child in a research project being undertaken by Allen Rollie, a graduate student in the School of Psychology, University of Ottawa. The project has been approved by Mr. George Moore, Superintendent of the English Ottawa Separate School Board, by Dr. William Barry, Chief Psychologist of the O.S.S.B. and by myself, Principal of Canadian Martyrs School.

The project is designed to study and to measure the development of the perceptual and thinking processes of the normal child. We are making measurements at different age levels in order to compare and to more fully understand the normal changes and developments that occur in children as they grow older. The age groups in our study are 5, 8, and 11 years old. The measuring instruments are: (1) a group intelligence test lasting about 30 minutes (for the younger children, small groups and at least two sessions will be undertaken to accommodate their age levels); and (2) individual testing with a series of ten inkblots of an unspecific form. With this last test, the child is simply asked to imagine what the ink blots look like; this test will also last around 30 minutes. Testing with each instrument will be done on different days and in regard to the convenience of your child, the teacher, and the classroom schedule. Every possible action will be taken to insure that your child is comfortable and enjoys his testing experience.

All testing will occur during school hours and will be kept strictly confidential. As mentioned before, the purpose of this study is to investigate the perceptual and thinking processes of children at different age levels. Therefore, all data will be combined by age level and compared on this level. Finally, a greater understanding of the perceptual thinking processes of the normal child, the aim of this project, can aid in the early and specific

detection of children with problems deficiencies in these areas. Such knowledge can enhance the possibility of helping troubled children to develop more fully and to make up for missed developmental steps.

Thankyou for your very kind attention to this letter and for your help with this project.

Sincerely,

A. Nagle  
School Principal

I do hereby authorize my child \_\_\_\_\_ to participate in the research project described, which is attempting to study and compare the perceptual and thinking processes utilized by normal children at different age levels. Furthermore, I realize that all results and data will be confidential and utilized collectively for group comparisons between age levels.

SIGNED \_\_\_\_\_  
RELATION TO CHILD \_\_\_\_\_

The following information would be of assistance to Mr. Rollie. Please feel free to give it or not.

Date of Birth of the Child:

Address:

Father's Occupation:

Mother's Occupation:

APPENDIX D

THE RORSCHACH ADMINISTRATIVE  
PROCEDURE

## Standardization of Rorschach Administration:

Rapport: The importance of establishing a comfortable and friendly inter-relationship between the examiner and the child cannot be overstressed. All children have been tested on the Lorge-Thorndike non-verbal intelligence test and all were told about a future session with an examiner to do the "inkblot game". They were also told that the examiner is interested in how kids think and see things, that all of the exercises of the study have nothing to do with their school evaluation or grades, but nevertheless, it is important to the study for them to do their very best. After the initial topics of acquaintance and a re-explanation of the prospective 'inkblot' session if needed, the examiner will play three games of Tic Tac Toe with the child in an effort to further relax the child and further establish rapport. Administration of the Rorschach will then proceed.

N.B. As the five year olds fatigue especially easily, it is important to get the Rorschach underway as quickly as possible.

### Administration: (Exner's Standard Procedure)

Seating: Side by side. Children, especially the five year olds may prefer to stand or sit on the floor.

Reporting: Verbatim transcripts.

Timing: Standard timing procedure. The total performance time as well as the reaction time to each card will be taken.

#### Introduction of the blots:

"Now we are going to do the inkblot test. Have you heard of it or have you ever taken it?"

"Its just a series of inkblots that I'll show you and I want you to tell me what they look like to you."

#### Instructions:

In the standard manner and order, the cards are handed to the child and he/she is asked, "what might this be?"

Klopfer's procedure of encouraging the child if only one response is given to Card I. "Some people see more than one thing in the cards." Such encouragement is only given on Card I.

#### Inquiry:

The inquiry is conducted according to standard procedure, (ie., the inquiry is to be conducted after the total performance proper is completed.) for all age groups. Brevity and non-directive questioning are necessary guidelines.

A reminder of two important considerations. (1) The child must not be made to feel that his ideas are being challenged. (2) The child must not become aware of the type of information the examiner is seeking through his questioning.

(Inquiry continued)

Instructions:

"I would like to go through the cards with you once again. This time, I'm concerned with making sure that I understand where it is on the blot that you have seen something, and I would like to try to see it as you do."

"Could you show me where you saw that?"  
(For five year olds- "Put your finger on the \_\_\_\_\_?")

"Could you tell me what makes it look like that to you." or "What makes it look like a \_\_\_\_\_?"

N.B. If there is further doubt as to the determinants that the child is using, the examiner should state — "I'm not sure I see it as you do." (Such an approach is very important in the inquiry) And if necessary ask again, "Could you tell me more about what makes it look like that to you?"

The fatigue and attention span of the five year olds must be given special attention. It is important not to unnecessarily belabor the inquiry. Fortunately, most small children give considerable description in their initial performance responses, and this should help in the inquiry investigation.

Important Supplementary Information:

Required number of Responses: Any record with fewer than 10 responses will be eliminated from the study.

Rejection of Cards: With the rejection of a card the examiner should encourage the child in the following way.

"Try and see something in it."

or "There's no hurry, most everyone can find something there."

N.B. Encouragement in this manner is not only permissible, but essential!

Testing the Limits Procedure: For the purposes of this study, this procedure has no usefulness and consequently is deleted.

Comfort of the Child to the task: Every attempt to encourage and to support the child if he is uneasy, anxious, or uncomfortable. Such support when necessary should be made in terms of the examiner's relationship with the child, but not in terms of the child's responses to the blots. Rest breaks etc. may be necessary, especially with the five year olds.