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Cognitive Structures for Self and Others in Adolescents at Risk for Schizophrenia

C. Christine O'Rourke

A Thesis

in

The Department

of

Psychology

Presented in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy at
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ABSTRACT

Cognitive Structures for Self and Others in Adolescents at Risk for Schizophrenia

C. Christine O'Rourke, Ph.D.
Concordia University, 1985

Clinicians have repeatedly identified developmental deficits in schemata for self and others as prominent features in schizophrenia. The present study examined children considered to be at risk for schizophrenia for precursor signs of psychopathology by assessing schema development for self, mother, and peer. Subjects were 80 French-speaking adolescents who, six years earlier, were identified through peer nominations on the Pupil Evaluation Inventory (PEI) as aggressive, withdrawn, aggressive-withdrawn (the high-risk group) or normal. There were 10 males and 10 females per group. Three methods were used to assess schema development for self, mother, and peer. The first examined self-other differentiation as measured by the time subjects required to decide whether personality adjectives best described themselves or best described their mothers. The hypothesis of deficits in self-other differentiation in the aggressive-withdrawn children was not supported. The second method assessed strength of schemata for self, mother, peer, and a semantic referent using response latencies and incidental memory for adjectives on an information processing task. Although the expected group differences on the three person referents were not found, the aggressive-withdrawn group manifested a lack of differentiation among these referents which was consistent with the type

of cognitive deficit predicted by developmental theories of schizophrenia. The third method examined developmental levels of schemata from written descriptions of self, mother, and peer using a traditional measure of cognitive complexity and a global index of conceptual level of object representation. The hypothesis of immaturity of schema development in aggressive-withdrawn adolescents was supported on the measure of cognitive complexity but not on the global index of conceptual level. These findings suggested more aschematic functioning for self and others in aggressive-withdrawn adolescents than in their peers. Results for the aggressive group pointed to a deficit in integration of schema information. A pattern which indicated relatively weak peer schema development in withdrawn adolescents was interpreted as a possible reflection of their limited peer experience. The relationship of these results to developmental theories of schizophrenia was discussed.

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Schizophrenia is the most incapacitating of psychiatric disorders. The magnitude of this incapacity is reflected in the elevated percentage of patients admitted to psychiatric hospitals who are diagnosed as schizophrenics (28.5%), and the continued dependency on community resources due to poor social and occupational adjustment post-discharge (Statistics Canada, 1984; Wallace, 1984). In a two-year international follow-up study of schizophrenic patients (N = 543), the World Health Organization (1979) reported that 37% of patients were psychotic at follow-up and another 31% were symptomatic but not psychotic. Twenty-nine percent of all patients were in psychotic episodes for 46% to 100% of the time during the two-year period between initial evaluation and follow-up. These patients were also found to be severely socially impaired during this period. As compelling as these statistics may be, they fail to capture the extent of human suffering involved in schizophrenia. The overwhelming fears and anxieties experienced in the acute phase followed by the life long social alienation, depression, poverty, and marginal lifestyles experienced by the chronic schizophrenic cannot be overstated. Nor can the disruptions in family life and the helplessness of parents, spouses, and offspring be ignored. Early intervention in the developmental course of the schizophrenic process must be viewed as a priority. Intervention, however, is dependent on early diagnosis of psychopathology and, preferably, of precursor signs of potential pathology.

The purpose of the present study was to examine children considered to be at risk for schizophrenia for precursor signs of psychopathology. In particular, within the framework of high-risk methodology, the study compared the development of schemata for the self and others in children

identified as aggressive, withdrawn, and aggressive-withdrawn with that of children identified as normal.

In spite of the extensive effort invested in the study of schizophrenia, a clear convergence between the understanding of the etiology of schizophrenia and identification of precursors has not been reliably established. At this stage, therefore, a distinction remains necessary between the study of etiological processes and the study of precursor signs although convergence may be expected between these two areas of research as clearer answers are obtained. A precursor variable is taken to be a signal of vulnerability for a disease or an indicator that a pathological process is underway. Precursor variables may be selected on the basis of an etiological theory or, alternatively, may be derived from empirical observation of premorbid functioning. The precursor variables selected in this study are drawn from theories of normal and abnormal social and cognitive development that have been derived from clinical observation and research, and from empirical study of the schizophrenic's pre- and post-morbid functioning.

High-risk Methodology

High-risk prospective longitudinal research has been viewed as the most promising method for identifying precursor signs of schizophrenia (Mednick & McNeil, 1968). This methodology has the advantage of studying individuals who meet specific criteria for risk but who, unlike diagnosed schizophrenics, are not impaired by severe psychotic symptoms, residual symptoms, nor the consequent medication and restricted lifestyle (Garmezy, 1974a). Despite the obvious need for this kind of

research, high-risk methodology in the study of schizophrenia is difficult to implement. As Garmezy (1974a) points out:

> (1) one is coping with a disorder of as yet unknown etiology (which poses the problem of how best to select for risk), (2) with potential dispositional parameters which have not yet been demarcated clearly (introducing the unresolved issue of what types of variable warrant study in risk research), (3) accompanied by an anticipated heterogeneity in onset, prognosis, and course (thus heightening the problem of the prediction of outcome), and (4) in which the projected age of onset of the formal disorder itself can extend up to a terminal point somewhere in the vicinity of age 45. To attempt to predict ultimate outcomes for a disorder as mysterious and as pervasive as schizophrenia requires an invulnerable experimental spirit, and an extraordinary amount of clinical and experimental acumen, together with a conceptual clarity which the complex nature of the disorder tends to obscure. (p. 78)

Garmezy's statement is most insightful in clarifying both the need for and the difficulty of such research. In addition to the conceptual problems he outlines, the longitudinal nature of risk methodology is beset with many practical problems, not the least of which is long-term funding and commitment of research staff necessary to ensure the needed continuity and efficiency of such work (Fisher & Jones, 1978). Nevertheless, there has emerged in the last 15 to 20 years a handful of high-risk projects.

Criteria for risk have generally fallen into three categories. These are 1) a genetic loading factor; 2) a biological/constitutional factor in the organism; and 3) precursor signs or behaviors that are symptomatic of premorbid functioning. In the genetic risk model, having one or both parents schizophrenic serves as the criterion of elevated risk. There is evidence that having one schizophrenic parent increases the probability of receiving a similar diagnosis from a base rate of 1% to between 10 and 15%. Having two schizophrenic parents increases the probability to between 20 and 40% (Heston, 1966; Keith, Gunderson, Reifman, Buchsbaum & Mosher, 1976). A majority of high-risk investigators have defined risk for schizophrenia on the basis of the genetic model (Anthony, 1972; Asarnow, Steffy, MacCrimmon & Cleghorn, 1978; Erlenmeyer-Kimling, 1968; Mednick & Schulsinger, 1968; Neale & Weintraub, 1975; Sameroff, Seifer & Zax, 1982). The major disadvantage of this model is that results can be generalized only to those schizophrenics with similar genetic background. Eighty-five to 90% of individuals diagnosed as schizophrenic, however, do not have a schizophrenic parent (Keith et al., 1976). Nevertheless, it is possible that the genetic risk criterion provides information relevant to one or more types of disturbance in the spectrum of the schizophrenic disorders (Lewine, Watt, & Grubb, 1981).

The study of vulnerability factors in the child offers an alternative to the sampling problems of the genetic risk model. The second and third models of risk research focus on such child factors. Very few risk studies have selected the biological/constitutional factor as their criterion for risk. The best known is a study conducted by Schulsinger, Mednick, Venables, Raman and Bell (1975) who selected

physiological reactivity as a risk criterion on the basis of findings from their genetic risk study. The use of autonomic responsivity, however, has been questioned because of equivocal findings in studies of schizophrenics and because of evidence that autonomic responsivity is not stable throughout development (Garmezy, 1974b; Neale & Oltmanns, 1980).

The third model of risk research which consists of the selection of certain precursor signs of psychopathology has recently led to two lines of investigation. One is exemplified by the recent work of Chapman and his associates who have focused on the development of self-report measures of perceptual aberration and anhedonia to assess risk in adolescents and young adults (Chapman & Chapman, 1980; Chapman, Edell & Chapman, 1980). A second approach examines certain variables which have been associated with increased vulnerability in clinic-referred children or in children selected from the general population. Risk criteria generally relate to some area of maladaptive functioning such as poor social or academic adjustment.

As in the genetic-risk model, the follow-up of clinic-referred children has several serious limitations for the study of vulnerability to schizophrenia. The majority of schizophrenics were not seen as children in clinics, thus questioning the generality of findings obtained from these studies (Neale & Oltmanns, 1980). Second, social class and gender have been found to influence referral to clinics (Dohrenwend & Dohrenwend, 1969; Eme, 1979; Neale & Oltmanns, 1980). Third, aggressive behavior is the predominant reason for referral, limiting the range of antecedents of schizophrenia that can be studied. Fourth, clinic data are not collected systematically by trained

personnel, thus raising questions concerning their reliability and validity (Neale & Oltmans, 1980). Finally, a labelling process may have been started by virtue of the referral itself which may colour the nature of clinic data (Schwartzman, Ledingham, & Serbin, 1985).

To avoid all of these problems, the use of behavioral risk indices in the screening of school children has recently been recommended as a favorable alternative to the constraints of genetic risk methodology and child clinic sample follow-up (Cass & Thomas, 1979; Lewine et al., 1981). The Concordia Longitudinal High-Risk Project (Ledingham & Schwartzman, 1983; Schwartzman et al., 1985) within which framework the present study was conducted adheres to this model of risk research.

The Concordia Longitudinal High-Risk Project

In the Concordia Longitudinal High-Risk Project, Ledingham and Schwartzman (1983) formulated their sample selection criteria on the basis of evidence that disturbances in social behaviour characterize the preschizophrenic's adjustment. More specifically, extremes in patterns of aggression and withdrawal served as risk criteria. Aggression was broadly defined to include physical aggression, disruptiveness and attention-seeking, while withdrawal included behaviours such as shyness, social isolation and over-sensitivity.

Aggression and withdrawal as risk criteria. In early retrospective descriptive writings, withdrawal was frequently noted as the dominant premorbid personality characteristic of the schizophrenic (Bleuler, 1950; Hoch, 1910; Kant, 1941; Kasanin & Rosen, 1933; Kraeplin, 1919). Similarly, the small number of studies using a follow-back methodology whereby childhood characteristics of adult schizophrenics are investigated also found a higher incidence of reports of withdrawn,

asocial, and overly-sensitive characteristics in the school and clinic records of adult schizophrenics than in the controls (Bower, Shellhamer, & Daily, 1960; Fleming & Ricks, 1970; Frazee, 1953; Roff, 1963; Warnken, 1957, and Warnken & Siess, 1965, (cited in Offord & Cross (1969))). One group of researchers reported a greater incidence of withdrawal in school records of female schizophrenics but not in those of male schizophrenics relative to their control groups (Watt, Fryer, Lewine, & Prentky, 1979; Watt & Lubensky, 1976).

Investigators using a follow-up methodology, whereby adult adjustment of clinic-referred children is examined, have questioned the predictive validity of childhood withdrawal for adult psychopathology (Kohlberg, LaCross, & Ricks, 1972; Robins, 1972). In one study, Morris and his colleagues found only one of 54 children classified as shy and withdrawn had become schizophrenic (Morris, Soroker, & Burruss, 1954). In a second study, the incidence of schizophrenic outcome was .6% in a sample of 164 children classified as introverts (Michael, Morris, & Soroker, 1957). On the basis of a study of 526 children and 100 matched controls, Robins (1966) concluded that the shy, withdrawn personality was not predictive of adult schizophrenia or other forms of psychopathology.

Aggression has been reported less frequently in retrospective and follow-back studies of schizophrenics. Of the early retrospective reports, only Bleuler (1950) made extensive reference to aggressive, labile behavior in latent schizophrenics at onset of the disorder and in milder cases. He described them as overly sensitive, "almost sanguine" (p. 41), and noted their active attempts to isolate themselves in order to avoid events that might arouse affect. This appears to be the

earliest mention of aggression and withdrawal as co-existing behavior patterns in the preschizophrenic and mild schizophrenic.

Using the follow-back methodology, a greater incidence of aggressive, quarrelsome behavior has been reported for male preschizophrenics than controls (Roff, 1963; Watt & Lubensky, 1976). One study reported a high incidence of aggression in both the target and cohort groups (Frazee, 1953). Several studies reported no group differences in aggression but did not specify whether incidence was high or low (Bower et al., 1960; Gardner, 1967).

A stronger association between adult schizophrenia and a history of childhood aggression rather than withdrawal has been found in studies using the follow-up model. Michael et al. (1957) found that 1.12% of 268 children classified as extroverts had become schizophrenic. This was double the incidence (0.6%) for introverted children. Robins (1966) reported that 5.6% of her sample had become schizophrenic. These children were found to manifest a greater incidence and severity of antisocial behaviors than the clinic children who did not become schizophrenic. Morris et al. (1956) reported that 25% of 47 anti-social males (sociopaths high in aggression) were diagnosed schizophrenics at follow-up.

A number of studies have indicated that children who are both aggressive and withdrawn are at greater risk for adult psychopathology than children who are either aggressive or withdrawn. Frazee (1953) noted a high incidence of aggression in child clinic records of both male schizophrenics and controls. It was, however, those children whose records also indicated a high incidence of withdrawal who had become schizophrenic. Michael et al. (1957) found that 3.45% of children

classified as ambiverts had become schizophrenic adults in contrast to 1.12% of extroverts and 0.6% of introverts. Of those in the follow-up sample who had become schizophrenic, 60% had been classified as ambiverts, 30% as extroverts and 10% as introverts. Robins' (1972) data endorsed these findings. She found that the greatest proportion of schizophrenics (11%) manifested both aggressive and non-aggressive symptoms (anxiety and withdrawal) in childhood.

Gender differences. In the studies described above, samples were predominantly male because of the use of clinic-referred children for follow-up studies. The gender ratio of children referred for treatment is four boys for every girl (Neale & Oltmanns, 1980). Moreover, the most frequent reason for childhood referral is for overly-aggressive, disruptive behavior. Given these sampling biases, it is not surprising that more studies find evidence of a link between childhood aggression and adult schizophrenia than childhood withdrawal. As more data are examined separately for males and females, a different pattern of poor premorbid social adjustment appears to be emerging for each sex. Males are reported to be more "actively" maladjusted (John, Mednick & Schulsinger, 1982; Watt et al., 1979; Watt & Lubensky, 1976). They manifest a pattern of poor inhibitory control resulting in aggression, disruptiveness and interpersonal conflict. In contrast, the pattern exhibited by females primarily involves nervousness, anhedonia, apathy and withdrawal. Females are described as "quietly" maladjusted (John et al., 1982; Watt et al., 1979). In both sexes, poor peer adjustment and lack of peer relationships dominate the picture.

It is on the basis of this cumulative evidence obtained primarily from follow-back studies of adult schizohrenics for whom records were

available and follow-up studies of clinic-referred children that Ledingham and Schwartzman (1983) selected extremes of aggression, withdrawal and both aggression and withdrawal as risk criteria in their study. To avoid the constraints imposed by the study of clinic-referred children, their sample was drawn from the general population by using peer nominations in the classroom setting. This methodology for identifying target groups was selected for several reasons. The school situation provides both structured and unstructured play and work environments. These situations are representative of the work and social demands with which the child will later have to cope (Pekarik, Prinz, Liebert, Weintraub & Neale, 1976). Moreover, peer interactions are probably the most significant mechanism of socialization and development outside the family. Peers have a greater opportunity than teachers and parents of interacting with and observing each child in these different situations (Smith, 1967). As well, each child is evaluated by a larger number of raters than if teacher or parent ratings were obtained (Pekarik et al., 1976). Multiple observations reduce bias in the data (Moskowitz & Schwarz, 1982). Most important is the demonstrated ability of peers to identify children at risk for schizophrenia and to predict adult maladjustment (Cowen, Pederson, Babijian, Izzo & Trost, 1973; Mednick & Schulsinger, 1970; Rolf, 1972; Weintraub, Prinz & Neale, 1978).

Theoretical Background of Present Study

Since the formation of stable, functional cognitive structures for the self and others is a complex developmental process, it seems likely that deficits in cognitive structures in adults originate in a disturbance in this developmental process. Defective cognitive

structures are therefore expected to be characterized by an arrest in their development such that they present the characteristics of structures found at the less mature developmental levels of young children. To clarify these processes, this section briefly reviews theories of normal and abnormal development as they relate to the formation of cognitive structures for the self and others.

Normal cognitive development. Developmentalists describe the biological and psychological growth of the human organism as progressing from global, undifferentiated matter to increasingly articulated and integrated functional systems (Mahler, 1968; Piaget, 1954; Werner, 1948). Werner (1948) labelled this the orthogenetic principle of development. For example, in the area of physical development, this process can be observed as the infant gains more and more control over movement, going from gross motor behavior to fine motor behavior and co-ordinated action. Similarly, in the cognitive and perceptual domains, increasing articulation of thought, perception and representational systems has been coherently mapped by such developmental psychologists as Piaget (1954), Kagan (1971), and Werner and Kaplan (1963). Self-regulation of behavior as opposed to regulation from without serves as the guiding principle propelling organismic growth. Self-regulation is dependent on the acquisition of stable, internal psychological structures referred to as schemata.

Central to adaptive, autonomous functioning is the infant's capacity to develop schemata comprising her/his definitions of self and others and their life situational contexts (Blatt & Wild, 1976; Burnham, Gladstone & Gibson, 1969; Edwards, Ruskin, & Turrini, 1980; Jacobson, 1964; Mahler, 1968; Modell, 1968). Clinical theorists believe that

without an adequately stable self schema, it is very difficult to interact realistically with one's social environment (Blatt & Wild, 1976; Magaro, 1980). Person perception theorists also indicate that, during development, the self is initially implicitly used as the point of reference in arriving at an understanding of others (Hastorf, Richardson, & Dornbusch, 1958).

Schema Definition and Function. A schema consists of a set of associations about an object or event which is capable of organizing new information about similar objects or events (Markus, 1977; Piaget, 1954). It represents an internalized pattern of thought, affect, and action. With development, schemata become organized cognitive representations of objects such as the self, others, space, time, causality, etc. Schemata are said to be dynamic rather than static. The processes involved in schema development are those of assimilation and accommodation (Piaget, 1954). It is through these processes that schemata which are initially diffuse and global become more differentiated, articulated, and integrated in an increasingly meaningful and adaptive manner.

Schemata play a very important role in the individual's ability to function adaptively in his environment. The importance of schemata lies in the function they serve in information processing. Given the limited information processing capacity of the human organism and the constant flow of stimuli, the organism selectively attends to only certain stimuli (Broadbent, 1958). It has been demonstrated that this selective attention is not random but, rather, depends on the organism's schemata (Markus, 1977). Schemata, therefore, function as cognitive structures that guide the organism in understanding, predicting, and

interacting with the environment. The absence of well-developed schemata, for whatever reasons, prevents an organism from developing beyond the state of being an undifferentiated mass, dependent on reflexive action and/or other people for survival. Both cognitive and clinically-oriented theorists focus on the development of organized cognitive structures or internal representations as the essential task of organismic growth towards adaptive, self-regulated functioning.

In the area of non-social cognitive development, Piaget (1954) has charted four major developmental stages describing the growth of the child's representational and thought processes as manifested through her/his interaction with her/his environment. This development is characterized by the growth of schemata which, through the processes of assimilation and accommodation, and guided by the organism's innate orientation to "equilibration", become less egocentric and idiosyncratic, and increasingly articulated and congruent with reality. This process has been described as involving the development of boundaries that differentiate the characteristics of one object from another. An initially undifferentiated environment becomes articulated through the perception and development of contours and boundaries in both the physical and psychological sense (Blatt & Wild, 1976).

In the area of interpersonal functioning, clinicians attempting to understand severe psychopathology have focused on developmental stages charting the changes in mental representations of the self and others and of the self's mode of relating to others (e.g., egocentric, autonomous). One example of this effort is Mahler's (1968) work which details three stages in infancy which identify the earliest steps in the lifelong process of separation-individuation. Again, the processes

described involve maturation of cognitive processes and motor skills which, in interaction with the human environment (maternal), foster the development of schemata on an interpersonal dimension. The work of Mahler and of other psychoanalytically-oriented ego psychologists focuses on the differentiation and articulation of a self-schema, which is defined as a sense of self or identity that represents a departure from the early mother-infant symbiotic bond (Erikson, 1950; Jacobson, 1964; Mahler, 1968). The development of a differentiated and articulated self-schema is considered essential for the testing of reality (Modell, 1968).

Like Piaget, these theorists have focused on the development of organized cognitive structures or internal representations based on experience with the objects in question. These internal representations guide the organism's interactions with similar objects in the future (Urist, 1980). There are additional parallels in the developmental theories derived from the cognitive and clinically-oriented theorists. Schema development follows universal trends with individual variations being a function of both innate and external factors. Specific stages of development, each with their own accomplishments, have been elaborated. These stages are sequential so that subsequent growth is based on prior consolidation of the developmental tasks of previous stages. Progress to a more complex developmental level is, therefore, impeded by poor acquisition or weak resolution of the demands of a previous stage (Edward et al., 1980; Piaget, 1954). Theorists do, however, allow for the possibility of some re-adjustment in adulthood of those stages which were poorly developed or unsuccessfully resolved at the optimal age in childhood. Such re-adjustment is the goal of

psychotherapy.

Abnormal cognitive development. Impaired development of the cognitive structures necessary for autonomous, adaptive functioning is seen as one of the main developmental deficits in schizophrenia (Blatt & Wild, 1976; Jacobson, 1964; Mahler, 1968). Clinicians have emphasized defects in cognitive structures for the self and others as the most significant deficit in individuals manifesting severe psychopathology (Blatt, Wild, & Ritzler, 1975; Burnham, Gladstone, & Gibson, 1969; Edward et al., 1980; Searles, 1965; Urist, 1980). Schizophrenic functioning has been characterized by a breakdown or absence in boundaries between the self and others, and within the self, i.e., what is internal versus external, what is imaginary versus real, what is current experience as opposed to memory. It is clear that disturbance in interpersonal functioning is a hallmark of schizophrenia. Other classic examples of inability to develop and/or maintain stable mental representations include hallucinations, delusions, body image distortions, poor reality testing, deviant verbalizations, and defects in concept formation. As mentioned above, schema development results from the dynamic interaction of the processes of assimilation and accommodation. These processes are activated through repeated interactions with objects in the environment (Piaget, 1954). Schema development is, therefore, a function of the nature and quantity of experience with specific objects. For example, Inuits have a more articulated schema for snow and ice than Montrealers whose schemata are probably more elaborate than those of Caribbeans. In the interpersonal domain, normal development of schemata for the self and others is facilitated by what has been variously referred to as "good enough"

mothering (Winnicott, 1965) or "average expectable environment" (Hartmann, 1939; Edward et al., 1980). Several factors may interfere with optimal conditions (Burnham et al., 1969; Mahler, 1968). Constitutional factors in the infant may impede development. Environmental factors may interfere with the mother's ability to meet a specific child's needs. Maternal variables of either a physical (illness) or psychological (depression) nature may also result in insufficient mothering and a less than optimal "fit" between a mother and her infant. All of these factors can contribute to deficits in the development of schemata for the self and others.

In schizophrenia, the presence of constitutional deficits is increasingly recognized (Anthony, 1974). To date, the extent of the deficits, their exact mechanism of action, and their interaction with environmental factors remain unclear and are the subject of much theoretical discussion. As presented below, some degree of constitutional vulnerability in cognition and/or anxiety and/or capacity to cope with anxiety seems to underlie theories which attempt to explain abnormalities in schema development and functioning.

In his integration theory, Magaro (1980) offers a coherent explanation of faulty processes at the cognitive level which may underlie disturbances in the development of meaningful mental representations. According to this theory, schizophrenic functioning results from the absence of integration of conceptual and perceptual processes during development. An imbalance in the processes of assimilation and accommodation underlies the integration deficit. While normal schema development and cognitive growth in the Piagetian framework are the outcome of a balanced interplay between the processes

of assimilation (change in percept to fit existing schema) and accommodation (change in schema to integrate the new percept), according to Magaro, non-paranoid schizophrenics are characterized by an imbalance of accommodation over assimilation such that schemata are constantly changing with each new percept. For this reason, schemata are never fully developed, and lack stability and meaning; hence they are not available to organize new percepts. This absence of stable schemata results in the need for the nonparanoid schizophrenic to make constant adjustment to a subjectively changing and unpredictable environment. Magaro further argues that the paranoid, whose development is believed to be arrested at a later stage, manifests a deficit in perceptual processes by overemphasizing assimilation processes. The paranoid develops a limited number of extremely rigid schemata and distorts all perceptions to fit them.

Magaro suggests that this imbalance between assimilation and accommodation may not be apparent in childhood due to favorable environmental conditions but rather, may persist as a predisposition to paranoid or nonparanoid adult schizophrenia. During adolescence, the child with the conceptual deficits (perceptual resolution) will fail to achieve the transition to Piaget's stage of formal operations. He will progressively fall behind peers and become isolated. The child with perceptual deficits (conceptual resolution) will initially not appear as deficient since he will have a greater capacity for abstraction. However, in view of the rigidity of his schemata, he will have difficulty with the stage of formal operations, achieving only incomplete transition to this stage. His schemata will begin to appear more bizarre and isolated from reality. Magaro suggests that a deficit

of this kind may lead to interpersonal difficulties and that the individual may seek a "cultural niche" accepting of his thought processes (p. 227).

Block (1982) contributes further to the understanding of the imbalance in processes of assimilation and accommodation and the role of these processes in personality development and adaptation. Following the orthogenic principle of development, Block points out that, for adaptation to proceed, the organism must continually utilize the processes of assimilation and accommodation in order to differentiate and integrate events into schemata that function to make the "world predictable or at least not disconfirming of expectation" (p. 291). Discrepancies between an event and the individual's schema for processing that event result in a state of "disequilibration" or confusion that serves to alert the individual that some aspect of the world is not making sense and thus, is not predictable and manageable. Block equates this state of disequilibration with a state of arousal ranging from mild tension to intense anxiety which then acts as a signal motivating the organism to make some adjustment. Assimilation, which is considered to have priority over accommodation, is first called on to regain equilibration. If this fails, anxiety continues and forces the individual to call on processes of accommodation to construct or invent new schemata that will serve to assimilate the intrusive event. Block's contribution to an understanding of individual differences in cognitive processes involved in development rests on his proposal that the organism's ability to use these processes effectively is dependent on its capacity to tolerate the anxiety levels which endure until some solution is found. If the organism cannot tolerate the anxiety, it may

revert, in perseverative fashion, to assimilative efforts which will entail distortions or denial of reality and impede the adaptive efforts of the organism toward increasing differentiation and integration in a meaningful, adaptive manner.

Although these attempts to explain failures in the development of schemata rest on innate tendencies of the organism, i.e., its ability to tolerate anxiety, which may be biological in origin, it is not difficult to see how the environment may contribute to failures in development by virtue of its facilitating or obstructing role. A number of pathogenic interactions in families of schizophrenics have been cited in studies focusing on communication and interpersonal relationships. These include patterns of pseudo-mutuality and role distortion, faulty communication and cognition (double-bind communication; amorphous and fragmented styles of thinking), undermining of personal authenticity, overprotectiveness, symbiosis, dominance and infantilization (Bateson, 1960; Burnham et al., 1969; Haley, 1960; Singer & Wynne, 1963, 1965(a), 1965(b); Wynne, Ryckoff, Day & Hirsch, 1958). These interactions do not provide a facilitating environment for differentiation of the self from the parents. Rather, they foster inadequate cognitive, interpersonal, and communicative competencies needed for the development of stable schemata, particularly of the self and others.

In summary, recent theory in cognitive psychology and in psychoanalytic theory of normal and abnormal development points to the importance of the development of cognitive structures (schemata) as an essential task for adaptive human functioning. Clinical observation and theories of processes underlying schizophrenic deficits suggest a disturbance in schema development, particularly, but not exclusively, in

schemata for the self and others. Since theorists emphasize that the development of schemata for self and others is an ongoing process associated with experience and physiological growth, it follows that disturbances in these schemata should become apparent prior to the appearance of severe psychopathology. The preschizophrenic child may not be able to differentiate characteristics of one child from another because (s)he may not have assimilated or accommodated different children's characteristic behaviors into differentiated schemata, i.e., one child is friendly, another is a bully, one child is fun, shares, another doesn't, is quiet, etc. A child who has not differentiated others will have more difficulty predicting what another child who is approaching might say or do. A continual inability to predict the nature of social behaviors directed toward oneself may lead to excessive vulnerability of the self and increasing levels of tension. These feelings may be dealt with in self-protective flight and/or fight responses, both of which would be socially less appropriate responses. They are also responses that would be less likely to be made by a less vulnerable child.

Children manifesting the aggressive-withdrawn pattern of social interaction have recently been reported to be at an earlier developmental level than aggressive or withdrawn children on dimensions of self-confidence and autonomy. Ledingham (1981) reported that aggressive-withdrawn children were described by both teachers and mothers as more dependent, sensitive, easily influenced and needing more contact with adults than all other groups. Self and other person schemata that are at a developmentally earlier level may be associated with the immature behavior of this group. It was on the basis of the

foregoing theory and research that the present study was designed to assess dimensions of schemata for the self and others as potential indicators of developmental deficits that might prove to be precursor signs of schizophrenia.

The Present Study

The present study assessed schema development for self and significant others in four groups of adolescents (aggressive, withdrawn, aggressive-withdrawn and control). Three dimensions of schema development were investigated:

1. Self-other differentiation. Differentiation refers to the process by which objects (and their mental representations) can be distinguished from each other (Blatt & Wild, 1976). The development of boundaries between two objects or events is considered to be the first step in development of new schemata. In the development of self schema, the first boundary to be established is said to involve the differentiation of the self from the mother in early infancy (Blatt & Wild, 1976; Jacobson, 1964; Mahler, 1968). Developmental theories of schizophrenia (Blatt & Wild, 1976; Mahler, 1968) and investigators of the preschizophrenic's sense of self (Anthony, 1974; Fleming and Ricks, 1970) emphasize that the preschizophrenic is a poorly differentiated individual who lacks a stable, autonomous self-structure. It was hypothesized that the aggressive-withdrawn group would show a lower level of self-other differentiation than all other groups because of greater vulnerability to major psychopathology.

Since differentiation of the self from the mother is considered the primary differentiation task in child development, the measure developed to assess self-other differentiation in the present study specifically

examined self-mother differentiation. This was assessed by the use of a forced-choice discrimination task specifically developed as an exploratory instrument for this study. On the basis of the preceding theoretical formulations, it was expected that the aggressive-withdrawn group would require longer processing times (reaction times) on a task where they had to decide if personality descriptors best described themselves or best described their mothers.

2. Schema strength for self, mother, and peer. The strength of a schema is a positive function of its level of articulation and integration. Articulation refers to the number of ideas or associations attributed to an object. Articulation has been found to increase with increasing familiarity of the object (Aboud & Miller, 1981; Markus, 1977) and with increasing age of the subject (Livesley & Bromley, 1973; Peevers & Secord, 1973; Scarlett, Press, & Crockett, 1971). Integration refers to a meaningful synthesis or strength of association between ideas or subsets of ideas. A schema, therefore, with few, loosely-knit associations would be defined as a weak, poorly developed schema. Such a schema would not prove very useful in organizing new information and in predicting events in one's environment. In the present study, it was hypothesized that, with one exception, the aggressive-withdrawn group would manifest weaker, less articulated schemata than the other three groups for the three person stimuli (self, mother and peer). The exception was that withdrawn subjects were expected to manifest inferior schema development for peer than would control and aggressive subjects because of their limited experience with peers.

Techniques for the objective assessment of schemata and their relative strength have recently been elaborated by cognitive

psychologists. Incidental recall, response latency, generation of examples of a concept or related behavior, and resistance to counterschematic information have all been used as dependent variables to demonstrate the functioning of schemata in a variety of information processing tasks (Aboud & Miller, 1981; Bower & Gilligan, 1979; Cantor & Mischel, 1977, Ferguson, Rule, & Carlson, 1983; Kuiper, 1982; Markus, 1977; Rogers, Kuiper, & Kirker, 1977). Support for the theory that the "self" constitutes a particularly powerful schema for processing information has repeatedly been obtained. Several studies have demonstrated that response latencies were significantly reduced for adjectives that fit an individual's self-schema than for those that did not (Markus, 1977; Mills, 1983; Rogers et al., 1977). Memory for adjectives that are related to the self-schema has been found to be superior to memory for adjectives related to structural, phonetic and semantic qualities of the word (Bower & Gilligan, 1979; Kuiper & Rogers, 1979; Rogers et al., 1977). Improved recall for self- and familiar other-referenced words in contrast to unfamiliar others has also been reported in several studies (Aboud & Miller, 1981; Bower & Gilligan, 1979).

Investigators who have examined the role of schema articulation and integration in information processing have found that retrieval time is longer and amount of recall is less for information relating to schemata that are well articulated but poorly integrated (Aboud & Miller, 1981; Sentis & Brunstein, 1979). This has been attributed to a "fanning effect" (Sentis & Burnstein, 1979). That is, as the number of ideas associated with a concept increases, a more elaborate network of paths must be searched in the retrieval process. Therefore, when an

individual has numerous, loosely-knit associations for a construct, response time for recall of an item or for judging whether or not it fits the schema is prolonged due to the need to search through a longer list of associations. Accuracy of recall may also be inferior due to interference of many more associations. However, with greater experience and use, some or many of these ideas may become associated into meaningful units. This integration of ideas has been described as "chunking". That is, a well-developed and frequently used schema shows more organization within itself and more capacity for organizing new, schema-consistent information. According to Sentis and Burnstein (1979), schema-consistent information can be stored in large chunks or units of memory representation which can be retrieved in an all-or-none fashion. Information that is inconsistent with a schema (counterschematic) is stored in discrete units and must be retrieved individually. This leads to longer search times and greater opportunity for error due to interference from competing associations when information is counterschematic.

From this analysis of the role of articulation and integration of a schema in information processing, one would expect that a short response latency for rating personality descriptors using a person as a referent, and good recall of endorsed descriptors reflect a strong person schema (well articulated and integrated) and, therefore, a high level of cognitive structuring. On the other hand, a long response latency and poor recall may indicate one of two possibilities: either interference in a well-articulated but not integrated schema (fanning effect) or, a poorly articulated schema.

In the present study, it was therefore hypothesized that, on an information processing task in which 1) processing time (reaction time) for judging whether or not a list of personality descriptors fit the target referent (self, mother, or peer), and 2) incidental memory (recall and recognition) for endorsed descriptors were used as measures of strength of schemata, the aggressive-withdrawn group would manifest longer latencies and less recall and recognition of endorsed descriptors than the other three groups on the self and mother schemata. For the peer schema, both the aggressive-withdrawn and withdrawn subjects were expected to have longer latencies and less recall and recognition than the aggressive and control groups.

In order to clarify whether a "fanning effect" or poor articulation might account for poor performance on the dependent measures, a measure of articulation of schemata was obtained from written descriptions of the self, mother, and peer. In accordance with the working definition of articulation adopted in this study, the number of ideas or items used in the written descriptions constituted the measure of articulation. Inclusion of this measure was intended to shed some light on whether the hypothesized deficit in schema development was at the level of elaboration of concepts or of integration of ideas into meaningful structures. According to this formulation, long latencies and poor recall of endorsed items on the information processing task together with good elaboration in the written descriptions represented a well-articulated but poorly integrated schema. This pattern of results would be indicative of a deficit at the integration level of schema development. Long latencies, poor recall of endorsed items, and few items in the written descriptions would be indicative of a poorly

developed schema (aschematic) and would reflect a deficit at an earlier stage in the process of schema development, that is, at the level of elaboration of the concept.

Since the present study involved between group comparisons, it was important to examine factors that were known to contribute to articulation of written descriptions of self and others in order to ensure validity of the data and accurate interpretation of results. Several characteristics of both the writer and target of descriptions have consistently been related to the number of ideas produced in written descriptions. Number of items varies as a function of familiarity, likeability, sex of the target, and age and sex of the writer. More constructs are used to describe a peer as opposed to an older person, a member of the immediate family or a friend as opposed to an acquaintance (Fiske & Cox, 1979), a liked as opposed to a disliked person, and males as opposed to females (Peevers & Secord, 1973; Maher, 1957; Livesley & Bromley, 1979; Bieri, Bradburn & Galinsky, 1958; Fancher, 1966; Supnick, 1964). The number of descriptors also increases with age of the subject (Livesley & Bromley, 1973; Peevers & Secord, 1973; Scarlett et al., 1971). With respect to gender differences, female subjects at all ages tend to produce more descriptors than same-age males (Livesley & Bromley, 1973). In the present study, it was expected that a normal pattern of schema development for adolescents would result in the following characteristics on the measure of articulation of written descriptions: The self and peer schemata would have the qualities associated with familiar referents resulting in more elaborate descriptions than the mother schema. Normal female subjects were expected to have more elaborate descriptions on all three referents

than males. If one or more target groups were found to have fewer items than control adolescents in any or all descriptions, a less mature level of schema development could be postulated to explain this finding. It was further postulated that the written descriptions of the aggressive-withdrawn adolescents would be less articulated than those of the aggressive and control groups for the three person schemata. Withdrawn adolescents were expected to show less articulation in peer descriptions than would aggressive and control adolescents.

3. Developmental level of schemata for self, mother, and peer. The third aspect of the study was designed to examine schema development based on a content analysis of written descriptions of the self, mother, and peer. Deficits in schema development were expected to manifest themselves by immature mental representations of the self and others. It was hypothesized that the quality of descriptions for self and others would be at a younger, less mature developmental level for the aggressive-withdrawn children than for the three other groups. Again, due to limited peer experience, it was hypothesized that the withdrawn subjects would manifest lower developmental levels than the aggressive and control groups in their peer descriptions.

Maturity of mental representations may be assessed on the basis of a number of developmental changes which are reported to occur in mental representations of others. Characteristics of the writer which have been found to influence the content of descriptions of others are age, gender, and social competence. Descriptions referring primarily to the person's appearance, identity, family, and possessions are used decreasingly with age. As children get older, behavioral consistencies and personality traits are increasingly used as descriptors (Barenboim,

1981; Livesley & Bromley, 1973; Rotenberg, 1982). The use of personalty constructs in person perception has been found to begin around the ages of 7 to 8 (Barenboim, 1981; Livesley & Bromley, 1973; Rholes & Ruble, 1984; Watts, 1944). Indeed, one study of 8 to 13 year old children found no differences across age in the number of psychological constructs used to describe others (Yarrow & Campbell, 1963). Other studies, however, indicate that complexity of person descriptions continues to increase with age of the writer (Livesley & Bromley, 1973; Peevers & Secord, 1973; Watts, 1944). Increasing complexity of descriptions refers to a greater use of traits and personality characteristics with increasing references to situational, temporal, or internal states (Peevers & Secord, 1973). With increasing age, children also show a decrease in the use of undifferentiating items, a decrease in egocentrism combined with an increase in other-oriented responses, and an increase in evaluative consistency.

With respect to gender differences, investigators studying children and adolescents have generally found that girls use more personality constructs than boys (Brierley, 1966; Livesley & Bromley, 1967; Sarbin, 1954). Boys have been reported to use more role constructs (Little, 1968) and more ability terms (Beach & Wertheimer, 1961) in describing others. It is not always clear, however, whether these differences, particularly with respect to girls' reporting more psychological constructs, are a function simply of greater verbal fluency, or whether they represent a true difference in proportions of these kinds of responses to total responses. Livesley & Bromley (1973) found a greater number of personality constructs in girls' descriptions of others but no gender difference was found when the proportion of personality

constructs in their descriptions was examined.

Investigation of the social behavior of the evaluator has indicated that active and friendly children give the most complex descriptions of peers relative to both withdrawn and hostile children. The friendly child is also more likely than the hostile child to make inferential statements (Yarrow & Campbell, 1963). This would seem to offer support for both the theoretical framework of ego psychology and the Piagetian emphasis on the intimate relationship between the development of cognitive structures and experience with objects in one's environment.

The nature of descriptors has also been reported to vary as a function of familiarity of the target person. Children describe familiar adults (non-family) in stereotyped fashion referring most commonly to possessions, social roles and external characteristics, whereas children's descriptions of peers show better discrimination and greater use of personality constructs (Livesley & Bromley, 1967, 1973). It is assumed that these results reflect greater familiarity with the peers selected by the subject for description than with the familiar adult. College students also use more personality constructs in describing friends as opposed to strangers (Fiske & Cox, 1979). A greater proportion of internal qualities are used to describe females than males (Livesley & Bromley, 1973). Likeability of the target person does not seem to have an effect on the number of personality descriptors used (Peevers & Secord, 1973).

In summary, children's descriptions of people become increasingly differentiated and adaptive. The content shifts from a focus on superficial characteristics of the individual to one which delineates more consistent, covert characteristics, and more behavioral tendencies.

Effective social interaction depends upon the ability to discern regularities in the individual's functioning across situations, as well as an ability to take situational factors into account in forming expectations about the person. Peripheral qualities of an individual (eye color, possessions) have little or no predictive value. Thus, the child who persists in using peripheral and concrete descriptions is at a developmentally earlier level of mental representation and is at a disadvantage in predicting and interacting appropriately with his environment.

The person perception literature points to the suitability of written descriptions as a task for subjects in the present study. Livesley and Bromley (1973) reported that written descriptions obtained in a group testing situation were as satisfactory as oral descriptions obtained through individual interviews. Written descriptions have also been found to be appropriate for adolescents and young adults (Fiske & Cox, 1979; Livesley & Bromley, 1973). Five- to ten-minute time limits have been shown to be suitable for obtaining meaningful information (Blatt, Wein, Chevron, & Quinlan, 1979; Fiske & Cox, 1979). Test-retest reliability of person descriptions has been reported as ranging from η (eta) = .71 to .92 for descriptions of liked peers obtained from high school juniors and college students at a one-month interval (Peevers & Secord, 1973).

Classification systems adopted for analyzing developmental changes in person perception have consistently reflected the age-related transition from the use of peripheral, concrete items (appearance, possessions, where the person lives) to central, abstract items (traits, attitudes, characteristics not tied to specific contexts) (Fiske & Cox;

1979; Livesley & Bromley, 1973; Peevers & Secord, 1973; Scarlett, Press & Crockett, 1971). Descriptions containing a large proportion of peripheral items are said to represent a low level of cognitive complexity. Descriptions with a primary focus on central characteristics are said to reflect a high level of cognitive complexity. In addition to this dichotomy, several authors have included the dimension of egocentrism in their classification systems in order to assess the developmental shift from poor self-other differentiation in early childhood to an increasing capacity for seeing the "self" and the "other" as distinct entities in middle childhood (Blatt et al., 1979; Peevers & Secord, 1973; Scarlett et al., 1971).

Procedures for coding written descriptions have differed in that, in some studies, each descriptive unit or idea was assigned exclusively to one category (Fiske & Cox, 1979; Scarlett et al., 1971), while in other studies, each descriptive unit was coded several times using several dimensions of interest to the investigator (Livesley & Bromley, 1973; Peevers & Secord, 1973). Investigators have also created summary measures to reflect the use of peripheral versus central characteristics in descriptions by combining data from two or more categories (Livesley & Bromley, 1973; Peevers & Secord, 1973). One group of investigators has developed a classification system which involves assigning one global rating to the entire description (Blatt, Chevron, Quinlan, & Wein (1981).

Two classification systems discussed below were selected for the present study to assess levels of schema development. The first consisted of a taxonomy elaborated by Fiske and Cox (1979) and followed traditional person perception procedures. This measure was applied to

the self, mother, and peer descriptions. The second classification system was a measure of conceptual levels of descriptions developed by Blatt et al. (1981). It was applied to the mother and peer descriptions.

Fiske and Cox (1979) detailed six discrete categories to classify each descriptive unit or idea as relating to either a person's appearance, actions, social relationships, typical contexts, origins, or internal properties (interests, traits, attitudes). This classification system was adopted in the present study because its comprehensive scope made it possible to classify descriptive items of all types. The categories themselves were distinct, clearly defined, and did not overlap with each other. Interjudge reliability reported by Fiske and Cox (1979) using a ratio that assessed the proportion of variance shared between judges was found to be acceptable and could be assured in the present study through training of judges. Also, the categories lent themselves well to the creation of summary scores of cognitive complexity reflecting the developmental shift from peripheral, concrete descriptions (low cognitive complexity) to central, abstract escriptions (high cognitive complexity). Using these summary scores as measures of cognitive complexity in the present study, it was hypothesized that aggressive-withdrawn children would obtain a significantly smaller proportion of high complexity items than aggressive and control children in their descriptions of the self, mother, and peer. Withdrawn children were not expected to differ from control children in complexity level of self and mother descriptions. However, complexity level of peer descriptions was hypothesized to be at

a lower level for the withdrawn children because of their limited peer experience.

The measure developed by Blatt and his colleagues was based on an integration of Piagetian stages of cognitive development with psychoanalytic theory of object representation. The psychoanalytic perspective of object representations focuses on the differentiation of a self-schema from the mother-infant symbiotic unit and on the progressive articulation and integration of schemata for the self and others. Following this developmental model, Blatt et al. (1981) elaborated five conceptual levels reflecting developmental changes in object representation: Sensorimotor-Preoperational, Concrete-Perceptual, External Iconic, Internal Iconic, and Conceptual Representation. Representations at the Sensorimotor-Preoperational level are those in which the person is described primarily by activities in reference to the gratification or frustration s(he) provides. There is little sense that the person exists as a separate entity. At the Concrete-Perceptual level, the person is seen as a separate entity but described primarily in concrete, global, literal terms, e.g., appearance. Descriptions at the External Iconic level focus on the person as a separate entity in terms of his or her functional activities and attributes. At the Internal Iconic level, the focus shifts from what the person does to what the person thinks, feels, and values. For a description to fit the Conceptual Representation level, the person must be described in a way that integrates all of the prior levels. There must be an appreciation for internal as well as external dimensions of the other. An attempt must be made to resolve apparent contradictions

in the other in an integrated synthesis of the other's values and activities.

Blatt et al. (1981) reported a Pearson Product-Moment correlation of .88 for two judges' ratings of the conceptual level scores of five-minute written descriptions of parents. Because the conceptual level score is a recent measure, its validity as a measure of the age-related processes involved in the formation of person schemata has not been directly examined. However, Blatt et al. (1979) present evidence for its validity as a measure of developmental deficits associated with one specific form of psychopathology, namely, depression. These authors found that higher conceptual level scores for parental descriptions were negatively correlated with the intensity and type of depression experienced by normal young adults. Subjects whose depression was primarily anaclitic, that is, thought to evolve during the early differentiation of the child's self from the mother-infant unit, obtained the lowest conceptual level scores in descriptions of their parents. Subjects whose depression was primarily introjective, that is, thought to be associated with the more advanced stage of superego formation, obtained significantly higher conceptual level scores. The non-depressed subjects obtained the highest conceptual level scores in parental descriptions.

The Blatt et al. (1981) measure was selected for the present study because it went beyond examining the static nature of the dimensions used in person perception, i.e., their presence or absence. The conceptual level score addressed directly such interpersonal dimensions as self-other differentiation and egocentrism which have repeatedly been found to be significant developmental markers in childhood. The measure

assessed the subject's ability to recognize or explain subtleties, apparent contradictions or latent feelings underlying behavior and dispositions of the other. The measure also provided an opportunity to evaluate the individual's capacity to integrate or interrelate the other's characteristics, to resolve apparent contradictions, and, in sum, to manifest an in-depth understanding of the other as a complex, separate entity.

In the present study, it was hypothesized that the aggressive-withdrawn group would obtain significantly lower conceptual level scores in written descriptions of the mother and peer than the aggressive and control groups. The withdrawn group was expected to obtain lower conceptual level scores for peer descriptions than the aggressive and control groups because of limited peer experience.

Summary of Hypotheses

1. Self-other differentiation. It was hypothesized that the aggressive-withdrawn group would show a lower level of self-other differentiation than all other groups. This group would register longer processing times on a task which required a decision as to whether personality descriptors best described themselves or best described their mothers. Because of the novel methodology, this aspect of the study was of an exploratory nature.
2. Schema strength for self, mother and peer. The aggressive-withdrawn group was hypothesized to manifest weaker, less articulated schemata for the three person stimuli (self, mother, and peer) than the other three groups with the exception of the peer schema. Withdrawn subjects were expected to manifest weaker schema development for the

peer referent than would control and aggressive subjects because of limited experience with peers.

Strength of schemata was assessed using an information processing task in which (a) reaction time for judging whether or not a list of personality descriptors fit the target referent (self, mother, or peer), and (b) incidental memory (recall and recognition) for endorsed personality descriptors were obtained. A weaker schema was expected to result in less efficient information processing. This would manifest itself in longer processing times and poorer recall and recognition of endorsed personality descriptors related to that schema. A measure of articulation of the schema, defined as the number of descriptive items in a written description of the referent, was included to further clarify the nature of deficits underlying weaker schema development. Few descriptive items would indicate a poorly developed schema and suggest an immature developmental level. A greater number of ideas in combination with less efficient information processing would suggest that the schema was well articulated but poorly integrated and would indicate a slightly more advanced level of schema development.

3. Developmental level of schemata for self, mother, and peer. The quality of descriptions for self and others was hypothesized to be at a younger, less mature developmental level for the aggressive-withdrawn children than for the three other groups. Again, due to limited peer experience, it was hypothesized that the withdrawn children would also manifest lower developmental levels than the aggressive and control groups on the peer descriptions. This

dimension was assessed for self, mother, and peer using a traditional person perception procedure to obtain a measure of cognitive complexity (high, low) of the descriptions, and for mother and peer using a conceptual level measure of object representation. Both high complexity scores and high conceptual level scores were expected to indicated mature developmental levels of schemata.

Although sex differences were not a focus of the study, reports of sex differences in person perception (Beach & Wertheimer, 1961; Brierley, 1966; Little, 1968; Livesley & Bromley, 1967, 1973; Sarbin, 1954) and, more recently, in the premorbid social behavior patterns of schizophrenics (John et al., 1982; Watt et al., 1979; Watt & Lubensky, 1976) warranted examining the data for possible gender differences in schema development for self and others. Gender was therefore included as an independent factor in the study.

Method

Subjects

Subjects were 80 French-speaking adolescent volunteers, who had been classified six years previously as aggressive, withdrawn, aggressive-withdrawn, or normative controls on the basis of classmates' assessments on a French version of the Pupil Evaluation Inventory (Pekarik et al., 1976). There were 10 males and 10 females per group. This sample was drawn from a larger sample of 1,756 children who have been followed since 1976 in the Concordia Longitudinal High-Risk Project (Ledingham, 1981; Ledingham & Schwartzman, 1983; Schwartzman et al., in press). At the time of administration of the Pupil Evaluation Inventory, subjects in this study were in Grade 4 and Grade 7 in schools under the jurisdiction of the Montreal Catholic School Commission (Commission des Ecoles Catholiques de Montréal). Children in these grades were selected because of evidence that by Grade 4, children's perceptions of aggression and withdrawal were internally cohesive and well-differentiated constructs (Younger, Schwartzman, & Ledingham, 1985).

The Pupil Evaluation Inventory (PEI) is a peer nominations instrument for classroom administration. It contains 35 items loading on three factors: aggression, withdrawal, and likeability. Internal consistency of the items on the aggression and withdrawal factors is high. For the English version, Pekarik et al. (1976) obtained coefficients above .90 for the aggression scale and above .70 for the withdrawal scale. They attributed the lower coefficient for the withdrawal scale to the fewer items which loaded on this factor. Test-retest reliability after a two-week interval was found to be between .86

and .95 for the aggression factor and between .89 and .91 for the withdrawal factor (Pekarik et al., 1976). For the French version of the PEI used in the Concordia Longitudinal High-Risk Project, internal consistency coefficients were between .97 and .98 on the aggression factor and between .86 and .94 on the withdrawal factor for the children in Grades 4 and 7, respectively (Moskowitz, Schwartzman, and Ledingham, 1985).

In selecting target groups for the Concordia Longitudinal High-Risk Project, each class was asked to nominate up to a maximum of four boys and four girls who best fit the description of each item in the questionnaire. Boys and girls were rated separately by all classmates in two separate administrations. Each child's nominations were summed on each of the three factors. Only the aggression and withdrawal scores were used in assigning children to the four target groups. These scores were converted to Z scores for each sex within each classroom to remove effects of gender differences in baseline rates of aggression and withdrawal and to control for differences in class size on total number of nominations. Children were classified as aggressive if their Z score on the aggression factor exceeded the 95th percentile and their withdrawal Z score fell below the 75th percentile. Children were classified as withdrawn if their Z score on the withdrawal factor exceeded the 95th percentile and their aggression Z score fell below the 75th percentile. The aggressive-withdrawn group was formed by selecting those children whose Z scores exceeded the 75th percentile on both the aggression and withdrawal scales. Control subjects had Z scores below the 75th percentile on both dimensions. Group means, standard

deviations and the required and obtained percentile rankings of the Z scores for each group in the present study are presented in Table 1.

In view of the developmental nature of the constructs under study, groups were matched on age as a control for maturation. Age range of subjects in the sample at time of the present study was 14.75 years to 19.25 years. Analysis of variance indicated no significant effects of grouping, sex, or grouping x sex interaction on age. Average age and standard deviation (in brackets) of each group were as follows: For males: aggressive, 17.0 (1.5); withdrawn, 16.8 (1.3); aggressive-withdrawn, 16.7 (1.1); control, 16.8 (1.0). For females: aggressive, 17.0 (1.4); withdrawn, 17.7 (1.4); aggressive-withdrawn, 16.2 (1.0); control, 16.6 (0.9).

Materials, Apparatus, Procedure, and Scoring

Self-Other Differentiation

To assess self-other differentiation, an information processing task was used consisting of a forced-choice paradigm in which response latency was determined. Subject's task was to indicate whether a trait was "more like me" or "more like mom" by pressing the appropriate one of two reaction time keys. This task was referred to as the Me-Mom Differentiation Task (MMDT). In a preliminary study described in the next two sections, a list of 30 commonly-known personality adjectives or traits was developed.

Materials: A. Adjective selection. In order to ensure that the forced-choice MMDT would be meaningful in the sense that it did indeed offer a choice of adjectives applicable to both me and mom, special attention was given to the selection of adjectives for this task. Adjectives which were clearly applicable to either mothers or

Table 1

Means (Standard Deviations) and Percentile Ranks on PEI Aggression and Withdrawal Factors

	Factors					
	Aggression			Withdrawal		
	Mean (SD)	Percentile Required	Obtained	Mean (SD)	Percentile Required	Obtained
Aggressive	1.90 (.50)	>95	97	-.40 (.53)	<75	34
Withdrawn	-.53 (.70)	<75	30	2.09 (.37)	>95	98
Aggressive-Withdrawn	1.67 (.57)	>75	95	1.73 (.78)	>75	96
Control	-.14 (.30)	<75	44	-.16 (.32)	<75	43

adolescents were considered unsuitable for this task since subjects could too easily respond to the stereotypes of the categories rather than to their personal schemata.

Students in two psychology undergraduate classes at Concordia University were requested on a voluntary basis to list positive and negative adjectives describing themselves, their mother, and their best friend. Seven minutes were allotted for each item. Responses were obtained from 90 females and 32 males. Mean age for female respondents was 23.8 years. Mean age for male respondents was 21.9 years. From these lists, descriptors which recurred a minimum of four times for the female group and twice for the male group were translated into French. This procedure provided a list of 97 words. French-speaking adolescents attending Cegep de Maisonneuve (a pre-university collegial studies programme) were asked to rate these adjectives on two rating scales. The first was a 7-point bipolar scale with the extremes indicating ratings of "more like me" versus "more like mom", and with the midpoint referring to "like both me and mom". An eighth choice was offered to eliminate adjectives which were consistently rated as "like neither me nor mom". The second scale required evaluative ratings of the words on a 7-point scale ranging from positive through neutral to negative. Finally, subjects were instructed to circle words which were unfamiliar to them.

Thirty-five female students and 38 male students volunteered to complete the questionnaires. Mean age of the female group was 17.8 years. Mean age of the male group was 18.0 years.

Words which were unfamiliar to two or more subjects and which were rated as "like neither me nor mom" by a minimum of 30% of the sample

were eliminated from further analyses. Examination of the means, medians, and modes of the remaining adjectives indicated a strong tendency for subjects to endorse items in the "more like me" end of the rating scale (1 to 3). Only seven words obtained means, medians, and modes of 4 ("like both me and mom") or above ("more like mom"). This skewed distribution of ratings suggested that it was generally easier to use oneself than to use mom as a point of reference in this age group. In view of this finding, adjectives were selected for inclusion in the MMDT having a mode of 4 or greater, and both a mean and median of 3.5 or more. Using these criteria generated a list of 28 adjectives. As a result of further pilot work with 29 subjects of the High Risk sample, 2 of the 28 adjectives were dropped due to the subjects' difficulties in understanding their meaning. Thus, in order to achieve a 30-word list, 4 adjectives with a mode of 4, a median of 3.4 to 3.6, and a mean of 3.1 to 3.4 were added.

B. Evaluative dimension of adjectives. Although the evaluative dimension of adjectives was not, a priori, a variable in the MMDT, careful attention was nevertheless given to this dimension in the development of the measure. The university undergraduates who generated the original list of descriptors of self, mother, and friend were instructed to include both negative and positive descriptors. Subjects, however, generally used two to three times more positive descriptors than negative.

Data from ratings by Cegep students indicated that negatively-rated words (ratings in the 5 to 7 range) were very likely to be rated as "like neither me nor mom". For words obtaining a mean evaluative rating of 5 or more (29 words), the mean percentage of total subjects (N=69)

rating these as "like neither me nor mom" was 45.5% with a range of 11.6% to 76.1%. For those subjects who endorsed the negative adjectives on the me-mom ratings, the mean me-mom rating across all negative adjectives endorsed was 3.3 ("somewhat like me"). All but two of these negative adjectives obtained mean ratings in the 1-3 range.

In summary, negatively evaluated adjectives were rejected as "like neither me nor mom" by about half the respondents. Of those items that were endorsed, all but two received mean ratings in the "more like me" range. Given these findings and the desire to ensure that adjectives did offer a discrimination or choice, it was decided that negatively rated adjectives were unsuitable, and with the exception of one word, would not be retained in this task. The exception was the word "nerveux" (nervous) which was rejected by only 11.6% of raters and which met the criterion of the mean and median being above 3.5. The list of adjectives is presented in Appendix A.

To control for order effects, four randomly ordered lists of the 30 stimulus words were generated. Four 5 x 5 cm slides of each adjective printed in lower case letters were then prepared. Thus, four slide trays, each containing the 30 stimulus words, in random order, were used in this task.

As a control for primacy and recency effects in recall, eight adjectives were added to each slide tray, four at the beginning of the set of 30 slides and four at the end. These words were excluded from the scoring. As well, for demonstration purposes, two additional adjectives were used at the beginning of the set of slides.

C. Control measure. A task designed to control for possible group differences in decision-making time itself was developed. In the event

that there were such group differences, this score was to serve as a covariate in the analysis of MMDT latencies. The task was therefore designed to minimize the complexity of the decision to be made. All discriminations were between descriptors relating to either a bird or a fish. Ten very simple, unambiguous items were presented in a forced-choice paradigm similar to the MMDT. For example, subjects were asked if a descriptor such as "feather" described a bird or a fish. Half of the words related to a bird and the other half, to a fish. Two demonstration words used to explain the task to subjects preceded the ten stimuli. Four copies of the twelve words were printed in lowercase letters on 5 x 5 cm slides. Four randomly ordered sets of these slides were added to the end of the MMDT slide trays.

In sum, each of the four slide trays developed for the MMDT consisted of two me-mom demonstration slides, four primacy buffers, 30 me-mom slides, four recency buffers, two control task demonstration slides, and 10 control task slides. The four slide trays were rotated over a four-day cycle.

Apparatus. The equipment used in this task consisted of a Kodak Carousel projector, model number 850H, modified to present automatically a slide for two seconds, then change and stop; a Lafayette Reaction Timer, model number 63014, with two response keys; and a custom-made control box connected to the projector and reaction timer.

Procedure. Subjects were seated at a table facing a small screen onto which slides were projected one at a time. Two response keys were placed on the table. Subjects were requested to place the index finger of their dominant hand on a small wooden cube positioned between the two keys. Subjects were asked to decide if certain words presented on the

screen best described themselves or their mother. They were instructed to press the key on the right for "me" and on the left for "mom". The word "me" appeared in the lower right-hand corner of each slide and "mom" in the lower left-hand corner. Subjects were to return their index finger to the centrally-positioned cube between each trial. They were also told that their answer did not necessarily mean that the other did not have these qualities but that they were to indicate which person was usually more like the given adjective. (See Appendix C for French instructions.) Two demonstration slides were presented to ensure that subjects understood the task.

Following presentation of the 38 slides, the control measure for assessing decision-making time was presented. Subjects were told that this task was similar to the me-mom series but this time dealt with either birds or fish. The key on the right of the cube was to be used if the word described a fish and the key on the left if the word described a bird. The word "fish" appeared in the lower right-hand corner and "bird" in the lower left-hand corner of each slide. Subjects were reminded to return their finger to the centrally-positioned cube following each trial and to respond as soon as they had their answer. French instructions for this task appear in Appendix C.

Onset of a slide was initiated by the experimenter by pressing a switch on the control box. Each adjective appeared for a two-second interval and was followed by a blank interval. The appearance of a slide on the screen activated a photocell which initiated the onset of the reaction timer. Subject's responses stopped the timer and lit up one of two coloured diodes on the control box, visible only to the experimenter, which indicated key selection. Response latency was

recorded during the blank interval, reaction timer was reset, and onset of the next slide was initiated by the experimenter.

Scoring. The response latency score consisted of the median response latency across the 30 trials of the MMDT. Median scores were selected as the appropriate measure of central tendency because latency data may contain a few extreme scores (Winer, 1971). Median response latency on the control task was also determined.

Strength of Schemata for Self, Mother, and Peer

The measure developed to assess strength of schemata was a modified version of information processing tasks commonly used in the schema literature (Craik & Tulving, 1975; Rogers, Kuiper & Kirker, 1977). Measures of response latency for judging whether or not a list of personality descriptors fit the target referent (self, mother, or peer), and of unexpected recall and recognition of stimulus words were obtained. A fourth referent, the semantic referent, was included to provide a basis for comparison of this study's findings to the body of literature using this methodology in normal subjects. This task was referred to as the Schema Task.

Since subjects in the present study differed on parameters such as language and age from research samples used in previous schema studies (English university students), it was necessary to ensure that the lists of personality traits used in the information processing task and in the recognition task were suitable for the present sample. Preliminary studies described below generated a list of 40 adjectives commonly used as descriptors of people which were found to be appropriate for the sample, and a list of 40 unrelated, distractor adjectives to be used in the recognition task.

Materials: A. Adjective selection. Criteria for the selection of adjectives used in the Schema Task were the following:

1) The adjectives had to be common descriptors of self, mother, and best friend.

2) Adjectives had to be sufficiently familiar for subjects to understand their meaning.

Initial adjective selection was made by referring to the translated lists of descriptors obtained from the university undergraduates and rated by the French-speaking Cegep students. Any word which was unfamiliar to two or more Cegep students was eliminated. As well, words used in the MMDT were eliminated. The remaining words of the list were reviewed by three judges whose native tongue is French for familiarity of words for 14 to 19 year old adolescents. The availability of an equally familiar synonym for each word also had to be taken into consideration. Synonyms were needed for use as stimulus items for the semantic referent trials. A dictionary of synonyms was used to generate this list (Dupuis & Légaré, 1979). Only those words for which all three judges were in agreement were retained. Piloting of the first word list indicated that the meaning of five words was repeatedly questioned by two or more of the 29 pilot subjects of the high-risk sample. These words were therefore replaced.

B. Evaluative dimension of adjectives. Given that the goal of this task was to assess the strength of the schema (articulation and integration) in different target samples of adolescents, the evaluative dimension of the adjectives was relevant in this study only to the extent that the desired goal of accessing specific schemata was met. As noted above, undergraduates used many more positive adjectives than

negative in describing themselves, their mother, and their best friend. As well, the ratings carried out by Cegep students indicated a strong tendency to reject as "like neither me nor mom" those adjectives which they rated negatively. These data suggested that adolescents and college students tend to report that they view themselves, their mother, and their best friend more positively than negatively. For these reasons, only a few very frequently used negative adjectives were included in the word list, e.g., égoiste (selfish), gêné (shy), paresseux (lazy), impatient (impatient). The final 40-word list appears in Appendix B.

To avoid response bias due to particular adjective-referent combinations, each word was paired with each of the four referent questions (like self? like mom? like friend? means same as X?) by counterbalancing across four different presentation lists. For each list, therefore, 10 adjectives were paired with each question type. For the Semantic referent, half the words yielded a "yes" response, and half, a "no" response. Approximately mid-way in the projected data collection, the semantic referent word list was revised so that the words which had been matched with a "yes" response word would now be paired with words that would elicit a "no" response, and vice versa for the "no" response words. Four primacy and recency buffers, each paired with one of the four questions, were added at the beginning and end of the list of adjectives. (Total word list was 48). As well, four adjectives were added at the beginning of the task in order to demonstrate each cue question and ensure subject's understanding of the task. Order of presentation of questions was randomized within each set of four question types.

Each word was printed in lower case letters on four 5 x 5 cm slides. Four slide trays were prepared such that each adjective was paired with a different cue question in each slide tray. The slide trays were rotated over a four-day cycle.

Forty unrelated distractor adjectives were selected for the recognition task from the remaining list of adjectives provided by the university undergraduates which were familiar to Cegep students. To complete the list, the three Francophone judges were asked to generate words that they judged to be familiar to 14 to 19 year old adolescents. These 40 adjectives were mixed in random order with the 40 stimulus adjectives and typed, doublespaced, in lower case letters on a blank sheet of paper. Two random orders of the 80-word list were used in the study.

Apparatus. The apparatus for the Schema Task was the same as that used in the MMDT previously described. Onset of a stimulus word activated a photocell which initiated onset of the reaction timer. Each trait appeared for a two-second interval followed by a blank interval. Each response key lit up one of two coloured diodes visible only to the experimenter and stopped the reaction timer.

Procedure. Subjects were seated at a table facing a screen onto which slides were projected one at a time. Two response keys were placed on the table. Subjects were requested to rest the index finger of their dominant hand on a small wooden cube positioned between the response keys. Subjects were told that their task was to answer "yes" or "no" to one of four questions about a list of words by pressing the appropriate key to the right or left of the resting cube. The four questions were "Describes you?" "Describes your mom?" "Describes your

friend?" or "Means the same as X?". The questions were read by the experimenter who then initiated onset of a slide by pressing the switch on the control box. Before going through the four demonstration slides, subjects were requested to write the name of their best friend on a small piece of paper provided for this purpose. They were instructed to think of this friend when asked if a word "Describes your friend?" The tester then presented the four demonstration slides, one for each referent type, making certain that the subject understood that he or she was to press the key on the right if the answer was "yes" and on the left if the answer was "no", and then to return the index finger to the centrally-positioned cube between responses. "Yes" and "no" appeared on each slide in the lower right and left corners, respectively. This was pointed out to subjects so that they could use this as a reminder of response-key locations. The tester indicated that there were no right or wrong answers but rather that the answer was a matter of the subject's personal judgement. Subjects were also told to respond as soon as they had the answer. The experimenter recorded subject's response (yes or no) and latency during the blank interval. Experimenter then proceeded to read the next cue-question and to initiate onset of the next slide. The French instructions used in the task appear in Appendix C.

Following completion of the 48 trials, subjects were given an unexpected test of their ability to recall the adjectives that had been presented. They were given a blank sheet of paper and requested to write as many words as they could remember. Three minutes were allotted for recall. The 80-word recognition list was then presented. Subjects

were requested to underline the words they remembered seeing on the slides.

A measure of subjects' simple reaction time was obtained as an index of baseline responsivity. Subjects were informed that the next series of slides had an "X" only on them. They were instructed to respond by pressing the "yes" key as quickly as possible when they saw the "X" on the screen. They were reminded to return their finger to the centrally-positioned cube between trials. Twelve such trials were conducted. Baseline latency scores were compared across groups so that baseline latency could serve as a covariate in analyses of response latency data if significant group differences were found. (See Appendix C for French instructions.)

Scoring. Responses to the four primacy and four recency buffers were excluded from scoring. For each of the 40 trials, four measures were coded: a response latency score in milliseconds (ms), an endorsement rating (yes or no), a recall score (yes or no) and a recognition score (yes or no).

Six separate summary scores on the above-described latency, recall, and recognition data were then calculated across the 10 trials associated with each of the referent categories of self, mother, peer, and semantic. For response latency, median latency for yes-rated items and median latency for no-rated items each constituted a summary score. As in the MMDT, the median score was adopted as the appropriate measure of central tendency since it is less sensitive to extreme scores. Summary measures for the recall and recognition data consisted of the sum of words accurately remembered for yes-rated and for no-rated words separately. Possible values for recall and recognition summary scores

for each referent ranged from 0 to 10. For the recall task where responses were obtained in writing, mispelled words were considered accurate if they were phonetically identical to the stimulus word.

To correct for the finding reported by Craik & Tulving (1975) that yes-rated words produce better memory traces than no-rated words, Rogers et al. (1977) recommended the use of a proportion score as a more accurate measure of schema strength. For yes-rated items, the proportion recall score consisted of the number of yes-rated items recalled divided by the number of items rated "yes" by the subject during the task. Similarly, to obtain the proportion of no-rated items recalled, the number of no-rated items recalled was divided by the number of items rated "no" by the subject during the task. Proportion scores for yes-rated and no-rated words were also calculated for the recognition task. This procedure was adopted in the present study because it was important to control not only for endorsement rating but also for potential differences in endorsement ratings that might be a function of peer classification, referent, or peer classification x referent interaction.

In summary, ten scores were derived for each subject for each of the following: the self items; mother items; peer items; and for the semantic items. These ten scores were 1) median latency for yes-rated items; 2) median latency for no-rated items; 3) total recall for yes-rated items; 4) total recall for no-rated items; 5) total recognition for yes-rated items; 6) total recognition for no-rated items; 7) proportion recall for yes-rated items; 8) proportion recall for no-rated items; 9) proportion recognition for yes-rated items; and 10) proportion recognition for no-rated items. Median latencies and proportion scores on the recall and recognition tasks for yes-rated items were considered

the most accurate measures of schema strength. Data for total recall and recognition of yes- and no-rated items were used to compare this study's findings with those of other investigators.

The baseline latency score consisted of the median latency in ms over the 12 control trials described above.

Developmental Level of Schemata for Self, Mother, and Peer

This measure involved obtaining written descriptions of self, mother, and best friend. As a control for word fluency, subjects were requested to describe their school. This item seemed appropriate since all subjects were either currently or recently enrolled in school.

Materials. Materials for this task consisted of lined sheets of white, letter-size paper, and a pencil with an eraser.

Procedure. Subjects were seated at a small table. They were told that we were interested in knowing more about the people who were close to them and about their school. They were then instructed to write a description of themselves, their mother, their best friend, and their school. French instructions for this task are presented in Appendix C.

A separate, lined sheet of paper was provided for each description. Five minutes were allotted for each item. Order of presentation was randomized across the sample. To minimize any experimenter effects, the tester left the room for each five-minute period.

Scoring: A. Person perception. Six categories adopted from a taxonomy described by Fiske and Cox (1979) were used for scoring the descriptions of self, mother, and peer: appearance, behavior, trait, relational, context, and origin. The appearance category included any references to physical attributes of the person including age, sex, race, overall attractiveness. The behavior category included references

to what the person did, i.e., any activities such as hobbies, habits, occupation, gestures, speech, etc. Items that described internal qualities of the person such as interests, attitudes, causal explanations, personality characteristics, etc., were categorized as traits. The relational category included references to roles, social network, affective statements, or the writer's reaction to the described person (e.g., we are very close, she's a real friend, we get along very well, etc.). Included in the context category were any references to where the person could be found, i.e., home, school. The origin category referred to background information such as education, family, class, drastic events, history.

To ensure reliability of scoring in the present study, two judges were trained using data obtained from pilot subjects (N = 29) until percentage of interrater agreements/(agreements + disagreements) was above 80%. This level of reliability was achieved for the categories of appearance, behavior, trait, and relational. As in the study reported by Fiske and Cox (1979), the present subjects used the context and origins categories infrequently. As a consequence, judges did not have as much opportunity to develop accuracy and, because there were fewer responses, each disagreement represented a larger percentage of events in these categories. Therefore, a lower criterion of 70% agreement was accepted for these two categories on the practice data. Since these two categories were to be combined with two frequently used and reliable categories in the formation of the Low Complexity Score (described below), this reliability problem did not have a significant impact on the data.

When training was complete, one judge proceeded to score the written descriptions. Reliability data were obtained on 22 subjects or 27.5% of the sample. Both raters were blind as to the peer classification of subjects. Although no indication of subject's gender was available, gender could sometimes be inferred from the descriptions. Overall percentage agreement was 83.7%. The breakdown by categories was as follows: appearance, 94.3%; behaviour, 82.4%; trait, 91.2%; relational, 84.5%; context, 75%; origins, 75%. The latter two categories were again found to be very infrequently used.

For each subject, a score summing the number of items used in each description was computed. The total number of items used in the school description served as the measure of word fluency. The total number of items used in the self, mother, and peer descriptions were used as the measure of schema articulation.

The number of items assigned to each of the six descriptive categories was computed for each subject for the self, mother, and peer referents. Using these values, Low and High Complexity scores were then calculated. The Low Complexity score consisted of the proportion of total items summed across the four categories of appearance, behavior, context, and origin. This score reflected a less mature developmental level of the schema. The High Complexity score consisted of the proportion of total items summed across the trait and relational categories and was an indication of a more advanced level of schema development.

In summary, each subject obtained three scores for the self, mother and peer referents: number of items, Low Complexity, and High

Complexity. For school descriptions, only one score for the total number of descriptors was computed.

Scoring: B. Conceptual level of object representation. Written descriptions of mother and peer were classified following procedures developed by Blatt et al. (1981). Classification involved assigning a global rating to the descriptions using the 9-point scale detailed in the manual. A score of 1 was assigned to descriptions that fit the Sensorimotor-Preoperational level of object representation. Descriptions at this level were those in which there was little sense that the other existed as a separate entity. The focus was primarily on the other as an agent of frustration or gratification. A score of 3 was assigned to descriptions that met the criteria for the Concrete-Perceptual level of object representation. Criteria for this level were that the person was described as a separate entity using primarily concrete, global, literal terms, e.g, physical attributes. A score of 5 was assigned for descriptions that fit the External Iconic level of representation where the person was seen as a separate entity and described primarily in terms of functional activities and attributes. A score of 7 reflected descriptions which met the criteria for the Internal Iconic level of object representation. At this level, the person was described in terms of his/her thoughts, feelings and values. The highest score of 9 was assigned to descriptions that met the criteria for the Conceptual Representation category. At this level, descriptions reflected the writer's capacity for perceiving the other on a variety of levels from the literal to the complex. These descriptions reflected an attempt to explain subtleties and apparent contradictions in the other. Integration and synthesis of the other's values and

activities was present. Intermediate scores of 2, 4, 6, and 8 were assigned to descriptions which showed a transition from one level to the next by including items which met criteria for two successive levels.

For the present study, two judges were trained until a minimum Pearson Product-Moment correlation of .80 was attained. Judges used the Blatt et al. (1981) manual as a training guide and initially practised with examples in the manual. Judges then proceeded to practise using descriptions of mother and peer obtained from the 29 pilot subjects. When training was complete, one judge rated the mother and peer descriptions obtained from the subjects in the study. Judges were blind to the peer classification of subjects. Interrater reliability on the final data was examined by having the second judge score mother and peer descriptions for 23 cases or 28.75% of the sample. Interrater reliability using the Pearson Product-Moment correlation coefficient for the mother referent was $r(23) = .87$. For peer, the correlation coefficient was $r(23) = .93$.

Control Measures

Intelligence. Six subscales of the Wechsler Intelligence Scale for Children - Revised (WISC-R) or the Wechsler Adult Intelligence Scale - Revised (WAIS-R) were administered. The selected subscales were: Information, Similarities, Vocabulary, Comprehension, Picture Arrangement, and Block Design.

Socioeconomic Status. The Household Prestige score (HPres) developed by Nock and Rossi (1979) was used as the measure of socioeconomic status. Unlike other SES scales, the HPres score does not rely solely on characteristics of the male parent of the household. This measure recognizes the changing structure of the North American

family and has included the occupation, education, age and marital status of the parent or parents in the home as well as the number of minor children in the home. Following scoring of occupations using the Siegal Prestige Scale (Siegal, 1971), the HPres score is derived using different weights as a function of marital status of the parents. The weights are empirically derived from multiple regression of respondents' rankings of hypothetical families. For example, in a two-parent household, both parents' education level, occupational prestige and age together with the number of minor children in the home would be weighted and summed using the regression weights obtained from intact families. In a one-parent household, only the one parent's education, occupation and age together with the number of minor children in the home would enter the equation. The weights used would depend on the marital status of the parent, i.e., never married or separated/divorced. The novel feature of the HPres score is its superiority in evaluating families of highly differing composition using empirically derived weights. Further discussion of the advantages of the HPres score is presented by Mueller and Pascal (1981) in their review of SES measures.

Information as to parental occupation, education, age, marital status, and number of children was obtained from subjects' parents during home visits.

Sequence of Procedures

The tests described in this study comprised part of an extensive battery of psychological tests administered to volunteer subjects during a one-day visit to the University laboratory. Letters describing the High-Risk Project and consent forms were sent to parents of the subjects and were followed up with a phone call to consenting families to arrange

the date of testing. Younger subjects were paid $15.00 and older subjects received $20.00 for their participation. Transportation and lunch were provided.

Subjects, all of whom were French-speaking, were tested individually in French on all measures. There were five French-speaking testers (three Ph.D. graduate students in psychology and two research assistants). Testers were blind to subjects' peer classifications.

Order of presentation of measures in this study was fixed. To avoid possible effects of prior exposure to trait lists on the spontaneous, personal descriptions of self and others, written descriptions were always obtained prior to presentation of the MMDT and the Schema Task. The Schema Task always preceded the MMDT. Other tests were administered between these two tasks. This ordering of the Schema Task and MMDT was observed to minimize interference and transfer effects on the recall measures of the Schema Task.

Results

The results are reported in five sections. The first section deals with the influence of demographic and other control variables. The second section examines self-other differentiation assessed by the Me-Mom Differentiation Task (MMDT). The third section reports the results which relate to schema strength for self, mother, and peer. The fourth and fifth sections examine the developmental level of schemata obtained from analysis of written descriptions of self, mother, and peer. The analysis for cognitive complexity of descriptions is covered in the fourth section. The fifth section is concerned with the conceptual level of object representation in the written descriptions of mother and peer.

Unless otherwise specified, data are reported by group and by sex for 80 subjects.

Statistical Treatment of the Data

A 4 x 2 analysis of covariance was the basic procedure used in the statistical treatment of the data. The independent variables were the between group factors of peer classification (PClass: aggressive, withdrawn, aggressive-withdrawn, and control) and Sex (female, male). Because tasks in this study involved reading, writing, and the processing of verbal material, the possibility that individual differences in language ability might obscure relationships of interest between the independent and dependent variables was controlled for by entering the Vocabulary subtest scaled score of the WISC-R or WAIS-R as a covariate in the analyses. Vocabulary was retained only in those

analyses where it accounted for a significant proportion of the variance.

The four Referent categories of self, mother, peer, and semantic or school constituted a within-subject factor. Similarly, Rating Type, yes and no, was a within-subject factor. Analyses involving these factors used a mixed between-within-subjects design. The statistic employed was a repeated measures analysis of covariance, the repeated factor being Referent or Rating, adjusted for Vocabulary where significant.

The Tukey HSD test was used in all post hoc comparisons dealing with significant main effects (Winer, 1971). The F test for simple main effects was employed for analysis of significant interactions. Where simple main effects were significant, the Tukey HSD test was used for further comparisons of group means with an alpha level of .05 as the criterion of significance. All tests of significance were two-tailed.

Arcsin transformations of proportion scores were computed to ensure conformity to the homogeneity of variance assumptions underlying analysis of variance. Results of evaluations of the assumptions of linearity, homogeneity of variance, and homogeneity of regression of the data were satisfactory (Cohen & Cohen, 1975; Tabachnick & Fidell, 1983; Winer 1971).

Demographic and Control Variables

Intelligence

Group means of scaled scores for the six WISC-R or WAIS-R subtests are presented in Table 2. A total score equal to the sum of the following five subtest scaled scores was computed: Information, Similarities, Comprehension, Picture Arrangement, and Block Design.

Table 2

Mean WISC-R/WAIS-R Subtest Scaled Scores (and Standard Deviations) by Peer Classification and Sex

	Aggressive		Withdrawn		Aggressive-Withdrawn		Control	
	Male	Female	Male	Female	Male	Female	Male	Female
Information	7.6 (1.4)	7.2 (2.1)	8.8 (1.7)	7.6 (2.5)	7.7 (2.4)	6.7 (1.6)	8.3 (2.7)	8.5 (1.4)
Similarities	10.5 (3.3)	11.1 (4.1)	11.1 (2.8)	10.5 (3.7)	10.3 (3.4)	8.5 (3.7)	11.2 (3.2)	12.0 (2.4)
Vocabulary	8.6 (1.0)	8.7 (2.5)	9.7 (3.1)	10.2 (2.6)	8.3 (3.5)	7.2 (3.7)	10.3 (3.1)	10.5 (1.8)
Comprehension	9.9 (1.9)	9.8 (2.3)	10.5 (3.0)	10.6 (3.3)	9.9 (2.6)	8.8 (2.7)	10.8 (3.9)	10.1 (3.1)
Picture Arrangement	10.3 (3.0)	8.7 (2.8)	11.1 (4.7)	9.7 (3.7)	10.1 (2.3)	10.4 (1.9)	10.4 (2.1)	10.9 (2.9)
Block Design	10.2 (2.0)	10.3 (3.1)	12.4 (4.1)	9.8 (3.8)	12.1 (3.3)	10.0 (0.9)	10.9 (3.6)	10.9 (1.7)
Total[a]	48.5 (7.3)	47.1 (9.9)	53.9 (11.5)	48.2 (13.0)	50.1 (10.6)	44.4 (8.3)	51.6 (10.5)	52.4 (7.6)

[a] Excluding Vocabulary score.

Vocabulary was excluded because, as described above, this score was entered as a covariate in the analyses. A PClass (4) x Sex (2) analysis of variance was carried out on the total score. Neither main effect nor interaction was found to be statistically significant. The source table for this analysis is presented in Appendix D.

Socioeconomic Status

Household Prestige scores (HPres) were computed for 64 of the 80 subjects or 80% of the sample. Parents of 13 subjects refused to be interviewed. Insufficient data precluded computation of HPres scores for the remaining three subjects. Mean HPres scores and standard deviations are presented in Table 3.

A PClass (4) x Sex (2) analysis of variance on the HPres score indicated no significant main effect nor interaction. Appendix E presents the source table for this analysis.

Self-Other Differentiation

Control Task

Before analyzing MMDT latency data, it was necessary to determine whether decision time itself varied significantly as a function of peer classification and sex. For this purpose, response latency on the simple, unambiguous forced-choice control task was examined. A PClass (4) x Sex (2) analysis of covariance was conducted on the latency scores. The covariate (Vocabulary) was significant, $F(1,71) = 8.8$, $p<.01$. However, no significant PClass, Sex, or PClass x Sex interaction effect was found. Further analyses therefore proceeded under the assumption that latency of decision-making per se was not significantly different across subject groups.

Table 3

Mean Household Prestige Scores (and Standard Deviations)

by Peer Classification and Sex

	Aggressive	Withdrawn	Aggressive-Withdrawn	Control
Males	48.68 (8.1)	46.71 (7.1)	46.73 (5.7)	47.75 (9.5)
	(n = 9)	(n = 10)	(n = 7)	(n = 7)
Females	49.46 (10.1)	44.21 (10.1)	43.12 (7.3)	47.79 (8.9)
	(n = 6)	(n = 8)	(n = 7)	(n = 10)

Decision Time Data

Group means and standard deviations for median decision times on 30 trials of the MMDT are presented in Table 4. To test the hypothesis that subjects in the aggressive-withdrawn group would show less self-other differentiation and thus, longer decision times, than subjects in the other three groups, a PClass (4) x Sex (2) analysis of covariance was performed on median decision time scores. Apart from the significant covariate (Vocabulary), $F(1,71) = 5.4$, $p<.05$, no significant interaction nor main effect of either PClass or Sex was found. (See Appendix F for this source table.) This analysis failed to support the hypothesis of group differences in self-other differentiation as assessed by this task.

Schema Strength for Self, Mother, and Peer

In order to test the hypothesis of poorer schema development as a function of peer classification and referent type, the analyses for both response latency and recall data consisted of PClass (4) x Sex (2) x Referent (4) analyses of covariance with Referent as a repeated measure and Vocabulary as the covariate. The Referents were self, mother, peer, and semantic. Analyses were performed separately for yes-rated and no-rated items.

Control Task

Before proceeding with the analysis of response latency data, it was necessary to determine whether response latency per se varied as a function of peer classification and sex. A two-way analysis of covariance was performed on the median value obtained from the 12 trials of baseline reaction time data. There was no significant PClass, Sex

Table 4

Mean Median Latencies[a] (in ms) (and Standard Deviations)

on Me-Mom Differentiation Task

by Peer Classification

Aggressive	Withdrawn	Aggressive-Withdrawn	Control
1958 (.543)	2003 (.586)	1962 (.705)	2022 (.707)

[a] Adjusted for Vocabulary score.

or interaction effect. The effect of the covariate was also not significant. The remainder of the analyses were therefore completed with the assumption that the groups were not reliably different in baseline response latency.

Latency for Yes- and No-Rated Items

The covariate (Vocabulary) was found to have a significant effect on latency scores for both the yes-rated and no-rated items, $F(1,71) = 9.52$, $p<.01$, and $F(1,67) = 9.58$, $p<.01$, respectively.

For yes-rated items, significant interactions were found for PClass x Referent, $F(8,191.9) = 2.39$, $p<.05$, and Sex x Referent, $F(2.67,191.9) = 3.67$, $p<.05$. Group means and standard deviations for these data as a function of Referent type appear in Table 5. For no-rated items, no significant main effects nor interactions were found. These data are presented in Table 6. Source tables for these analyses appear in Appendices G and H.

Post hoc analysis of the PClass x Referent interaction for yes-rated items indicated a simple main effect of Referent in the aggressive group, $F(3,192) = 4.26$, $p<.01$. For the aggressive group, response latency was significantly longer for yes-rated mother items than for self items ($p<.05$) and peer items ($p<.01$).

Post hoc analyses of the significant Sex x Referent interaction indicated a significant simple main effect for Sex on the yes-rated semantic referent, $F(1,262) = 4.05$, $p<.05$. Female subjects had significantly longer latencies on this referent than males ($p < .05$). A significant simple main effect of Referent was found for male subjects, $F(3,192) = 3.65$, $p<.05$. Latencies for the yes-rated peer items were

Table 5

Mean Median Latencies[a] (in ms) (and Standard Deviations)

for Yes-rated Items on the Schema Task

by Peer Classification, Referent, and Sex

	Aggressive	Withdrawn	Aggressive-Withdrawn	Control	Referent Mean
Self					
Male	1635 (540)	2031 (816)	1858 (769)	1727 (561)	1813
Female	1993 (920)	1863 (593)	1753 (677)	2102 (805)	1928
Mean	1814	1947	1806	1915	
Mother					
Male	1922 (780)	1842 (586)	1778 (436)	1813 (710)	1839
Female	2379(1382)	1770 (546)	1899 (648)	2350 (991)	2100
Mean	2151	1806	1839	2082	
Peer					
Male	1604 (469)	1966 (566)	1915 (541)	2445(1241)	1983
Female	1878 (640)	1876 (581)	1861 (872)	2092 (769)	1927
Mean	1741	1921	1888	2219	
Semantic					
Male	1775 (573)	1752 (345)	1667 (490)	1565 (487)	1690
Female	2209 (988)	1786 (666)	1797 (660)	2286 (779)	2020
Mean	1992	1769	1732	1926	

[a] Adjusted for Vocabulary score.

Table 6

Mean Median Latencies[a] (in ms) (and Standard Deviations)

for No-Rated Items on the Schema Task

by Peer Classification and Referent

	Aggressive	Withdrawn	Aggressive-Withdrawn	Control
Self	1923 (618)	2025 (840)	1949 (655)	2041 (701)
Mother	1821 (503)	2042 (995)	2106 (531)	2113 (690)
Peer	1962 (623)	2184 (783)	2221 (882)	1936 (757)
Semantic	1984 (515)	2186 (954)	2013 (581)	2065 (635)

[a] Adjusted for Vocabulary score.

significantly longer than latencies for the semantic items ($p<.05$). No other group differences were found.

Summary. The effects of peer classification and sex on response latencies were not significant for either yes-rated or no-rated words. However, a significant PClass x Referent interaction indicated that for aggressive subjects, latencies were longer for yes-rated mother items than for yes-rated self and peer items. A Sex x Referent interaction indicated that female subjects had longer latencies than male subjects on the yes-rated semantic items. Male subjects had longer latencies for yes-rated peer items than for the semantic items. No interactions were found for the no-rated items.

Validity of Recall for Yes- and No-rated Items

To test for consistency with schema theory and previous research findings, data on total recall and total recognition of yes-rated and no-rated words were analyzed. Each statistical treatment consisted of a PClass (4) x Sex (2) x Referent (4) x Rating (2) analysis of covariance with repeated measures for the Referent and Rating factors. A significant effect of the covariate (Vocabulary) was found in both analyses, $F(1,71) = 5.45$, $p<.05$, and $F(1,71) = 7.11$, $p<.01$, respectively. Source tables for these analyses are presented in Appendices I and J, respectively.

Recall. Table 7 shows the frequency distribution of recall for yes- and no-rated items. As can be seen, there was little recall on this task. Many subjects obtained zero recall scores on more than one referent category.

Table 7

Frequency Distribution of Recall

for Yes- and No-Rated Items on the Schema Task

by Referent

Number of items recalled	Self		Mother		Friend		Semantic	
	Yes	No	Yes	No	Yes	No	Yes	No
0	27	43	25	38	23	38	39	46
1	25	31	34	31	34	32	32	26
2	15	4	18	9	16	9	8	7
3	10	2	3	2	3	1	-	1
4	3	-	-	-	4	-	1	-
	80	80	80	80	80	80	80	80

There were significant main effects for Referent, $F(2.86,206) = 6.08$, $p<.001$, and for Rating, $F(1,72) = 36.05$, $p<.001$. The Referent x Rating interaction was also significant, $F(2.91,209.8) = 2.82$, $p<.05$. Means and standard deviations for this analysis appear in Table 8. Post hoc analyses indicated that mean recall for yes-rated self, mother, and peer items was significantly greater than recall for yes-rated semantic items ($p<.01$, $p<.05$, and $p<.01$, respectively) and no-rated self, mother, and peer items ($p<.01$, $p<.05$, and $p<.01$, respectively). No significant difference was found for incidental recall of semantic items as a function of yes or no ratings. These results are consistent with previous findings suggesting that a stronger memory trace is created for items that fit a meaningful, well-developed schema (Bower & Gilligan, 1979; Kuiper & Rogers, 1979; Lord, 1980).

Recognition. Analysis of the recognition data also revealed significant effects for Referent, $F(2.86,205.7) = 22.55$, $p<.001$, Rating, $F(1,72) = 83.94$, $p<.001$, and Referent x Rating interaction, $F(2.67,192.2) = 14.92$, $p<.01$. There were no main effects or interactions involving peer classification or sex. Table 9 presents means and standard deviations for this analysis. Recognition was much greater than recall.

As was the case for recall, post hoc analyses indicated that mean recognition was significantly greater for yes-rated words as compared to no-rated words for the self ($p<.001$), mother ($p<.01$), and peer ($p<.001$) referents but not for the semantic referent. As well, recognition of yes-rated items differed significantly with respect to each referent

Table 8

Mean[a] Recall (and Standard Deviations)

of Yes- and No-Rated Items on the Schema Task

by Referent and Rating

	Referent			
	Self	Mother	Peer	Semantic
Rating				
Yes	1.21 (1.16)	.99 (.83)	1.14 (1.04)	.65 (.76)
No	.56 (.71)	.70 (.77)	.66 (.73)	.54 (.71)

[a] Adjusted for Vocabulary score.

Table 9

Mean[a] Recognition (and Standard Deviations) of Yes- and No-Rated Items on the Schema Task by Referent and Rating

	Referent			
Rating	Self	Mother	Peer	Semantic
Yes	4.82 (1.87)	3.38 (1.59)	4.11 (1.77)	2.73 (1.48)
No	2.25 (1.48)	2.48 (1.62)	2.28 (1.53)	2.63 (1.44)

[a] Adjusted for Vocabulary score.

category ($p<.01$ and $<.001$). Recognition was greatest for self, followed by peer, mother, and semantic in decreasing order of magnitude. No referent effect was found for no-rated words. Again, these results are consistent with schema and person perception theory and previous research findings (Bower & Gilligan, 1979; Kuiper & Rogers, 1979; Lord, 1980).

Proportion Data for Recall and Recogniton

Proportion Recall. To test the hypothesis that schema development for self and significant others was weaker in the aggressive-withdrawn group and for peer in particular in the withdrawn group, a PClass (4) x Sex (2) x Referent (4) repeated measures analysis of covariance was conducted on the proportion recall scores. This analysis was performed separately for yes-rated and no-rated items.

Results of the analysis for proportion recall of yes-rated words failed to support the predictions. No main effect or interaction was found. Only the covariate (Vocabulary) was statistically significant, $F(1,71) = 8.13$, $p<.05$. Means and standard deviations for this measure are presented in Table 10. (See Appendix K for this source table.)

Cell sizes were unequal for the proportion recall of no-rated items because proportion scores could not be computed for four subjects. For these subjects, the denominator of the ratio, i.e., the number of words rated "no" during the task, was zero on one of the referents. Cell sizes were as follows: Males: aggressive, 10; withdrawn, 9; aggressive-withdrawn, 9; control, 10; Females: aggressive, 10; withdrawn, 10; aggressive-withdrawn, 8; control, 10.

Table 10

Mean[a] Proportion Recall (and Standard Deviations) of Yes-Rated Items on the Schema Task by Peer Classification and Referent

	Aggressive	Withdrawn	Aggressive-Withdrawn	Control
Self	.18 (.19)	.18 (.18)	.15 (.16)	.22 (.17)
Mother	.17 (.16)	.16 (.14)	.18 (.16)	.22 (.20)
Peer	.18 (.16)	.19 (.12)	.15 (.13)	.17 (.17)
Semantic	.22 (.21)	.12 (.14)	.14 (.19)	.08 (.14)

[a] Adjusted for Vocabulary score.

Because the covariate (Vocabulary) was not found to account for a significant proportion of the variance, the data were reanalyzed without the covariate in order to report on subjects' actual scores. Analysis of variance revealed a significant main effect for Referent, $F(2.8,190.1) = 2.91$, $p<.05$. (See Appendix L for this source table.) Post hoc analysis indicated that a significantly greater proportion of no-rated peer items (.19) than semantic items (.10) ($p<.05$) were recalled. Table 11 presents the relevant means and standard deviations.

Proportion Recognition. A significant effect of the covariate (Vocabulary) was found, $F(1,71) = 7.84$, $p>.01$.

As predicted, a significant PClass x Referent interaction was found for the recognition of yes-rated words, $F(8.3,198.3) = 2.25$, $p<.05$. Means and standard deviations for these data are presented in Table 12 and graphically in Figure 1. The main effect of Referent was also significant, $F(2.75,198.3) = 9.26$, $p<.001$. Analysis of covariance source table appears in Appendix M.

Post hoc tests for simple main effects yielded a significant PClass effect only on the semantic referent, $F(3,287) = 5.09$, $p<.01$. Comparison of group means indicated that proportion of semantic referents that were recognized was significantly lower for the control group than for each of the three other groups ($p<.01$).

Analysis of the simple main effects of Referent indicated a significant effect on proportion recognition data in the withdrawn group, $F(3,216) = 5.2$, $p<.01$, and in the control group, $F(3,216) = 11.43$, $p<.001$. Comparison of means for referent type in the withdrawn group (see Table 12) revealed that the proportion of items

Table 11

Mean Proportion Recall (and Standard Deviations)

of No-Rated Items on the Schema Task

by Peer Classification and Referent

	Aggressive	Withdrawn	Aggressive-Withdrawn	Control
Self	.22 (.26)	.14 (.19)[a]	.15 (.21)[a]	.24 (.29)
Mother	.22 (.19)	.16 (.18)	.20 (.26)	.13 (.17)
Peer	.18 (.17)	.16 (.18)	.17 (.21)[b]	.26 (.32)
Semantic	.05 (.12)	.09 (.11)	.12 (.13)	.15 (.18)

[a] Cell size is 19.

[b] Cell size is 18.

Table 12

Mean[a] Proportion Recognition (and Standard Deviations) of Yes-Rated Items on the Schema Task by Peer Classification and Referent

	Aggressive	Withdrawn	Aggressive-Withdrawn	Control
Self	.77 (.21)	.75 (.24)	.69 (.24)	.73 (.23)
Mother	.65 (.25)	.52 (.30)	.65 (.20)	.59 (.22)
Peer	.70 (.25)	.62 (.22)	.65 (.24)	.63 (.23)
Semantic	.63 (.25)	.65 (.28)	.65 (.30)	.40 (.31)

[a] Adjusted for Vocabulary score.

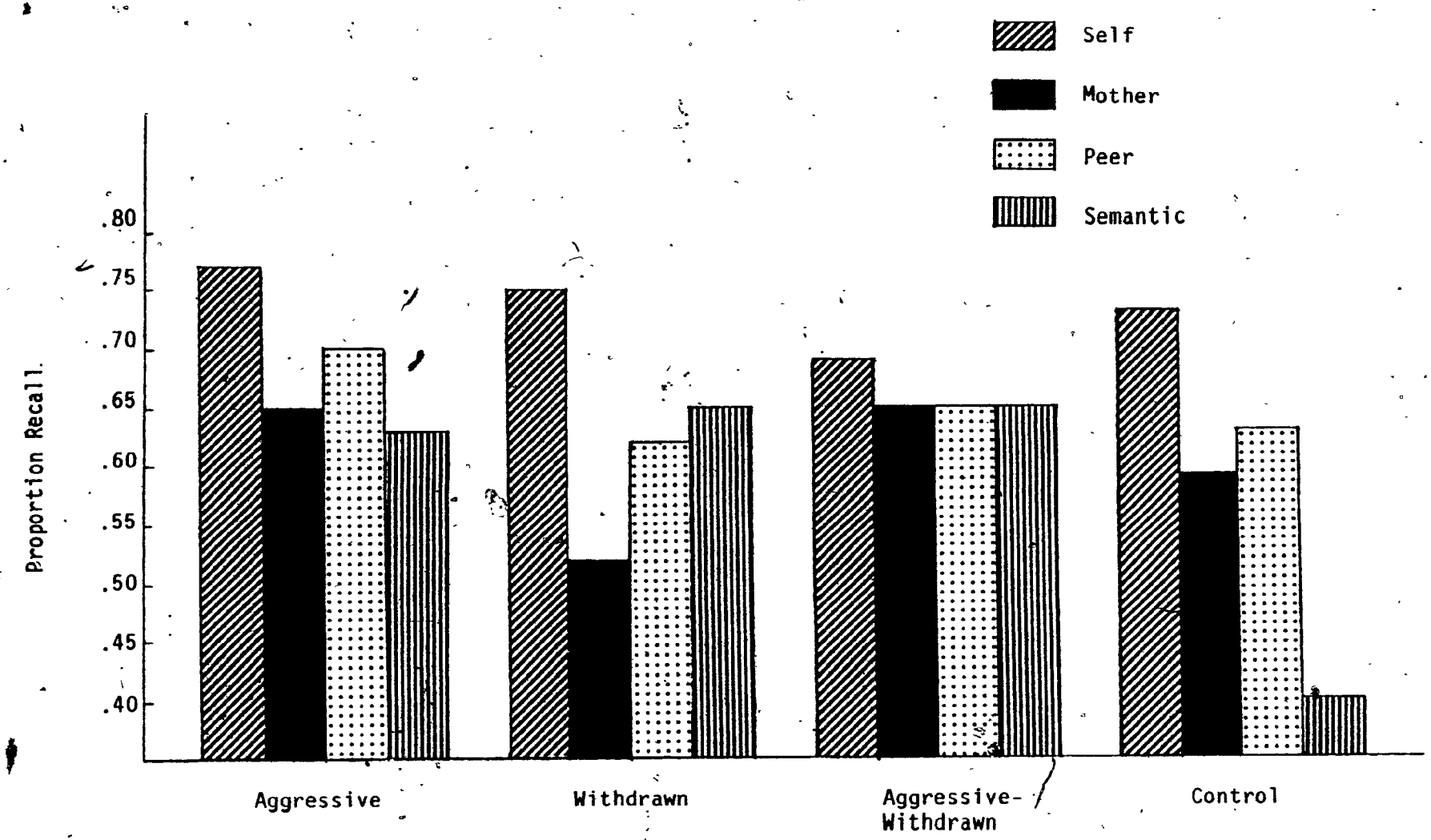

Figure 1 Adjusted Mean Proportion Recognition of Yes-rated Items for each Referent and Peer Classification

recognized for the self referent was significantly greater than for both mother ($p<.01$) and peer referents ($p<.05$) but did not differ from the proportion recognized for semantic referents. For the control group, the proportion of self, mother, and peer items recognized was significantly greater than recognition of semantic items ($p<.05$, $p<.05$, $p<.01$, respectively). Also, the proportion of self items recognized by the control group was significantly greater than the proportion of mother items recognized ($p<.05$) but not of peer items recognized. No significant differences were found between the proportion of peer items and of mother items recognized by the control subjects. Rank order of means for proportion of items recognized in the control and withdrawn groups for the three person schemata (self, peer, and mother) was consistent with previous reports of schema functioning and person perception in adolescents (Aboud & Miller, 1981; Bower & Gilligan, 1979; Kuiper & Rogers, 1979; Livesley & Bromley, 1973).

Although support for the hypothesis of group differences on the person schemata was not obtained, the distinct pattern of proportion recognition across referent types found within each group suggests differences in schema functioning that are consistent with developmental theories of schizophrenia. These results indicate that the greatest amount of differentiation in recognition among the four schemata was obtained by the control and withdrawn subjects. Recognition in the aggressive-withdrawn and aggressive groups suggested much less differentiation across the four referent types. As can be seen in Figure 1, similarity of proportion recognition scores across referent categories is particularly noticeable in the aggressive-withdrawn group.

Post hoc analysis of the main effect of Referent on proportion recognition scores across the sample reproduced in part the significant effects found on total recognition scores. Proportion recognition for self (.74) was significantly greater for the entire sample than for mother(.61), peer (.65), and semantic (.58). Proportion recognition for mother, peer, and semantic referents, however, did not differ from one another.

As in the analysis for the recall of no-rated words, data for the same four subjects who failed to have any no-rated items on one referent were also eliminated for the analysis of recognition of no-rated items. Analysis of the proportion of no-rated words recognized indicated a main effect for Referent ($F(2.6, 179.1) = 7.78$, $p<.05$). No significant PClass, Sex, or interaction effect was found. The source table for this analysis is presented in Appendix N. The relevant means and standard deviations appear in Table 13. Post hoc tests of significance for referent category means found that, for the sample as a whole, the proportion of self items recognized was significantly greater than that of mother and semantic items ($p<.01$) but not than that of peer items. Proportion of mother and peer items recognized was significantly greater than that of semantic items ($p<.01$).

It was considered possible that the differences described above in incidental recall and recognition scores might have been an artifact of differences across items in study time. To assess this possibility, Pearson Product-Moment correlations were computed between amount of recall and latencies for each referent category for yes- and no-rated

Table 13

Mean Proportion Recognition (and Standard Deviations)
of No-Rated Items on the Schema Task
by Peer Classification and Referent

	Aggressive	Withdrawn	Aggressive-Withdrawn	Control
Self	.71 (.25)	.71 (.30)[a]	.66 (.27)[a]	.64 (.27)
Mother	.55 (.31)	.64 (.24)	.57 (.32)	.55 (.32)
Peer	54 (.41)	.67 (.29)	.66 (.29)[b]	.68 (.30)
Semantic	.50 (.27)	.48 (.25)	.49 (.30)	.55 (.26)

[a] Cell size is 19.

[b] Cell size is 18.

words separately (see Appendix O). Only one significant correlation was found and it was in a direction opposite to the rationale of this analysis. Amount of recognition recall for the yes-rated peer items was significantly negatively correlated with latency for these items, $r(80) = -.23$, $p < .05$.

Summary. Analysis of the incidental recall and recognition data revealed findings consistent with previous research on schema functioning (Bower & Gilligan, 1979; Craik & Tulving, 1975; Lord, 1980; Rogers et al., 1977). Yes-rated words were recalled more frequently by all subjects than no-rated words for the self, mother, and peer referents but not for the semantic referent. Moreover, yes-rated self, mother, and peer items were recalled more frequently than yes-rated semantic items. With respect to recognition memory, recognition of yes-rated items was greatest for self, followed in significantly decreasing magnitude by peer, mother, and semantic items. These analyses also revealed no differences in recall or recognition as a function of peer classification or sex.

No main effect or interaction of peer classification and sex was found on the proportion recall for yes-rated and no-rated items. The only significant finding in these data was that more no-rated peer items were recalled by all subjects than no-rated semantic items.

A significant PClass x Referent interaction was found for the proportion of yes-rated items recognized. Control subjects recognized a significantly smaller proportion of semantic items than each of the other three groups who did not differ from one another. A Referent effect was obtained for the withdrawn and control groups only. Both

groups recognized a greater proportion of yes-rated self items than mother items. Proportion of self items recognized by withdrawn subjects was also greater than that of peer items. Control subjects recognized a greater proportion of self, mother, and peer items than semantic items.

The hypothesized effect of grouping on recall and recognition of words related to person schemata was not supported. However, the PClass x Referent interaction found on the proportion recognition data indicated a pattern of schema development for the aggressive-withdrawn group that was consistent with the hypothesis of weaker development of person schemata on the part of these adolescents.

As had been found for the measure of total items recognized, the proportion of yes-rated self items recognized was significantly greater for all subjects than the proportion of mother, peer, and semantic items recognized.

A significant main effect of Referent was found on the proportion recognition of no-rated items. For the sample as a whole, the proportion of no-rated self, mother, and peer items recognized was greater than that of semantic items. The proportion of no-rated self items recognized was also greater than that of mother items.

Articulation of Schemata

To determine whether deficits in schema development were due to poor elaboration of schemata or to poor integration of ideas into a meaningful structure, the number of items used in written descriptions was compared across PClass, Sex, and Referent type (self, mother, and peer). Because the effect of the covariate (Vocabulary) was found not to be significant, an analysis of variance was carried out on this data.

Appendix P presents a source table summarizing the results of this analysis. Significant main effects were found for Sex, $F(1,69) = 5.08$, $p<.05$, and Referent, $F(1.78,122.7) = 3.88$, $p<.05$, but not for PClass. Means and standard deviations used in this analysis appear in Table 14. Comparison of means by Sex revealed that the mean number of items generated by female subjects (11.26) was significantly greater than that of males (9.3). With respect to Referent, post hoc analysis indicated that a significantly greater mean number of items was used in describing the self (10.9) as compared to mother (9.8) ($p<.05$). Both of these effects are consistent with previous reports in the person perception literature (Livesley & Bromley, 1973). The mean number of items used in peer descriptions (10.12) was between the mean number of items used in self descriptions and that used in mother descriptions. These means, however, did not differ significantly from one another. No group differences in the number of ideas or articulation of the schemata for self and others were found.

Developmental Level of Schemata for Self, Mother, and Peer

The data reported in this section were obtained from the five-minute written descriptions of self, mother, and peer. Data for written descriptions of peer were missing for three subjects; data for descriptions of school were missing for two subjects.

Results are reported on analyses of variance for those instances where an analysis of covariance failed to find a significant effect of the covariate (Vocabulary) on the dependent measures.

Table 14

Mean Number of Items (and Standard Deviations)
in Written Descriptions of Self, Mother, and Peer
by Peer Classification and Sex

	Aggressive	Withdrawn	Aggressive-Withdrawn	Control
Self				
Males	10.7 (4.4)	9.8 (5.7)	8.4 (4.1)	9.8 (4.6)
Females	11.0 (5.6)	12.8 (5.1)	10.1 (4.7)	14.7 (4.1)
Mother				
Males	9.7 (3.5)	9.8 (4.2)	8.4 (3.9)	8.8 (2.6)
Females	10.7 (4.1)	11.2 (3.3)	9.5 (5.2)	10.6 (3.0)
Peer				
Males	8.9 (4.5)	10.0 (6.5)	7.8 (3.7)	9.8 (3.7)
Females	10.9 (2.8)	10.8 (3.2)	10.9 (6.2)	12.6 (5.6)

Control Task

Since this task required written descriptions of referents, it was necessary to control for word fluency. The measure of fluency adopted in this study was the total number of items used by the subject in the school description. Mean scores for these data are presented in Table 15. A PClass (4) x Sex (2) analysis of variance yielded no significant main or interaction effect of these factors on word fluency (see Appendix Q for this source table).

Person Perception

It will be recalled that a High Complexity score and a Low Complexity score were derived from each of the written descriptions for self, mother, and peer. The High Complexity score consisted of the proportion of (trait + relational items)/total items used in the description. The Low Complexity score consisted of the proportion of (appearance + behavior + context + origin items)/total items. As noted previously, the context and origin categories were rarely used by subjects. The Low Complexity score, therefore, mainly reflected the use of appearance and behavior items. Since High and Low Complexity scores sum to the total, only the analysis of the High Complexity data is reported to avoid redundancy. Means and standard deviations for the High Complexity scores appear in Table 16. A PClass (4) x Sex (2) x Referent (3) analysis of variance of High Complexity scores was computed with Referent as a repeated factor. (See Appendix R for the source table.) Main effects for PClass and Sex were significant, $F(3,69) = 3.71$, $p<.05$, and $F(1,69) = 9.08$, $p<.01$, respectively. There

Table 15

Mean Number of Items (and Standard Deviations)
in Written Description of School
by Peer Classification and Sex

	Aggressive	Withdrawn	Aggressive-Withdrawn	Control
Females	7.6 (5.0)	9.9 (4.8)[a]	8.2 (4.9)	9.7 (5.6)
Males	8.6 (4.1)	8.6 (3.3)	9.4 (4.5)	7.3 (4.0)

[a] Cell size is 9.

Table 16

Mean High Complexity Scores (and Standard Deviations) in Written Descriptions of Self, Mother and Peer by Peer Classification and Sex

	Aggressive	Withdrawn	Aggressive-Withdrawn	Control
Self				
Male	.75 (.16)	.71 (.24)	.45 (.29)	.75 (.16)[a]
Female	.71 (.30)	.81 (.30)[a]	.80 (.16)	.76 (.15)[a]
Mother				
Male	.70 (.19)	.53 (.26)	.44 (.28)	.70 (.19)[a]
Female	.68 (.28)	.82 (.14)[a]	.49 (.34)	.86 (.14)[a]
Peer				
Male	.62 (.20)	.55 (.31)	.53 (.30)	.59 (.23)[a]
Female	.74 (.23)	.66 (.23)[a]	.63 (.28)	.78 (.17)[a]

[a] Cell size is 9.

were no significant interactions. Figure 2 illustrates the association of High Complexity scores and peer classification.

In line with predictions, post hoc analysis indicated that the aggressive-withdrawn group's mean score on High Complexity (.56) was significantly lower than that of the control group (.74) ($p<.05$) and marginally lower than the aggressive group's mean score (.70) ($p<.10$). The mean for the withdrawn group (.67) was not significantly different from that of the aggressive-withdrawn group. The aggressive, withdrawn and control groups did not differ from one another on this measure.

Females attained a higher mean High Complexity score (.72) than males (.61) ($p<.05$). This finding is consistent with previous reports in the person perception literature (Brierley, 1966; Livesley & Bromley, 1967; Sarbin, 1954).

Conceptual Level of Object Representation for Mother and Peer

A PClass (4) x Sex (2) x Referent (2) analysis of covariance was carried out with Referent type (mother and peer) as a repeated factor. The covariate (Vocabulary) contributed significantly to the variance, $F(1,68) = 3.82$, $p<.05$. The predictions were not supported by the results. No significant main effect nor interaction for PClass or Sex was found. Appendix S presents the source table for this analysis. Means and standard deviations appear in Table 17 and can be seen graphically in Figure 3. Although the means of the aggressive-withdrawn group were in the expected direction in that they were consistently lower than means in all other groups (see Figure 3), these differences were not reliable.

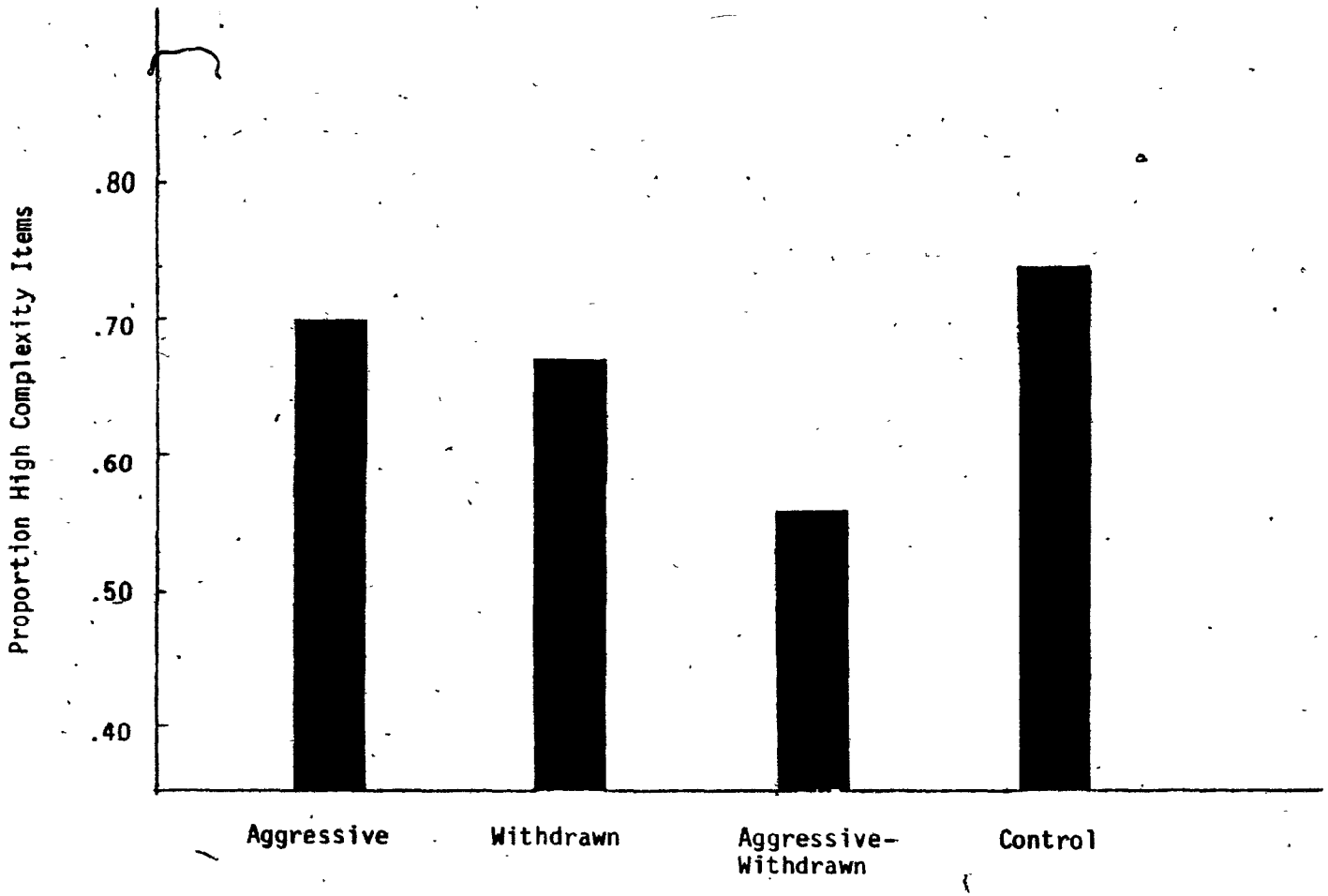

Figure 2 Mean High Complexity Scores for Written Descriptions by Peer Classification

Table 17

Mean[a] Conceptual Level Scores (and Standard Deviations) in Written Descriptions of Mother and Peer by Peer Classification

	Aggressive	Withdrawn	Aggressive-Withdrawn	Control
Mother	5.2 (3.4)	5.0 (3.0)[b]	3.4 (2.2)	4.6 (3.3)[c]
Peer	4.5 (2.9)	4.2 (2.6)[b]	3.3 (2.2)	4.0 (2.9)[c]

[a] Adjusted for Vocabulary score.

[b] Cell size is 18.

[c] Cell size is 19.

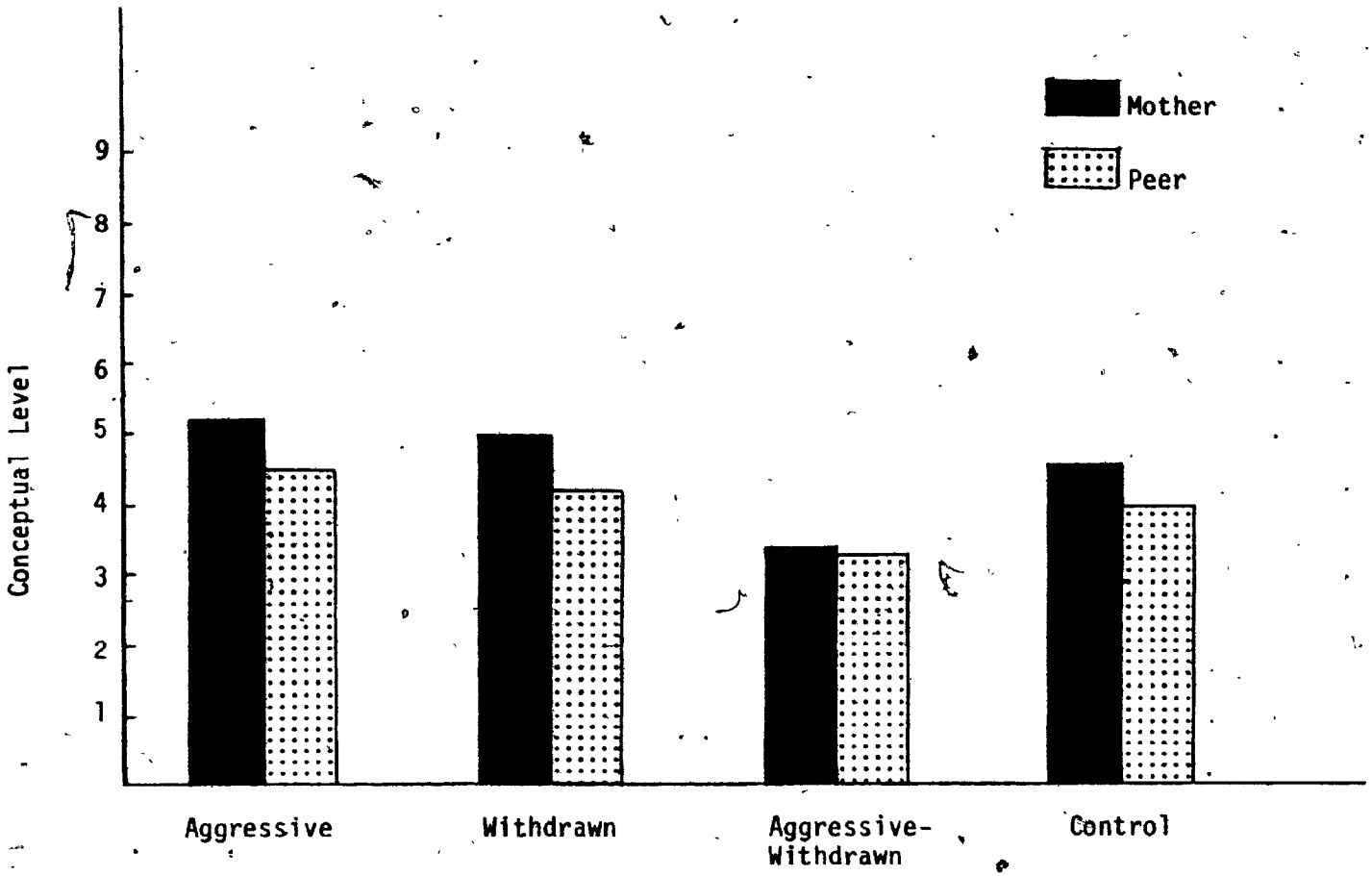

Figure 3 Adjusted Mean Conceptual Level Scores for Mother and Peer Referents by Peer Classification

Discussion

The purpose of the present study was to assess schema development for self and significant others in adolescents judged to be at risk for schizophrenia. It was found that the aggressive-withdrawn group displayed the lowest level of schema development for self and others. Although the hypothesized group differences in response latency and memory functioning on the person referents of the information processing task were not found, the peer classification by referent interaction obtained on the recognition measure supported the hypothesis that aggressive-withdrawn children, who were deemed to be at greatest risk for schizophrenia, would manifest deficits in schema development predicted by theories of schizophrenia. Recognition memory on the schema task by the aggressive-withdrawn adolescents was characterized by lack of differentiation among schemata for self, others, and non-person items. In addition, their complexity scores in written descriptions were significantly lower across all referents than complexity scores of control children. Since there were no differences in schema articulation (number of items in written descriptions) among the groups, the qualitative deficits reflected in the complexity scores cannot be attributed to a limited capacity to generate descriptors for the self and significant others. Rather, these findings suggest aschematic functioning for the self and others in the aggressive-withdrawn adolescents as a function of relatively impoverished cognitive complexity. Written descriptions obtained from aggressive-withdrawn adolescents were immature and concrete in that they contained primarily external characteristics of the self and others. These characteristics may not lend themselves to schema development. That is, a higher level

of conceptual thinking characterized by a broader range of person descriptors may be a necessary prerequisite before the structural process of differentiation of one schema from another, and of integration of descriptive units into a functional schema can take place.

The results suggest that representations of self and others in aggressive-withdrawn adolescents are not at a level that is functionally meaningful and adaptive for their age. Schemata consisting primarily of external features of others, for example, eye and hair colour, body size, are not useful in predicting behavior. This tendency may be a source of significant difficulty in social interactions. Although no cause-effect relationships can be assumed on the basis of this study, one may speculate that these cognitive difficulties limit the aggressive-withdrawn child's ability to predict and understand the behavior of others, and result in the erratic and unusual combinations of aggressive and withdrawn behaviours which they manifest. As a further consequence, a heightened sense of vulnerability and anxiety would be expected, leading to still further misinterpretation of situations and to unpredictable, inconsistent behavior patterns. As Block (1982) has suggested, anxiety may impair the organism's ability to engage effectively in the processes of assimilation and accommodation which underlie schema development.

The fact that the self-schema did not stand out as distinct from schemata for others in the aggressive-withdrawn group together with the qualitatively immature nature of their descriptions is also consistent with a number of developmental theories of schizophrenia (Blatt & Wild, 1976; Burnham et al., 1969; Edwards et al., 1980; Jacobson, 1964;

Mahler, 1968; Modell, 1968). The present findings provide support to those theories which emphasize deficits in the development of mental representations of the self and others. These results also lend themselves to interpretation in the context of Magaro's integration theory, particularly with regard to cognitive development in the non-paranoid schizophrenic, since this category is usually associated with poorer premorbid functioning and a longer history of deviant symptomatology. Magaro (1980) attributes a conceptual deficit in the schizophrenic's (non-paranoid) schema development to an overemphasis on the processes of accommodation. It is possible that such overemphasis may also underlie the developmental deficit in person perception found in the aggressive-withdrawn group. Accordingly, it seems reasonable to expect that if a child is constantly forming new schemata for self and others, she/he would focus on the simplest, most obvious characteristics of the self and other. These would tend to be the superficial, external features of the person such as appearance and belongings.

Normative control subjects in the present study recognized information related to the self, known peer, and mother constructs in a manner that was consistent with previous reports. Studies of person perception in childhood have found that descriptions of self and known peers are more complex than descriptions of adults and unknown peers (Fiske & Cox, 1979; Livesley & Bromley, 1967; 1973). Similarly, the self and familiar others have been found to function as well-developed schemata in the processing of information related to these constructs (Aboud & Miller, 1981; Bower & Gilligan, 1979; Kuiper & Rogers, 1979). Recognition memory for self and peer items by the control adolescents

indicated that both self and peer dimensions functioned as well-developed schemata. As expected for an adult schema, recognition of mother items indicated a slightly less-developed schema than for the self. As well, in line with results reported by Kuiper and Rogers (1979), recognition of items related to each of the person constructs was better than recognition for the semantic-referenced items.

The pattern of referent effects on recognition memory obtained by the withdrawn adolescents was very similar to that of control subjects for self and mother constructs. Their recognition of peer-referenced items, however, was poorer than their recognition of self-referenced items. This self-peer distinction was not found for the control group. Less familiarity with peers on the part of withdrawn adolescents than might normally be expected would account, at least in part, for this finding. Observations of playground behavior of peer-identified withdrawn children have validated their sociometric status in that they were found to spend less time in social interactions and were more often alone than the other two target groups and the control subjects (Serbin, Lyons, Marchessault, & Morin, 1983). Moreover, Piagetian developmental theory, which places emphasis on peer contact in schema development, would predict the relatively retarded peer schema development of these socially withdrawn youngsters. Since the withdrawn group did not differ from the control group in self-other differentiation, articulation, or complexity level of the written descriptions, it appears plausible that integration of peer-related information by withdrawn children had not attained a level comparable to that of the control adolescents. Diminished peer contact might account for this.

In contrast to the findings obtained for the control and withdrawn groups, lack of differentiation among person and non-person schemata similar to that obtained by the aggressive-withdrawn adolescents characterized the results of the aggressive adolescents. That is, these youngsters did not recognize more items for the self referent than for the peer, mother, or semantic referents. However, unlike the aggressive-withdrawn group, the complexity levels of their written descriptions were similar to those of control and withdrawn subjects. They also did not differ from controls on the measures of self-other differentiation and articulation. This pattern of results in combination with the high complexity level of their written descriptions suggests that schema development in this group has attained a more advanced level of development than that of aggressive-withdrawn adolescents. A deficit in the capacity for integrating schema-related information may underlie their apparent lack of differentiation among self, others, and non-person schemata. The reason for this pattern in aggressive adolescents is not readily apparent. Perhaps motivational or interest factors play a role in limiting the amount of attention given to thinking about the self and others. This possibility merits further study.

Although gender differences have been noted in studies of preschizophrenics' social interactions (John et al., 1982; Watt et al., 1979; Watt & Lubensky, 1976), sex differences were not observed for the cognitive processes assessed in the present study. Substantial differences in sample selection are a most likely cause for the discrepant findings. Watt and his colleagues reported retrospective data obtained from the examination of teacher records of the classroom behaviors of children who were now adult schizophrenics. John et al.

(1982) also used a questionnaire completed by the child's teacher but, in this case, target subjects were selected using genetic risk as the criterion. In the present study, target subjects were identified by their peers on specific deviant behavior patterns. The use of many peers who interact with each other in situations outside the classroom as well as in the classroom may result in a more comprehensive and accurate assessment of a specific child than would teachers' comments on the child's classroom behavior (Moskowitz & Schwarz, 1982). A distinctive feature of this identification process was that subjects were compared to their same-sex classmates. Thus, same-sex norms were "built in" to the peer nomination process. The comparison restricted to same-sex as opposed to all classmates avoids the pattern of evaluating behaviors that may be relevant only to one gender's classroom or school behavior. Children had to nominate girls who were more aggressive than their same-sex classmates and boys who were more withdrawn than their same-sex classmates. Some of these children may be overlooked when teachers nominate boys and girls using general rather than sex-appropriate norms. The distinctive features of the present study's sample selection are the probable source of discrepancies between this study's findings of no gender differences and those of other investigators.

A number of methodological issues arising from the data merit comment. The question of why the two measures assessing developmental level of schemata in written descriptions (the High Complexity score and the conceptual level score) did not elicit similar findings needs to be addressed. The conceptual level score (Blatt et al., 1981) was designed to assess the developmental levels of mental representations of others.

A global rating was assigned to descriptions of the target person by collapsing across several dimensions of interpersonal functioning and cognitive processes, for example, self-other separation, concrete versus abstract reasoning, etc. Collapsing across these themes, however, may reduce the sensitivity of the measure. It would be less effective, therefore, in screening individuals who are manifesting less severe, less dysfunctional levels of psychopathology, and when fewer dimensions of cognitive representation may be disturbed. In contrast, the procedure for using the person perception measure (Fiske & Cox, 1979) involved assigning scores for each descriptive idea or unit using one of a limited set of clearly-defined categories. In studies of this kind, therefore, the measurement of discrete functions may prove more useful than global evaluations in clarifying the dimensions on which individuals at risk may show delayed development.

A second methodological question arises from the findings for recall and recognition in the incidental memory task. Recall was observed to be very poor in all groups of the present study and these floor effects may have obscured true group differences. Poor recall may be attributable to the younger age of the subjects of this study as compared with the university students who served as the subjects of previous studies. Few investigators have studied schema functioning in younger individuals. In one such study, however, proportion recall was found to be significantly poorer in a group of fifth graders than in university students (Aboud & Miller, 1981). Since control subjects in the present study were not superior to target subjects on recall, it would appear that the recall task was too difficult for this age group and would not be suitable for use with adolescents. By contrast, the

recognition task proved to be a discriminating and meaningful measure. This finding is consistent with recent reports that recognition is a good measure of strength of the memory trace generated by each referent type during encoding (Ferguson, Rule, & Carlson, 1983).

The third methodological consideration concerns the use of latency scores which did not prove as effective in the present study as did the memory measure in differentiating groups on the schema task. This finding is consistent with the negative findings reported in the two only other studies which have examined group differences using latency measures. In both cases, no group differences in latency data were found (Derry & Kuiper, 1981; Markus, 1977). From previous studies, it is apparent that the interpretation of latency data is not clear cut. Both aschematic functioning (weak, undifferentiated schemata) and "fanning effects" (well-articulated but poorly integrated schemata) are expected to result in longer decision times than well-articulated and integrated schemata (Aboud & Miller, 1981; Sentis & Burnstein, 1979). In the present study, aschematic functioning of the aggressive-withdrawn adolescents and "fanning effects" in the other three groups may have resulted in latencies of similar duration. Since most studies have relied on recall alone as the measure of schema functioning (Aboud & Miller, 1981; Bower & Gilligan, 1979; Cantor & Mischel, 1977; Lord, 1980; Sentis & Burnstein, 1979), there appears to be some implicit consensus among investigators that latency measures add little to research in this domain. For similar reasons, lack of group differences in latencies on the self-other differentiation task may have been due either to an absence of differentiation between the self and mother or to very elaborate but unintegrated self and mother schemata. Both types

of deficiency would require longer analysis and comparison reflecting inefficient information processing.

The final methodological consideration concerns the effectiveness of peer nomination procedures carried out six years prior to the present study. Developmental changes during the six-year interval may have introduced some heterogeneity in the groups. Nevertheless, the findings of the present study are consistent with other reports of the Concordia Longitudinal High-risk Project in demonstrating the predictive power of the PEI (Ledingham, 1981; Ledingham & Schwartzman, 1984; Schwartzman et al., 1985). Several years after the initial screening was completed, the aggressive-withdrawn group was found to differ from the other three groups on a number of dimensions. They were less liked by their peers. They were found to be less mature in their motor development than the three other groups (Schwartzman et al., 1985). Three years after selection, the aggressive-withdrawn students were more likely to be behind a grade or placed in a special class than other children. Academic difficulties were found to become more pronounced with grade level (Ledingham & Schwartzman, 1984). The differences in schema development observed in the present study also indicate that peer nominations are tapping into certain enduring and stable factors. All of these findings provide interim support for the predictive validity of the PEI and for the hypothesis that the aggressive-withdrawn youngsters are at particular risk for later problems indicative of maladjustment and potential psychopathology.

This study is, as far as can be determined, the first to examine the development of person schema for measuring dimensions of the self and others within a developmental psychopathology perspective. The

approach seems promising particularly in view of the dearth of objective assessment tools for examining the processes and stages of development of the self schema. In addition, the schema task provided information about the relative strength of schemata that was not available from the analysis of written descriptions.

Future Directions

As mentioned above, peers rated the aggressive-withdrawn child as least likeable of the target categories. Likeability decreased systematically as age of the subjects increased (Ledingham, 1981). Yet in an observational study of playground activity, the aggressive-withdrawn child's play behavior could not be distinguished from that of the normal control child's (Lyons, 1984). These children, however, were the targets of more peer aggression than others. They were similar in this respect to children labelled as rejected in other studies of social interaction (Coie & Kupersmidt, 1983; Dodge, 1983; Dodge, Schlundt, Schocken, & Delugach, 1983;). Two recent studies reported that rejected children's sociometric status and peer acceptance on entry into a new group did not change (Dodge et al., 1983; Kupersmidt, 1983). The results of the present study in combination with the absence of obvious behavioral deficits reported in Lyons' (1984) observational study strongly suggest that peers are picking up on subtle characteristics of this group. This study suggests that schema organization for self and others may be one of these subtle characteristics affecting social interactions with peers which merit further investigation.

There are several implications with regard to treatment strategies. In addition to the typical cognitive and behavioral techniques used in social skills training programs, the present findings indicate that it

would be important to foster schema development directly for self and others. Specifically, a training program which focused on the development of a broad range of dimensions on which to categorize and remember people would be useful. More emphasis on the self schema would also be important. This could be achieved by providing the child with consistent feedback about herself/himself. Investigation of the parents' ability to foster knowledge about the self through consistent feedback to the child would also be important in clarifying the origins of these deficits and in providing appropriate training for parents.

A final consideration for further research is Block's (1982) hypothesis that increased anxiety levels or lower tolerance to anxiety are underlying factors which interfere with the processes of assimilation and accommodation necessary for schema development. The results of the present study together with mothers' reports that these children show increased sensitivity to stimulation (Ledingham, 1981) suggest that the impact of anxiety and low tolerance to stimulation on schema development in aggressive-withdrawn youngsters warrants further examination.

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Appendix A

Me-Mom Differentiation Task Word List

	Mean	Median	Mode		Mean	Median	Mode
compréhensif(ve)	3.9	3.9	4	sérieux(se)	3.6	3.7	4
sociable	3.7	3.9	4	aimant(e)	3.5	3.7	4
créatif(ve)	3.5	3.5	4	patient(e)	3.9	3.8	4
pratique	4.0	4.0	4	sensible	3.5	3.7	4
agréable	3.7	3.9	4	ordonné(e)	4.4	4.2	4
partageux(se)	4.1	4.0	4	têtu(e)	3.4	3.6	4
curieux(se)	3.2	3.5	4	prévenant(e)	3.9	3.8	4
actif(ve)	3.1	3.5	4	bon(bonne)	4.4	4.2	4
travaillant(e)	4.2	4.1	4	critiqueux(se)	3.5	3.6	4
serviable	3.9	4.0	4	tranquille	3.6	3.7	4
honnête	3.9	3.9	4	généreux(se)	3.7	3.9	4
attentioné(e)	4.0	4.0	4	confiant(e)	3.4	3.6	4
nerveux(se)	3.9	3.8	4	émotif(ve)	3.3	3.6	4
courageux(se)	3.6	3.5	4	intelligent(e)	3.5	3.8	4
amical(e)	3.5	3.8	4	gentil(le)	3.7	3.9	4

Appendix B

Schema Task Word List

poli(e)	moderne
paresseux(se)	achalant(e)
attrayant(e)	positif(ve)
jaloux(se)	ambitieux(se)
gai(e)	amusant(e)
agressif(ve)	impatient(e)
gêné(e)	heureux(se)
calme	taquineux(se)
secrèt(e)	triste
égoiste	comique
romantique	solitaire
décidé(e)	indépendent(e)
intéressant(e)	énervé(e)
attentif(ve)	réaliste
rêveur(se)	habile
distrait(e)	affectueux(se)
peureux(se)	fiable
fidèle	simple
juste	naif(ve)
charmant(e)	prudent

Appendix C

Instructions

Written Descriptions of Self, Mother, and Peer

"Nous sommes intéressés à savoir comment sont les jeunes et comment sont les gens qui sont proche d'eux. Alors, j'aimerais que tu m'écrivent une description de X (toi, ta mère, ton (ta) meilleur ami(e), ou ton école. Raconte-moi comment X est. Qui est X?"

Schema Task

"Dans cette tâche, il s'agit de répondre à quatre questions différentes au sujet de certains mots. Les quatre questions sont: Si le mot est comme toi?, comme ton ami(e)?, comme ta mère?, ou encore si le mot veut dire la même chôse qu'un autre. Avant de commencer, j'aimerais que tu écrives le prénom de ton (ta) meilleur(e) ami(e) du même sexe que toi sur ce papier. Pour la première diapositive, la question est "Comme ton ami(e)?". Alors, je veux que tu penses à ..... Je vais te présenter une diapositive comprenant un mot ainsi que les réponses "oui" ou "non" à gauche et à droite. Ces deux réponses correspondent aux deux clés que tu as devant toi. Tu pèses à gauche si tu penses que, oui, ton ami(e) est comme ça, ou à droite, si ta réponse est non, ton ami(e) n'est pas comme ça. Entre chaque diapositive, tu places toujours ton doigt sur le bloc au centre des deux clés. Alors, quelle est ta réponse pour cette première question? C'est la même chôse avec les trois autres genres de questions. Tu dois répondre "oui" ou "non" en te servant toujours des clés. Il n'y a pas de bonnes ou de mauvaises réponses. Il s'agit plutôt de ton jugement personnel. Voici les trois autres questions comme exemple."

Me-Mom Differentiation Task

"Dans cette tâche, il s'agit de voir si certains mots décrivent ta mère plutôt que toi. Voici un exemple. Il s'agit de penser à toi et à ta mère et juger à qui le mot ressemble le plus ou lequel (laquelle) de vous deux est le plus .... Si tu penses que c'est plutôt ta mère qui est comme ça, tu réponds en pesant sur la clé de droite, comme indiqué sur la diapositive. Si tu penses que ce mot s'applique plutôt à toi, tu réponds en pesant sur la clé de gauche. Entre chaque diapositive, tu places ton doigt sur le petit bloc de bois au centre des deux clés. Portes bien attention, car les dispositives ne resteront pas longtemps. Dès que tu as une réponse, tu pèses

immédiatement sur la clé de ton choix. Ta réponse ne veut pas dire que l'autre n'est pas comme ça aussi, mais simplement, qu'en général, l' un est plus comme ça que l'autre. Est-ce que tu as des questions sur la façon de procéder?"

Control Task for Simple Differentiation Task

"Maintenant, nous avons terminé avec les diapositives qui concernent toi et ta mère. Nous allons faire une sèrie qui est exactement pareille, sauf que cette fois-ci, les mots que nous allons voir vont se rapporter à des poissons ou à des oiseaux. Tu pèses sur la clé de droite si le mot se rapporte à un poisson, et sur la clé de gauche si le mot se rapporte à un oiseau. Comme tout à l'heure, tu gardes ton doigt au centre, sur le bloc, entre chaque diapositives. Des que tu as trouvé que le mot se rapporte à un poisson ou à un oiseau tu pèses sur la clé qui indique ta réponse. Est-ce que tu es prêt(e) à recommencer?"

Control Task for Schema Task - Simple Reaction Time

"Maintenant, nous allons faire une série où il n'y a que des X. Il s'agit pour toi de peser sur la clé de droite (ou de gauche), toujours la même, dès que tu vois aparaître le X sur l'écran. N'oublies pas de remettre ton doigt sur le petit bloc au centre des deux clés entre les diapositives. Est-ce que tu es prêt(e)?"

Appendix D

Analysis of Variance Source Table for WISC-R/WAIS-R Total IQ Scores

Source	SS	df	MS	F
PClass	332.05	3	110.68	1.1
Sex	180.00	1	180.00	1.8
PClass X Sex	157.90	3	52.63	.5
Within	7242.00	72	100.58	

Appendix E

Analysis of Variance Source Table

For Household Prestige Score

Source	SS	df	MS	F
PClass	169.09	3	54.03	.77
Sex	27.59	1	27.59	.40
PClass X Sex	48.13	3	16.04	.23
Within	3936.37	56	70.29	

Appendix F

Analysis of Covariance Source Table for Latencies on Me-Mom Differentiation Task

Source	SS	df	MS	F
Covariate Vocabulary	2.137	1	2.137	5.4*
PClass	.052	3	.017	.04
Sex	.452	1	.452	1.14
PClass X Sex	.359	3	.120	.30
Error	28.182	71	.397	

* $p < .05$

Appendix G

Analysis of Covariance Source Table For Latencies for Yes-Rated Items on the Schema Task

Source	SS	df	MS	F
Covariate Vocabulary	14.37	1	14.37	9.52**
PClass	2.26	3	.75	.50
Sex	2.11	1	2.11	1.40
PClass X Sex	2.95	3	.99	.65
Error	107.12	71	1.51	
Referent	.81	2.67[a]	.27	1.72
Referent X PClass	3.39	8.00[a]	.38	2.39*
Referent X Sex	1.74	2.67[a]	.58	3.67*
Referent X PClass X Sex	2.03	8.00[a]	.23	1.43
Error	34.06	189.93[a]	.158	

* $p < .05$

** $p < .01$

[a] Greenhouse-Geisser adjusted df

Appendix H

Analysis of Covariance Source Table

For Latencies For No-Rated Items on the Schema Task

Source	SS	df	MS	F
Covariate Vocabulary	13.90	1	13.90	9.58*
PClass	1.51	3	.50	.36
Sex	1.30	1	1.30	.92
PClass X Sex	.90	3	.30	.21
Error	94.23	67	1.41	
Referent	.44	2.34[a]	.15	.85
Referent X PClass	1.66	7.02[a]	.18	1.06
Referent X Sex	.15	2.34[a]	.05	.28
Referent X PClass X Sex	2.41	7.02[a]	.27	1.54
Error	35.40	159.20[a]	.17	

[a] Greenhouse-Geisser adjusted df

* $p < .01$

Appendix I

Analysis of Covariance Source Table for Recall of Yes- and No-Rated Items on the Schema Task

Source	SS	df	MS	F
Covariate				
Vocabulary	6.69	1	6.69	5.45*
PClass	1.73	3	.58	.47
Sex	.0058	1	.0058	.00
PClass X Sex	8.82	3	2.94	2.40
Error	87.17	71	1.23	
Rating	23.64	1	23.64	36.05**
Rating X PClass	1.20	3	.40	.61
Rating X Sex	.002	1	.002	.00
Rating X PClass X Sex	.82	3	.27	.42
Error	47.21	72	.66	
Referent	9.84	2.86[a]	3.28	6.08**
Referent X PClass	2.54	8.59[a]	.28	.52
Referent X Sex	2.21	2.86[a]	.73	1.36
Referent X PClass X Sex	6.55	8.59[a]	.73	1.35
Error	116.49	206.14[a]	.54	
Rating X Referent	6.39	2.91[a]	2.13	2.82*
Rating X Referent X PClass	7.34	8.74[a]	.82	1.08
Rating X Referent X Sex	.38	2.91[a]	.13	.17
Rating X Referent X PClass X Sex	6.58	8.74[a]	.73	.97
Error	162.94	209.80[a]	.75	

a Greenhouse-Geisser adjusted df
* $p < .05$
** $p < .001$

Appendix J

Analysis of Covariance Source Table

For Recognition of Yes- and No-Rated Items on the Schema Task

Source	SS	df	MS	F
Covariate				
Vocabulary	35.28	1	35.28	7.11*
PClass	7.66	3	2.55	.51
Sex	1.33	1	1.33	.27
PClass X Sex	16.83	3	5.6	1.13
Error	352.41	71	4.96	
Rating	292.95	1	292.95	83.94**
Rating X PClass	3.69	3	1.23	.35
Rating X Sex	2.89	1	2.89	.83
Rating X PClass X Sex	9.30	3	3.10	.89
Error	251.29	72	3.49	
Referent	65.64	2.86[a]	21.88	22.55**
Referent X PClass	3.74	8.57[a]	.42	.43
Referent X Sex	5.27	2.86[a]	1.76	1.81
Referent X PClass X Sex	12.67	8.57[a]	1.41	1.45
Error	209.56	205.67[a]	.97	
Rating X Referent	140.13	2.67[a]	46.71	14.92**
Rating X Referent X PClass	16.50	8.01	1.83	.59
Rating X Referent X Sex	9.82	2.67	3.27	1.05
Rating X Referent X PClass X Sex	13.76	8.01	1.53	.49
Error	676.16	192.17	3.13	

[a] Greenhouse-Geisser adjusted df

* $p < .01$

** $p < .001$

Appendix K

Analysis of Covariance Source Table For Proportion Recall of Yes-Rated Items on the Schema Task

Source	SS	df	MS	F
Covariate				
Vocabulary	3.11	1	3.11	8.13*
PClass	.41	3	.14	.36
Sex	.002	1	.002	.01
PClass X Sex	1.45	3	.48	1.26
Error	27.17	71	.38	
Referent	1.56	2.92[a]	.52	1.96
Referent X PClass	3.08	8.77[a]	.34	1.29
Referent X Sex	.75	2.92[a]	.25	.93
Referent X PClass X Sex	3.51	8.77[a]	.39	1.47
Error	57.42	210.39[a]	.27	

[a] Greenhouse-Geisser adjusted df

* $p < .05$

Appendix L

Analysis of Variance Source Table For Proportion Recall of No-Rated Items on the Schema Task

Source	SS	df	MS	F
PClass	.88	3	.29	.51
Sex	.04	1	.04	.06
PClass X Sex	3.66	3	1.22	2.12
Error	39.18	68	.58	
Referent	3.80	2.80[a]	1.57	2.91*
Referent X PClass	3.29	8.39[a]	.37	.84
Referent X Sex	1.10	2.8[a]	.37	.85
Referent X PClass X Sex	2.39	8.4[a]	.27	.61
Error	88.93	190.1[a]	.44	

[a] Greenhouse-Geisser adjusted df

* $p < .05$

Appendix M

Analysis of Covariance Source Table For Proportion Recognition of Yes-rated Items on the Schema Task

Source	SS	df	MS	F
Covariate				
Vocabulary	6.71	1	6.71	7.84**
PClass	2.89	3	.96	1.13
Sex	3.05	1	3.05	3.58
PClass X Sex	2.56	3	.85	1.00
Error	60.68	71	.85	
Referent	7.77	2.75[a]	2.59	9.26***
Referent X PClass	5.66	8.3[a]	.63	2.25*
Referent X Sex	.46	2.75[a]	.15	.55
Referent X PClass X Sex	3.57	8.3[a]	.40	1.42
Error	60.43	198.3[a]	.28	

[a] Greenhouse-Geisser adjusted df

* $p < .05$

** $p < .01$

*** $p < .001$

Apendix N

Analysis of Variance Source Table For Proportion Recognition of No-Rated Items on the Schema Task

Source	SS	df	MS	F
PClass	1.09	3	.36	.30
Sex	1.04	1	1.04	.87
PClass X Sex	6.96	3	2.32	1.93
Error	81.78	68	1.20	
Referent	11.37	2.6[a]	3.79	7.78*
Referent X PClass	4.36	7.9[a]	.48	.99
Referent X Sex	.69	2.6[a]	.23	.47
Referent X PClass X Sex	2.06	7.9[a]	.23	.47
Error	99.47	179.1	.49	

* $p < .001$

a. Greenhouse-Geisser adjusted df

Appendix O

Pearson Product-Moment Correlations of Latency with Recall and Recognition for Yes- and No-Rated Items on the Schema Task

	Recall		Recognition	
	Yes	No	Yes	No
Self	-.12	-.11	-.13	-.07
Mother	-.13	-.19	-.13	-.21
Peer	-.03	-.18	-.23*	-.05
Semantic	.05	-.01	-.18	.12

* $p < .05$

Appendix P

Analysis of Variance Source Table For Number of Items in Written Descriptions of Self, Mother and Peer

Source	SS	df	MS	F
PClass	114.02	3	38.0	.86
Sex	225.1	1	225.1	5.08*
PClass X Sex	31.2	3	10.4	.23
Error	3055.5	69	44.3	
Referent	50.9	1.78[a]	25.5	3.88*
Referent X PClass	38.8	5.33[a]	6.5	.98
Referent X Sex	12.4	1.78[a]	6.2	.94
Referent X PClass X Sex	34.6	5.33[a]	5.8	.88
Error	906.3	122.7[a]	6.6	

[a] Greenhouse-Geisser adjusted df

* $p < .05$

Appendix Q

Analysis of Variance Source Table

For Number of Items in Written Descriptions of School

Source	SS	df	MS	F
PClass	13.3	3	4.4	.22
Sex	1.2	1	1.2	.06
PClass X Sex	37.6	3	12.5	.61
Error	1463.6	71	20.6	

Appendix R

Analysis of Variance Source Table for High Complexity Scores in Written Descriptions of Self, Mother and Peer

Source	SS	df	MS	F
PClass	7.17	3	2.39	3.71*
Sex	5.84	1	5.84	9.08**
PClass X Sex	.81	3	.27	.42
Error	44.37	69	.64	
Referent	1.65	1.96[a]	.82	2.63
Referent X PClass	3.18	5.9[a]	.53	1.70
Referent X Sex	.026	1.96[a]	.013	.04
Referent X PClass X Sex	3.19	5.9[a]	.53	1.70
Error	43.19	135.4	.31	

[a] Greenhouse-Geisser adjusted df

* $p < .05$

** $p < .01$

Appendix S

Analysis of Covariance Source Table for Conceptual Level Scores in Written Descriptions of Mother and Peer

Source	SS	df	MS	F
Covariate Vocabulary	39.98	1	39.98	3.82*
PClass	50.86	3	16.95	1.62
Sex	2.34	1	2.34	.22
PClass X Sex	19.49	3	6.50	.62
Error	712.56	68	10.49	
Referent	12.2	1	12.2	2.05
Referent X PClass	2.99	3	1.00	.17
Referent X Sex	.02	1	.02	.00
Referent X PClass X Sex	.83	3	.28	.05
Error	411.63	69	5.97	

* $p < .05$