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# Self-regulated learning processes among inner-city students: A social cognitive investigation

Wibrowski, Concepcion Rocha, Ph.D.

City University of New York, 1992



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# SELF-REGULATED LEARNING PROCESSES AMONG INNER-CITY STUDENTS: A SOCIAL COGNITIVE INVESTIGATION

by

CONCEPCION ROCHA WIBROWSKI

A dissertation submitted to the Graduate Faculty in Educational Psychology in partial fulfillment of the requirements for the degree of Doctor of Philosophy. The City University of New York.

1992

This manuscript has been read and accepted for the Graduate Faculty in Educational Psychology in satisfaction of the disserattion requirement for the degree of Doctor of Philosophy.

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# Abstract

SELF-REGULATED LEARNING PROCESSES AMONG INNER CITY STUDENTS: A SOCIAL COGNITIVE INVESTIGATION

by

Concepcion Rocha Wibrowski

Advisor: Professor Barry Zimmerman

This study investigates the use of self-regulated learning processes to achieve academic success by students who come from disadvantaged environments. The relationship between three variables was examined: academic achievement, self-regulation outcomes, and learning activities. Measures of academic achievement were obtained from students' school records on the Mathematics Metropolitan Achievement Test (MAT-M), and the Degrees of Reading Power (DRP) test; measures of self-regulation outcomes were obtained by the Rating Student Self-Regulated Learning Outcomes: A Teacher Scale (RSSRL). Measures of learning activities were derived from the Learning Activities Inventory (LAI), a structured interview schedule developed for the present study.

The subjects for the present study were 100 Junior High School students from an urban school district. Subjects who displayed high achievement were randomly selected from

school records a comparison group of regular achievers were selected from the same school. All subjects were interviewed using the Learning Activities Inventory (LAI).

Based on Zimmerman's (1988) Model of a social cognitive view of self-regulated academic learning, it was predicted that high achieving students would display more self-regulation to their teachers and would report more efforts to self-regulate their learning activities at their home and in classroom environments. Support for both hypotheses was found using Pearson correlation analysis, regression analysis, and canonical correlations. This study also showed the pattern of correlations among the self-regulated strategies used by high achieving students in inner city environments. The results were discussed in terms of Zimmerman's triadic model of student self-regulation.

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# CHAPTER I

## LITERATURE REVIEW

### Introduction

Academic achievement of inner city students has been studied historically in relation to teaching practices (e.g., Good, 1983; Good & Brophy 1986; West, 1985), students' learning abilities (e.g., Wang & Lindvall, 1983), and their home environment ( e.g., Marjoribanks, 1979; Walberg & Marjoribanks, 1973). Perhaps as a result, the general lack of success of these students has been attributed to their poor schools, their low ability, or the impoverished intellectual environment of their home. A new approach relates achievement in school to students' use of self-regulated learning strategies rather than to their learning abilities or environments at school or home.

Theories of self-regulated learning seek to explain how students' perceptions of themselves as learners and how the processes they use to regulate their learning affect their academic achievement (Zimmerman, 1986). Among other goals, this approach seeks to explain how certain students can achieve despite many academic and environmental obstacles such as those commonly encountered in the inner city.

In the following section, an overview of a theoretical Model of Self-Regulated Learning developed by Zimmerman

(1989a) from cognitive social learning theory and research will be presented. The model analyzes student self-regulated learning on the basis of three interdependent influences: personal, behavioral and environmental. It should be noted, however, the present investigation is not viewed as a test of Zimmerman's model. Instead the model will be used to guide the formulation of hypotheses, the types of measures, and the interpretation of the data.

## Social Learning Theory

Social learning theory emphasizes the prominent roles played by vicarious, symbolic, and self-regulatory processes in psychological functioning (Bandura, 1977). Human behavior is explained in terms of a continuous reciprocal interaction between personal (including cognitive), behavioral, and environmental factors (Bandura, 1986). According to Bandura, reciprocal causation does not mean symmetry in strength or bidirectional influences. During behavioral interactions, environmental influences may be stronger than behavioral or personal influences for a particular context. Zimmerman (1989a) has offered a triadic analysis of self-regulated functioning by students based on social learning research and theory. (See Appendix F)

## Self-Regulation

Self-regulation is defined (Bandura 1977, 1986) as a self-initiated effort to control events and outcomes related to oneself. It has been studied recently by such

investigators as Bandura and Schunk (1981), Bandura and Cervone (1983, 1986), Schunk (1983, 1984, 1986), and Thoresen and Mahoney (1974). According to Bandura (1986), self-regulation is composed of three interdependent processes: self-observation, self-judgment, and self-reaction. Self-observation refers to one's efforts to perceive, describe, or record one's own actions or their outcomes. Closely observing oneself can provide information about how well one is achieving a specific goal (Zimmerman, 1989a).

Self-judgment refers to personal efforts to set standards and compare one's actions and outcomes against those standards (Bandura, 1977, 1986; Bandura & Schunk, 1981; Schunk, 1983, 1986). It has also been termed self-evaluation (Zimmerman, 1989a). Self-reactions refer to personal responses to self-evaluations such as persistence or degree of effort (Bandura & Cervone, 1983, 1986). Researchers have begun to study self-regulation as it relates to academic learning (e.g., Corno,1986; Henderson, 1986; McCombs,1986; Wang & Peverly, 1986). This particular area of research, termed self-regulated learning, will be discussed in detail later.

## Academic Achievement

Academic achievement has been often defined in terms of marks in school and to a lesser extent in terms of performance on standardized tests (e.g., Center on

Evaluation Development and Research, 1987). It has been studied historically in relation to teaching practices in the school (e.g., Brophy & Good, 1986; Good, 1983; Good & Brophy, 1986; Thomas, Iventhosh & Rower, 1987; West, 1985), students' learning abilities (e.g., Wang & Lindvall, 1983), and their home environment (e.g., Marjoribanks, 1979; Walberg & Marjoribanks, 1973).

Good and Brophy (1986) described the effectiveness of public schools in terms of their ability to promote the average academic achievement of their students. These researchers surveyed input-output studies conducted during the 1960's that examined the association between resources (e.g., the ratio of adults to children, the number of books in the library) and student outcomes, but found no consistent relationship between these two variables. However, the studies that followed the input-output research which included measures of school processes as well as school input found several processes associated with individual schools were related to student achievement. For example, evaluators found that student achievement, was related to measures of principals and teachers commitments to the New York City School Improvement Project (SIP) (Clark & McCarthy, 1983).

During the 1960s it was widely assumed that intellectual stimulation in the home environment enhanced cognitive growth. According to Henderson (1981), the homes

of lower socioeconomic status and poor minority group children generally failed to provide the kinds of experiences required to nourish intellectual growth. Henderson also concluded that the socialization practices of disadvantaged families were seen as contributors to intellectual deficits in their children.

A number of investigators (e.g., Fernandez & Nielsen, 1986; Hearn, 1984; Peng, 1982; Rosenthal, Baker & Ginsburg, 1983; West, 1985; Wilkinson & Burke, 1984) have studied the relationship between academic achievement and factors related to disadvantaged environments such as low socioeconomic status, belonging to a minority group, school social structure, lack of proficiency in English language, difficult learning environments, low self-esteem, low self-concepts and difficult family background. For example, Fernandez and Nielsen (1986) studied four groups of high school sophomores and four groups of seniors. The investigators used two sets of independent variables. The first set contained general factors assumed to affect achievement for all students, independent of their linguistic history; the second set consisted of specific factors such as linguistic indicators that are of special relevance for language minorities or for individuals of Hispanic descent.

Among the general factors were family length of residence in the U.S., family socioeconomic status, and sex.

Family length of residence in the U.S. involved a composite scale derived from the length of residence of the respondent and of the respondent's father and mother. Family socioeconomic status was a derived scale constructed from father's occupation, father's education, mother's education, family income, and a set of other items that asked whether the student's family received a daily newspaper, possessed an encyclopedia or other reference books, typewriter, electric dishwasher, two or more cars or trucks, more than 50 books, a pocket calculator, and whether the student had his or her own room. A composite socioeconomic status measure was used involving the father's and mother's education and income because a large number of students did not provide all the information.

The dependent variables for the Fernandez and Nielsen (1986) study were four measures of school achievement: educational expectations and scores on three standardized tests. Educational expectations were measured by items such as: "As things stand now, how far in school do you think you will get?". The response categories were recorded in years of education. According to the researchers, education expectations has been shown to be one of the best predictors of actual school achievement. The test scores involved measures of reading, vocabulary, and mathematics. It was found that lower school achievement is strongly associated with lower socioeconomic status.

In a study of the inequalities in academic achievement by children from different social status and ethnic groups, Marjoribanks (1976) examined the relation between the family learning environments and the cognitive performance of 11 year old children from different social class groups. To define the family environment, Marjoribanks included the occupation of the father, education of mother and father, family size and crowding in the home. The families were designated as either middle class or as lower class. An interview schedule involving 200 items was constructed and administered to the parents of 185 families in Canada. The family interview data and the mental ability scores were used as measures.

The results of this study indicated that students' scores on number and verbal abilities were associated positively with parents' expectations for the child, parents' reinforcement of educational expectations, and parents' knowledge of their childs' progress. In contrast, students' number and verbal ability were related negatively to family size and crowding in the home. Marjoribanks argued that the family constitutes a social environment that greatly affects children's academic achievement.

The relationship of other family and home background variables such as race, ethnicity, socioeconomic status, and language to academic achievement were studied by Rosenthal, Baker, and Ginsburg (1983). Data were collected on a

nationally representative sample of more than 12,000 children in grades 1-6 from either Spanish or English speaking households. Results showed that socioeconomic status and race/ethnicity were more important than language in explaining the low achievement of subjects from Spanish speaking households.

Quraishi and Bhat (1986) investigated the separate and combined effects of age, sex, and socioeconomic status on academic achievement in 100 male, and 100 female undergraduates using a 2 x 2 x 2 factorial analysis. It was found that socioeconomic status was related significantly to academic achievement.

There is evidence of lower self-esteem among lower socioeconomic status children (e.g., Bruce, 1981); and that these lower self concepts were due to low academic performance. Wilkinson and Burke (1984), examined the effects of three variables: ethnic identity, socioeconomic status and self-concept on the academic performance of Mexican-American and Anglo-American eighth graders. Subjects were administered a criterion referenced competency examination on the U.S. constitution and subsequently completed a self-concept of ability scale and received examination feedback. Ethnic identity and socioeconomic status were obtained from school records. Results showed that subjects with higher self-concepts attained better examination scores than those with lower self-concepts,

however, no differences were found based on socioeconomic status.

The relationship between three levels of socioeconomic status and students' academic achievement were studied by Krishnan (1982). He hypothesized that the academic achievement of high socioeconomic status students would differ significantly from that of middle socioeconomic status students and the achievement of middle socioeconomic students would differ significantly from that of low socioeconomic students. It was hypothesized additionally that subjects of low socioeconomic status would have low scores in academic achievement. As expected, Krishnan found a significant positive correlation between subjects' socioeconomic status and academic achievement.

Inner city public schools have been characterized by lower academic levels (Shanker, 1988; West, 1985), and high dropout rates (Ekstrom, Goertz, Pollock & Rock, 1986; National Center for Education Statistics, 1980; Peng, 1982, 1985). Results on the Regents Competency Tests, and high school Regents examinations have been used to analyze achievement trends and to compare schools or school districts within New York State.

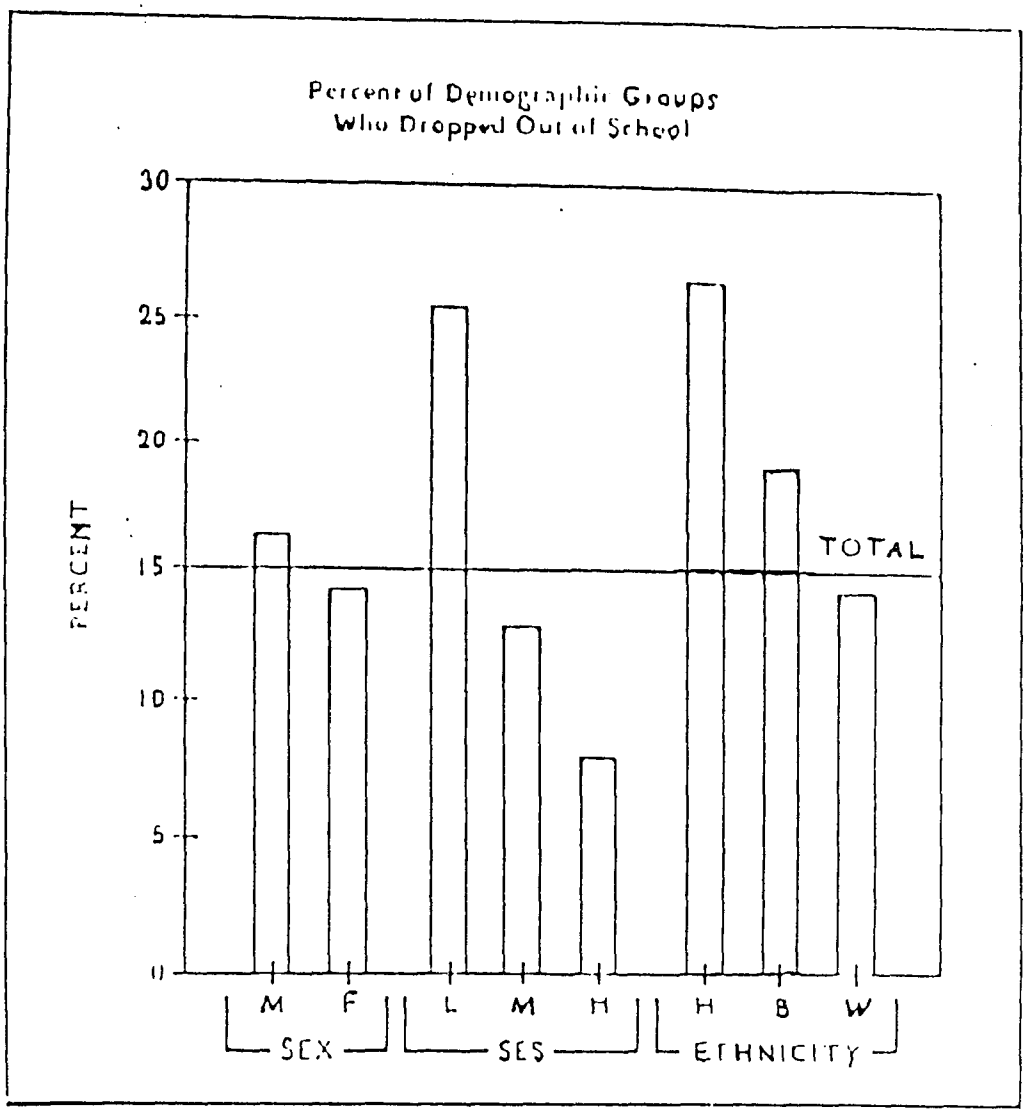
A recent report on student achievement (New York State Education Department, 1986-87), revealed that of students attending New York City schools a lower percentage scored above state reference norms than students attending suburban

school districts. The causes of the apparent inability of urban public school systems to raise the educational levels of their students were explored by West (1985). In this study, teachers completed a school climate questionnaire, and students performed on basic skills tests. The findings showed that a combination of social system variables explained most of the variation in academic achievement among students in these schools. Social composition (race, and socioeconomic backgrounds, school social structure and social climate) explained about 83% of the variance in achievement.

School dropouts are defined as students who neither are enrolled in school nor are high school graduates (U.S. General Accounting Office, 1986). They are also defined as a student who has been dropped from a school's membership and/or enrollment and who has not graduated from grade 12 or who has not been transferred to another school (CED, 1986). National data (Peng, 1985) show that during the last decade approximately one youth in four did not graduate in the year that they had been expected to complete high school. School district data show a much larger dropout rates for students attending inner city public schools, including reports of rates of 50% or more for some schools.

A report prepared during 1986 by the New York State African American Institute of the State University of New York, attributed students dropping out of school to an

FIGURE 1




M- Male F- Female L- Low M- Middle H- High H- Hispanic B- Black W- [illegible]

Source: Who Drops out of Whigh School and Why? Findings from a National Study. K. B. Ekstrom, M.E. Goertz, J. M. Pollock, and D. A. Rock (1986). Teachers College Record, 87, p. 359.

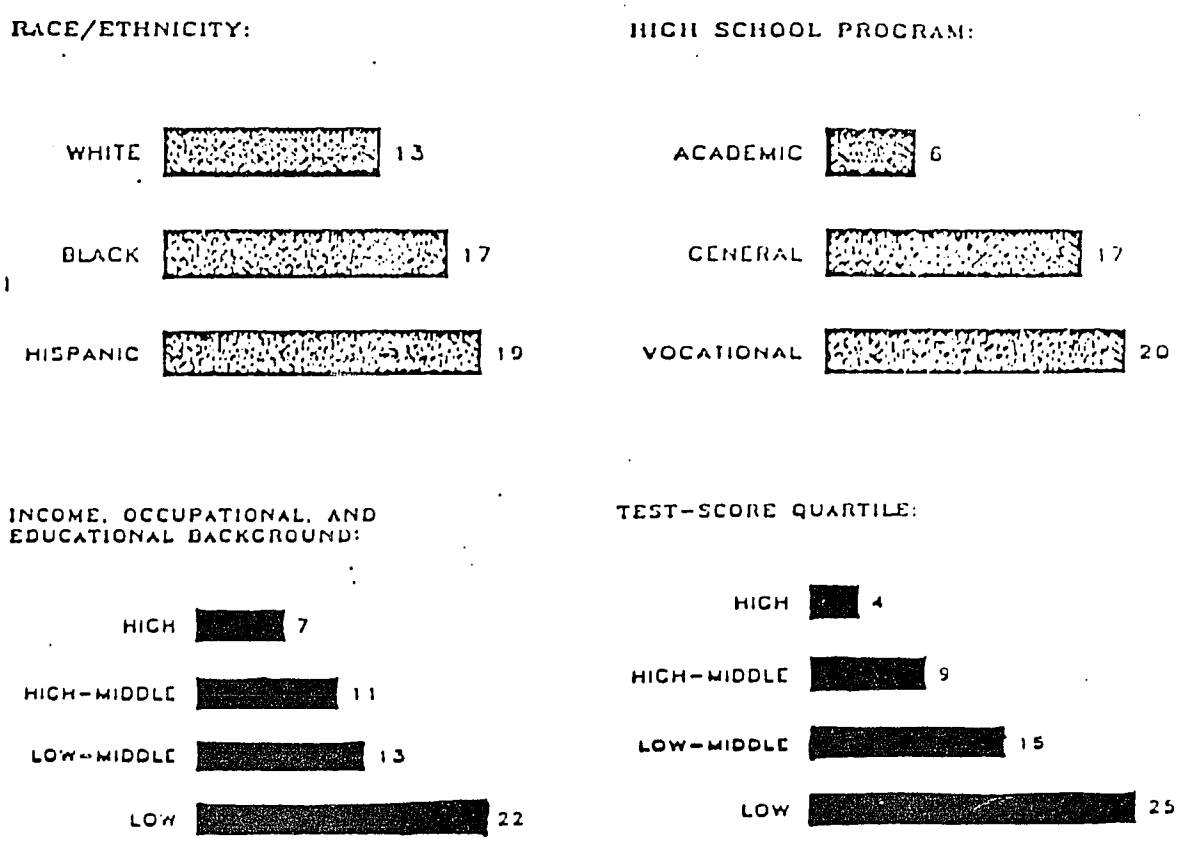
intergenerational pattern of poverty, low educational attainment and other socioeconomic trends. Research on the characteristics of school dropouts reveals a strong correlation between the educational attainments of parents and the propensity of their children to leave school prior to graduation. The children of parents who dropout are more likely to dropout themselves (New York State African American Institute of the State University of New York , no date).

Ekstrom, Goertz, Pollock, and Rock (1986) provided an analysis of the salient characteristics of the dropout population, using the most comprehensive data set on school dropouts to date, the High School and Beyond study (NCES, 1980). It was found that the two background characteristics that are most strongly related to dropping out of school are socioeconomic status (SES) and race/ethnicity. According to the investigators, students of lower socioeconomic status have been consistently shown to have higher dropout rates than higher socioeconomic status students.

Dropouts occur more often among Hispanics than among Blacks, and more often among Blacks than Whites (See Fig.1, Ekstrom, Goertz, Pollock & Rock, 1986). Dropouts were also more likely to attend public schools in urban areas in the South or West. High School and Beyond data (1980) also showed that the dropout rate for youth from households with low-income, low-skill wage earners and limited educational

FIGURE 2

PERCENT OF 1980 PUBLIC HIGH SCHOOL SOPHOMORES WHO DROPPED OUT OF SCHOOL BY SELECTED CHARACTERISTICS (FALL 1982)




Source: High School and Beyond, U.S. Department of Education, adapted from chart 5.2 in The Condition of Education 1985 Edition, National Center for Education Statistics.

backgrounds was about three times the rate of those from the highest end of the socioeconomic scale: 22 percent versus 7 percent (See Fig. 2, National Center for education Statistics, 1885).

Other background characteristics of dropouts include homes with weaker educational support system, with fewer study aids, with less opportunity for non-school related learning, without both natural parents living at home, with mothers having less formal education, with mothers having lower educational expectations for their offspring, and with parents who were less likely to monitor their childrens' in-school and out-of-school activities (Ekstrom, Goertz, Pollack & Rock, 1986). In addition, the New York State African American Institute (no date) reported that the dropout figures are large for non-White high school students in the state of New York. For example, it was found a 62% of student dropouts among Latinos, 53% among African Americans and 46% among Native Americans (New York State African American Institute, no date).

In the studies reviewed, academic achievement has been defined and assessed in terms of test grade and term grades (e.g., Center on Evaluation Development and Research, 1987), student's educational expectations (e.g., Fernandez & Nielsen, 1986), standardized test scores on reading, vocabulary and mathematics (e.g., Fernandez & Nielsen, 1986), mental ability scores such as number and verbal

abilities (e.g., Marjoribanks, 1976), criterion referenced competency examinations (e.g., Wilkinson & Burke, 1984), and Regents Competency tests (e.g., New York State Education Department, 1986-87).

These studies revealed also that student dropouts had lower achievement test scores than students who did not drop out of school (e.g., NCES, 1980) and that inner city public schools or public schools in urban areas are characterized by high levels of ethnic minorities, low levels of achievement on standardized tests, and high dropout rates (NCES, 1980). These studies have been reviewed in detail because they describe the characteristics of disadvantaged environments, and all these descriptors of disadvantaged environments have been often found to characterize inner city schools (e.g., NCES, 1980).

The reviewed studies show the need to address the relationship between low socioeconomic status children and the school in a different manner. To date, educational reformers have focused their attention primarily on disadvantages in the intellectual environment of the home of poor children (Hess, 1970). An effort was made to overcome the inadequate home environments of disadvantaged children through programs such as Headstart. The goal of these programs was to compensate for experience deficits of disadvantaged children through the use of new methods and types of curricula. According to Zimmerman (1989b), these

environmentally-oriented reform movements were based on instructional theories that viewed students as passive rather than as active subjects in their own learning.

An alternative approach to achievement and learning, suggested by cognitive social learning theorists (e.g., Bandura, 1986; Schunk, 1986; Zimmerman, 1986, 1989a, 1989b), assumes that students can serve as active managers of their own learning. Self-regulation processes and perceptions of self-efficacy are assumed to be responsible for these outcomes. According to Ryan and Connell (1988), children who initiate achievement-related behaviors and learning on their own are more self-regulated than those who are dependent on direct interpersonal controls and rewards.

The capacity to be self-regulating or autonomous with respect to the learning process and to one's own behavior is a significant goal of education (Deci & Ryan, 1985). The present investigation seeks to identify academic achievers from their classmates in inner city schools and to examine the relationship between their self-initiated or self-regulated behaviors and their school achievement.

## Self-Regulated Learning

Self-regulation theorists (e.g., Bandura, 1977, 1986; Bandura & Schunk, 1981; Schunk, 1984; Zimmerman, 1983, 1986) assume that students may learn and achieve despite such limitations as living in an impoverished social environment. Self-regulated learning theorists (e.g., Corno,1986;

Henderson, 1986; McCombs, 1986; Schunk, 1986) have conceptualized students as metacognitively, motivationally and behaviorally active participants in their own learning process.

This new approach relates achievement in school to student use of specific self-regulated strategies (Zimmerman & Martinez-Pons, 1986), rather than to fixed student learning abilities or environments at school or home. According to this view, self-regulated students learn to overcome these limitations by using personal (e.g., self) processes to strategically regulate behavior and the immediate learning environment. According to Zimmerman (1990) when defining self-regulated learning, it is important to distinguish between self-regulated learning processes such as self-monitoring and strategies such as record keeping which are specifically designed to enhance those processes.

Social cognitive theory describes self-regulated learning as influenced not only by personal processes but also by behavioral and environmental events (Bandura, 1986). In this approach, the focus is on individual students and their personal learning practices. Students' perceptions of themselves as learners and the processes they use to regulate their learning are important factors in the analysis of academic achievement (Zimmerman, 1986). Self-regulated learning theorists (e.g., Zimmerman, 1986) view

students as metacognitively active when they plan, organize, self-monitor and self-evaluate at different points during the learning process, and as behaviorally active when they select, structure, and modify or create environments that increase learning (Zimmerman, 1986).

Students' self-regulation has been studied as it relates to parental support. Grolnick and Ryan (1989) have hypothesized that both self-regulation and competence relevant outcomes can be linked to parents' styles of motivating and supporting their childrens' school related behavior. The investigators found that parental support for autonomy by their children was positively related to children's self-reports of self-regulation, their competence and adjustment (as rated by their teacher), and their school grades and achievement.

Another factor found to be related to self-regulated learning is students' classroom environment. Wang and Peverly (1986) have developed a model to explain how classroom environments may affect self-regulated learning positively or negatively. Included in this model are the teacher, the instructional program, and the classroom setting. Henderson (1986) has suggested that self-regulation may be a culturally transmitted method for personally optimizing and controlling learning events. He recommended Vygotsky's account of how socializing agents can instill self-regulated processes through expert scaffolding

(Bandura,1986) and reciprocal learning (Palincsar & Brown, 1984).

According to Zimmerman (1986), students who are metacognitively, motivationally, and behaviorally active participants of their own learning process are more effective. That is, they are aware of a functional relationship between their patterns of thought and action (often termed strategies) and social and environmental outcomes.

## Learning Strategies

Self-regulated learners are not only aware of strategic relations between thought, behavior regulatory processes, and learning outcomes, they are distinguished by their willingness to employ these strategies to achieve their academic goals (Zimmerman, 1990a). According to Zimmerman and Martinez-Pons (1988), important progress has been made in identifying strategies that students use to regulate their (a) personal functioning, (b) academic behavioral performance, and (c) learning environments. Among the strategies identified are organizing and transforming (Corno & Mandinach, 1983), rehearsing and memorizing (McCombs, 1986) and goal setting and planning (Bandura & Schunk, 1981). These particular strategies relate to personal functioning (Zimmerman, 1986). Another strategy identified and designed to enhance behavioral functioning is evaluating (Bandura & Cervone, 1983, 1986; Zimmerman & Martinez-Pons,

1986, 1988). Strategies designed to optimize the students' immediate learning environment (Zimmerman, 1986) are seeking information (Wang, 1983), record keeping (Ghatala, 1986; Presley, Levin & Ghatala, 1988), environmental structuring (Thoresen & Mahoney, 1974), seeking social assistance (Zimmerman, 1983) and reviewing academic materials (Wang, 1983).

Students' strategic behavior have been recently the subject of a series of investigations (e.g., Britton & Tesser, 1991; Corno, 1986; Ghatala, 1986; Ghatala, Levin, Pressley & Lodico, 1985; Henderson, 1986; McCombs, 1986; Palincsar & Brown, 1984; Pressley, Levin & Ghatala, 1984; Pressley, 1986; Schunk, 1986, Schunk, Hanson & Cox,1987; Zimmerman, 1986, 1990b). For example, in a study conducted by Ghatala, Levin, Pressley and Lodico (1985), students had the opportunity to compare performances with and without an instructed strategy, and to make the attribution that the performance gain was due to strategy use. Compared to students in the control group, trained students were more likely to use the successful strategy in future learning situations.

In empirical studies of self-regulated learning, researchers have often measured time management-variables in the context of other variables. Also, time-management practices have been related to academic achievement in college. Britton and Tesser (1991) predicted that students

with well developed time management practices would accomplish more intellectually, and therefore would have higher college grades.

In their study, Britton and Tesser (1991), gave a set of questionnaires to ninety male and female freshmen and sophomore undergraduates enrolled in an introductory psychology class. One of the questionnaires was the time-management questionnaire. The questionnaire included 35 items, each answered on a 5-point scale consisting of the responses always, frequently, sometimes, infrequently, and never. Five points were assigned to the response at the end of the scale that was defined a priori as the "good" practice and one point was assigned to the response at the other end of the scale. Intermediate values were given for the other responses. Higher values on the scale corresponded to better time-management practices. Results of this study indicated that self-reports of time-management are related to academic achievement.

When students monitor the strategies they use, long-term effects on learning can be expected. In an experiment conducted by Pressley, Levin and Ghatala (1988), students were asked to compare two different strategies when learning a list of words. When students attributed their performance accomplishments to effective strategy use, they continued to use strategies over time. Pressley, Levin and Ghatala (1984) instructed students to study a vocabulary list using

either an effective mnemonic strategy (the keyword method) or an ineffective strategy (repeating the vocabulary words). After studying the list, subjects took a test on the words and a majority of subjects realized that they had done better using the effective strategy. Subsequently, when subjects were asked to study an additional test of words, they chose the effective strategy to do so. This study demonstrated a link between strategy monitoring and effective strategy selection.

Kurtz and Borkowski (1984) found that when children were taught specific strategies and attributed their success to effort, they tended to use these strategies more regularly. Specific strategy instructions were given to sixty first and third grade children, who were divided into three treatment groups. The treatment conditions were (1) metacognitive training and strategy training; (2) metacognitive training and no strategy training; and (3) strategy training with no metacognitive training. The instructions given were appropriate for three memory problems and were followed by an attributional assessment of children's perceptions of the causes for specific success and failure outcomes. The investigators found that among strategy-trained children, those who attributed success to effort were more strategic than those who attributed task outcomes to uncontrollable factors such as ability or task characteristics. Social learning theorists (e.g., Bandura,

1986; Schunk, 1986; Zimmerman, 1989a) view monitoring as a key self-regulated learning strategy.

Bandura and Cervone (1983, 1986) tested the hypothesis that self-evaluative and self efficacy mechanisms mediate the effects of goal systems on human performance motivation. Subjects in their investigation were assigned to three different conditions during a strenuous activity. Subjects in the first condition were given goals and performance feedback; subjects in the second condition were given goals alone, while subjects in the third condition were given only feedback. Subjects in the control group were given neither goals nor feedback.

The results of this study showed that when goals and feedback were present, the evaluative and self-reactive influences were predictors of enhanced motivation. That is, that the higher the self-dissatisfaction with a substandard performance, and the stronger the perceived self-efficacy for goal-attainment, the greater the subsequent intensification of effort. Efforts to improve self-evaluation was hypothesized to enhance motivation. Bandura and Cervone (1986) found that self-evaluation improved motivation only when attainments fell markedly or moderately short of a comparative standard. These laboratory studies of self-regulated learning processes have demonstrated their importance on human motivation.

Recently students' use of self-regulated learning

strategies on students academic achievement have been studied in a naturalistic setting. Zimmerman and Martinez-Pons (1986) proposed a model composed of 14 categories of self-regulated learning strategies used by high school students. An interview schedule, the Self-Regulated Learning Interview Schedule (SRLIS), was developed to assess students' learning methods used in six hypothetical contexts. The categories included in the interview schedule were self-evaluation, organizing and transforming, subgoal setting and planning, seeking information, keeping records, self-monitoring, environmental structuring, self-consequences, rehearsing and memorizing, seeking peer, teacher or adult assistance, reviewing notes, tests, or text books. The categories for this instrument were derived from social learning research and theory. The six hypothetical learning contexts involved studying at home, classroom learning, writing assignments, math assignments, test taking and motivation.

Forty male and 40 female students attending a suburban high school were studied in the Zimmerman and Martinez-Pons (1986) investigation. Two measures were collected: frequency of use of various self-regulated learning strategies derived from the Self-Regulated Learning Interview Schedule (SRLIS), and academic achievement test scores that were derived from the Metropolitan Achievement Test scores. It was found that measures of strategy use

were highly correlated with students' performance on standardized academic tests. The researchers concluded that the (SRLIS) had promise for describing students' use of these strategies in naturalistic settings. However, they concluded that further research was needed in which students' actual performance on academic tasks in naturalistic settings is studied.

The validity of the Student Self-Regulated Learning Interview Schedule (SRLIS) was tested in a subsequent study (Zimmerman & Martinez-Pons, 1988). For this second study, the researchers developed a rating scale for use by teachers. The scale included indirect as well as direct manifestations of students' self-regulated learning. (See Appendix B). The teacher rating scale called Rating Student Self-Regulated Learning outcomes: A Teacher Scale (RSSRL) included 12 items judged by experienced teachers and by the researchers to indicate student's self-regulated learning outcomes that would be readily observable to the teachers. Results from this study indicated both convergent and discriminant validity for the two measures of students' use of self-regulated learning strategies. The RSSRL Scale will be utilized for the present investigation as a measure of students' self-regulation. The Zimmerman and Martinez-Pons (1986, 1988) studies proved the first evidence of a positive relationship found between students' use of self-regulated learning strategies and their performance on standardized

academic tests in a naturalistic setting.

## Determinents of Self-Regulated Learning

On the basis of social learning assumptions and constructs, Zimmerman (1989a) has developed a model of student self-regulated learning involving three interdependent sources of influence: personal, behavioral and environmental (See appendix E). An assumption of this triadic model is that students' self-regulated learning varies depending on the social and physical context.

Among the personal influences, self-efficacy is considered the most important factor. Self-efficacy perceptions according to Zimmerman (1989a) depend in part on each of four other personal influence factors. These factors are knowledge, goals, metacognitive processes and affect. Among the behavioral influences, self-observation, self judgement, and self-reaction are important. These three factors are assumed to influence each other and are similarly influenced by personal factors. The physical and social context is classified by Zimmerman (1988) as environmental influences. These two classes of environmental influences were derived from social cognitive research and theory.

## Summary

This review of the literature sought to indicate the role of self-regulated processes within the social learning theory and their importance on students' academic

achievement. Although there is extensive evidence of a positive relationship between academic achievement and level of social and economic status (e.g., Fernandez & Nielsen, 1986; Quraishi & Bhat, 1986), there has been little effort to determine whether efforts by disadvantaged, lower class students living in the inner city can improve their achievement by using self-regulated learning strategies.

Existing research (e.g., Bandura, 1986; Britton & Tesser, 1991; Schunk, 1984, 1986; Zimmerman, 1986; 1989; Zimmerman & Martinez-Pons, 1986, 1988) has shown that achievement in school is related to students' use of strategies. Specifically, Zimmerman and Martinez-Pons (1986) study showed evidence of a relationship between students' use of self-regulated learning strategies in naturalistic contexts and academic achievement, however, their study was conducted with middle class children attending suburban schools. It appears that use of self-regulated strategies does predict the academic achievement of students who attend relatively advantaged schools.

To date, there has not been an attempt to see how successful disadvantaged students attending inner city schools self-regulate their academic learning and performance. These schools, as previously discussed, are characterized by high drop out rates, ethnic minorities, and low levels of academic achievement (NCES, 1980). The present study is the first attempt to investigate a

relationship between the use of self-regulated learning strategies and academic achievement by children attending inner city schools. In addition this study will focus on the kinds of self-regulated learning processes used by successful students who come from disadvantaged environments. The proposed investigation will be based on the social learning theory and research in general and Zimmerman (1989a) Model in particular. (See Appendix E).

# CHAPTER II

## THE PROPOSED STUDY

### Objectives

The present study will investigate the kinds of self-regulated learning processes used by students who come from disadvantaged environments to succeed academically. As mentioned earlier, a relationship between students' exposure to disadvantaged environments and their low academic achievement has been found (e.g., Bruce, 1981; Fernandez & Nielsen, 1986; Hearn, 1984; West, 1985). However, since a positive relationship has been found recently between the use of self-regulated learning strategies and academic achievement by middle class students attending suburban schools. (e.g., Zimmerman & Martinez-Pons, 1986, 1988), it is possible that a similar relationship may occur for lower class youngsters who are self-regulated learners.

There has been no attempt to date to see if a similar relationship exists for students attending inner city schools. This question is of particular social significance because these schools are characterized by high levels of ethnic minorities, large numbers of families on public assistance, diminished levels of achievement on standardized tests, and high drop out rates. It is hypothesized that students attending inner-city schools, who are average and

high achievers, will make greater use of self-regulated learning strategies in and outside of the classroom. It is also of interest to determine which particular strategies are used by inner-city school achievers. Finally, it is important to determine the kinds of learning activities in which students engage outside of the direct surveillance of the teacher. The proposed study will be guided by the following questions: Do students who come from disadvantaged environments make use of self-regulated learning strategies? If so, what kind of self-regulated learning strategies do they use? Do self-regulators self-select academic related activities outside of the classroom? In what kind of learning activities do inner city students engage? Are these activities related to self-regulation? Do inner city students who are self-regulated, achieve better in school?

In the present investigation, a structured interview--Learning Activities Inventory (LAI) (See Appendix C)--for assessing students' learning activities in naturalistic settings was developed. This instrument was used to determine if and how students attending inner city schools engage in self-regulation processes, and to identify the kinds of learning activities in which inner city students engage outside of the classroom. In addition, an attempt was made to collect information about the daily lives of these students to ascertain their self-regulation during

study, their free choice of activities, and their interest in activities related to scholarship.

A series of questions were presented to the students during an interview. Each of the questions pertained to variables in Zimmerman's (1989a) social cognitive model view of self-regulated academic learning as well as to other categories identified in previous studies with the cognitive social learning view (e.g., Bandura, 1977, 1986; Corno & Mandinach, 1983; Thoresen & Mahoney, 1974; Wang, 1983). As noted earlier, this model describes student functioning in terms of three sources of influence: personal, environmental, and behavioral factors (see Appendix E); It assumes a reciprocally causal relationship among these influences and assumes a key role for academic self-efficacy beliefs and three self-regulatory subprocesses during learning---self-observation, self-judgments, and self-reactions (Zimmerman, 1989a) (See Appendix F).

The present study is not viewed as a test of the model; rather the model is used as a heuristic device to guide the formation of hypotheses, the types of measures developed, and the interpretation of the data. The present investigation differs from the Zimmerman and Martinez-Pons (1986) study in a number of ways. The LAI interview deals more broadly with environmental and behavioral functions of students than the interview developed by Zimmerman and Martinez-Pons (1986). The LAI interview provided

information not only about learning activities but also other activities in which the students engaged outside of the classroom. This information is particularly interesting because the urban school student has to deal with a less advantaged home environment.

Of particular interest was learning how the inner city students are able to self-regulate in home environments that are typically not conductive to self-regulation. Unlike the SRLIS, the LAI interview focused on behavioral activities as well as strategic information in order to find out specifically how the inner city students cope with their difficult environments.

Pilot Investigation

To acquire information about the daily life of students who attend an inner-city junior high school, especially these who are achievers according to school records, the LAI was developed and pilot tested before undertaking the proposed research. In addition to assessing students' learning activities outside of the classroom, it sought information about their daily activities and their home and school environments. These included: questions such as: In what kind of environment do they study? Do they have adequate books? How do they spend their free time? How do they spend their time at school and at home? How do they prepare for exams? With whom do they study? How do they organize their studying?

The objective of the pilot study was to refine the items and scoring system. Like the SRLIS (Zimmerman & Martinez-Pons, 1986) the LAI interview schedule considered questions in six different contexts: 1) home, 2) classroom, 3) writing assignments, 4) math assignments, 5) test taking and 6) motivation. There was a total of 32 questions. The pilot study focused on the items' clarity and evocativeness of diverse student's responses.

The pilot study was conducted in an inner city public school similar in student's socioeconomic and ethnic background to that which was subsequently proposed. The subjects were 20 junior high school students, 8 boys and 12 girls seventh and eighth graders. There were 10 students identified by their teachers as high achievers and 10 identified by their teachers as regular achievers.

Procedure.

The students were taken individually to a classroom where they were informed that questions would be asked of them regarding their studying activities and that their answers would not affect their academic grades in school. They were also informed that their participation in the pilot study was completely voluntary and that they could withdraw from the study at any point if they wished so. The duration of the interviews ranged from 40 to 65 minutes and when they were concluded, the tapes were all transcribed individually. Once the interviews were completed, a

composite of answers for each of the 32 questions on each of the six contexts was made. The answers to questions 1 through 32 were all analyzed for similarities and to identify the common factors for the academic achievers.

On the basis of previous social learning research and theory (e.g., Bandura, 1986; Thoresen and Mahoney, 1974; Schunk, 1984; Zimmerman and Martinez-Pons, 1986, 1988; Zimmerman, 1989a, 1989b), a series of categories of learning activities were identified. Each of the questions in the Learning Activities Inventory (LAI) was related to the social cognitive model view of self-regulated learning (Zimmerman, 1989a).

The three factors of personal, environmental and behavioral influences were represented in the interview schedule. (See Appendix D). For example, answers to questions such as "Where do you go if you don't have enough information?" and "What kind of support do you ask for from your teachers?" indicated the influence of the social and physical environment. Answers to questions such as "At home, where do you study, when do you study, with whom do you study" also were designed to reveal student efforts to self-regulate the social and physical environments. Answers to questions such as "Have you set any goals for yourself as a student, if so, what are they" and "Do you set daily goals for yourself? What kind? " were designed to reveal the role of personal (self) influences in self-regulation (see

Appendix C). Answers to questions such as "How important is your achievement in school to your parents? Do they have any specific expectations? What are they? " and "How do you know if you are prepared for a test?" "After taking a test do you do anything about questions you might have missed?" sought to uncover behavioral efforts to self-regulate (see Appendix C).

Eighteen categories of learning activities were identified on the basis of previous research and theory. The protocols of pilot students were used to derive definitions and examples of each category (See Appendix D and Appendix H). The categories included measures of personal factors, behavioral factors and environmental factors. Among the personal factors, the following categories were identified: time accounting, time budgeting, academic worries, organizing and transforming, rehearsing and memorizing, and goal setting. Among the behavioral factors, the following categories were identified: free time reading activities, homework activities done as a priority, keeping records, self-observation and self-judgement and self-reaction. Environmental factors included categories such as: designated place of study, seeking support from teachers, seeking information (non-social), academic activities with friends, seeking social assistance (other than teacher), environmental structuring and reviewing records.

For the pilot investigation, the interpretation of the questionnaire results was guided by social learning concepts and criteria. (See Appendix F). The scoring procedures developed for the Pilot Investigation and used in the present study are illustrated in Appendix G. The unit of analysis was a sentence or a phrase. The answer to any question could be in one or more of the 18 categories or in none of them. A category label "other" was included to score answers not included in the 18 categories identified. Two graduate students independently coded approximately 20 percent of the protocols. The graduate students were previously trained using the protocols of the pilot testing. A reliability check (see Withall, 1949, and Zimmerman & Martinez-Pons, 1986, 1988) indicated an interobserver agreement level of more than 80 percent. For items where there was disagreement, the author met with the graduate and discussed them until mutual consent was reached.

The results of this investigation led to the elimination of some of the unclear items in the Learning Activity Inventory (LAI) interview schedule. Results also led to the clarification of the research hypotheses and assumptions for the present study. Accordingly, the present investigation used teacher and student measures of self-regulation and purports to answer the following questions: (1) Are inner city students who are self-regulated also high achievers in school? (2) Which student

activities are most highly associated with their academic achievement? (3) In which learning activities do self-regulated inner city students engage in and outside of the classroom? (4) What is the relationship between variables comprising the three sources of student self-regulation (personal, environmental, behavioral)? Within each of these three sources of influence, what are the relationships among the component variables?

Hypotheses

A series of hypotheses derived from the reviewed literature, and the results from the pilot investigation are proposed below.

1. Students' self regulation scores as measured by their teachers on the Rating Student Self-Regulated Learning Outcomes: A Teacher Scale (RSSRL), will be positively and significantly related to two student measures of academic achievement (mathematics and reading).

2. Students scores on each of the Learning Activities Inventory (LAI) areas (personal, behavioral and environmental), will be significantly related to their reading and mathematical achievement.

3. Students' self-regulation scores (as measured by the RSSRL scale) will be significantly related to their out of class engagement in activities that reflect self-regulated learning (as measured by the LAI).

4. Positive and significant relationships will be

found between the three sources of student self-regulation--namely personal, environmental and behavioral activities.

# CHAPTER III

## METHOD

### Subjects

The subjects for this study were 100 students selected from a public junior high school in New York city. There were 50 seventh and eighth graders randomly selected from school records who displayed high achievement. A comparison group of 50 students was randomly selected from the third quartile of the same school (50th to 74th percentile). The comparison group did not include lower achieving youngsters because the goal of the study was to determine whether the self-regulated learning measures could predict students' achievement among inner city students as effectively as it had among regular achieving suburban youngsters (Zimmerman & Martinez-Pons, 1986). Since the regular achieving youngsters in that study scored between the 50th and 74th percentiles, the same parameter was imposed in this study. It should be noted that this decision to exclude lower achieving inner city students from the comparison group constituted a more demanding test of the relationship between self-regulation and achievement because it reduced the range of scores by fifty percent.

The students' mean age was 13 years and 4 months.

There were 45 girls and 55 boys. The school was characterized by a large variety of ethnic groups as well as racial diversity, including approximately 5% Asian, 27% Black, 48% Hispanic and 20% White. The racial diversity of the sample was 5% Asian, 23% Black, 39% Hispanic and 33% White. When comparing the ethnicity of the sample against that of the school, only the white students were over represented in the sample of regular and high achieving youngsters, Chi-Square (1)= 8.45, $p< .01$.

Socioeconomic status of the students attending the school was generally low, measured by the number of free lunches associated with low economic income. Approximately 56% of the students were eligible for free lunch and 19% of the students were eligible for reduced price lunch. Only 25% of the students paid full price for their lunch. The academic performance of the general population of students at this inner city school was poor. Approximately 42% of the students were eligible for Chapter I support. Chapter I student eligibility is primarily based on performance on citywide tests results, such as scoring in the bottom quartile on either the reading or the math citywide test or being more than one year over-age for their grade. Parental permission for subject participation was obtained. (See Appendix A).

Measures

Academic achievement. Measures of academic achievement were obtained from school records on the Degrees of Reading Power (DRP) test and the Mathematics section of the Metropolitan Achievement Test (MAT-M). Students who scored on or above the 76th percentile on both the DRP and the MAT-M tests were identified as high achievers according to New York State public school standards. Students who scored between the 50th and 75th percentile on both academic measures according to national norms were identified as regular achievers. According to the New York City Board of Education, for all grades and test forms, students whose percentile scores are in the top quartile are eligible for enrichment or accelerated programs (NYC Board of Education, 1989).

Although the achievement level of the school was below national norms, the sample involved regular and high achieving students according to national criteria. This allowed the results from students attending an inner city school to be compared with prior research comparing these two groups of students in suburban schools (Zimmerman & Martinez-Pons, 1986).

Self-Regulated Learning. Measures of academic self-regulation were obtained using the Rating Student Self-Regulated Learning Outcomes: A Teacher Scale (RSSRL) (See

Appendix B), an instrument developed by Zimmerman and Martinez-Pons (1988) to measure teacher observations of student self-regulated performances in classroom situations. The Cronbach reliability coefficient for this scale was .95.

Learning Activities. Measures of students learning activities were obtained using the Learning Activities Inventory (LAI), a personal interview schedule developed for the present study (See Appendix C). The Interview Schedule includes questions about six different learning contexts: (1) At home, (2) classroom, (3) writing assignments, (4) mathematics assignments, (5) test taking and (6) motivation. The importance of these six different contexts was established in an earlier study by Zimmerman and Martinez-Pons (1986). During pilot testing, 32 questions were found to be effective, and 18 response categories were identified and used to classify the students' answers.

Procedure.

Parental consent was obtained for the students participating in the study (See Appendix A). Scores on self-regulation outcomes were obtained by using the Rating Student Self Regulated Learning Outcomes (RSSRL), a teacher scale. Copies of this instrument were given to a teacher of each student in the sample. The completed forms were collected from the teachers. All students were given the Learning Activities inventory (LAI). They were taken

individually by the experimenter to a classroom where they were informed that they would be asked questions regarding their study activities. They were told that their answers would not affect their grades in school. They were also informed that their participation in the study was voluntary and that they could withdraw from the study at any point if they wished to do so. Before the initiation of the interview, their consent was obtained concerning the taping of the interview.

The answers to each particular question were recorded on audio tape as well as on a note pad by the interviewer. If a student failed to give an answer, the question was clarified using a planned probe. The interview schedule as previously mentioned considered questions in six different contexts: (1) At home, (2) classroom, (3) writing assignments, (4) mathematics assignments, (5) test taking and (6) motivation.

For the context Studying at Home, the students were asked: Describe a typical school day from the time you get up in the morning to the time you go to bed; What do you like to do during your free time? Do you have adequate books at home and if not, what do you do? How important are books to you? Where do you study, when, and with whom? Do you study during weekends? Do you ever need help with your homework, and what do you do if you haven't finished your

homework when you usually go to bed?

In the Classroom Learning context, students were asked: Do you take notes in school and if so, how do you organize them? Students were also asked: what kind of support do you need from your teachers? Where do you go if you don't have enough information? Do you study between classes? Do you study or discuss school matters with friends, and what are your concerns about school?

In the Writing Assignment context, students were asked: Do you usually ask for help when doing a writing assignment, and if so, whom do you ask? Do you have a particular method for doing writing assignments, and if so, describe it. The students were also asked: What do you do when writing a paper on a topic with which they were not familiar?

In the Math Assignment context, students were asked: Do you usually ask for help when doing a math assignment,and if so whom do you ask? Do you have a particular method for doing it, and if so, describe it. The students were also asked, what do you do when completing an assignment on a topic that is difficult for you?

In the Test Taking context, students were asked: Do you have a specific way of preparing for a test and if so, describe it? They were also asked, do you have any way of organizing information that you might need on a test? Students were asked, can you figure out a way of finding out

what will a teacher ask in a test and how he or she will ask it? Also, students were asked, if after taking a test, do you do anything about questions you might have missed?

For the Motivation context, students were asked, how important is you achievement in school to your parents? Do your parents have any specific expectations, and if so, what are they. They were asked: Do you set any specific goals for yourself as a student? Do you set daily goals for yourself? Do you have any relatives who had done well in school? What do you find most rewarding as a student? And what do you want to be when you get out of school?

At the conclusion of the interview, the students were thanked for their participation in the study, and were returned to class.

Definitions of Categories for the LAI

Eighteen response categories were incorporated into the Learning Activities Inventory (LAI). Six categories fell under the personal dimension, seven categories were subsummed under the environmental dimension and five were under the behavioral dimension. (For definitions of LAI categories, see Appendix D).

Under the personal dimension, the following categories were identified: time accounting, time budgeting, academic worries, organizing and transforming, rehearsing and memorizing and goal setting. Students' time accounting was

defined as statements indicating awareness of specific times at which activities take place, e.g., "I get up at 6:00 am", "I arrive home at 3:00 pm". Students' time budgeting was defined as statements indicating the amount of time used for a specific activity, e.g., "I study one hour a day" or "I study from 7:00 pm to 7:30 pm". Students' academic worries were defined as statements indicating academic worries such as "I worry about my report card". The category of organizing and transforming was defined as statements indicating student initiated overt or covert rearrangements of instructional materials to improve learning, e.g., "I make an outline before I write my paper". The category of rehearsing and memorizing was defined as students' statements indicating self-initiated efforts to memorize material by overt or covert practice, e.g., "In preparing for a math test, I keep writing the formula down until I remember it". The category of goal setting was defined as students' statements indicating setting of educational goals or subgoals and planning for sequencing, timing and completing activities related to those goals, e.g., "I start studying much before the exam, and I pace myself".

Under the environmental dimension, the following categories were identified: Designated place of study, seeking support from teachers, seeking non social information, academic activities with friends, seeking

social assistance, environmental structuring and reviewing records. Designated place of study was defined as statements indicating where the studying takes place at home, e.g., "I study in my own bedroom". Seeking support from teachers was defined as statements indicating academic support expected from teachers, e.g., "I expect the teacher to answer my questions when I don't understand something". Seeking non-social information was defined as statements indicating students' non-social sources of information, e.g., "I go to the library". Academic activities with friends was defined as statements indicating academic activities with friends, e.g., "She helps me to study". The category of seeking social assistance was defined as statements indicating students' initiated efforts to solicit help from parents, or other adults, e.g., "If I have problems with math, I ask my mother to help".

The category of environmental structuring was defined as statements indicating student initiated efforts to select or arrange the physical setting to make learning easier, e.g., "I isolate myself from anything that distracts me". The category of reviewing records was defined as students' statements of self-initiated efforts to reread notes, tests or textbooks to prepare for class or further testing, e.g., "When preparing for a test, I review my notes".

Under the behavioral dimension, the following

categories were identified: Free time reading activities, homework activities, keeping records, self-observation, self-judgement and self-reaction. Free time reading activities were defined as statements indicating free time spent reading. Homework activities were defined as statements indicating whether homework is done regularly or as a priority, e.g., "I do my homework first". Keeping records was defined as statements indicating students' efforts to record events or results, e.g., "I keep a list of the words I got wrong". Self-observation and self-judgement were defined as students' statements of self-initiated reporting or recording of one's own actions in comparison to a norm, e.g., "If I don't understand...", or "If it is not clear...". The category of self-reaction was defined as students' statements of self-initiated reaction to a particular learning situation, e.g., "If I don't understand, I read again".

Scoring the LAI

The scoring procedure developed during pilot testing to score students' answers to the Learning Activities Inventory (LAI) interview schedule was used during the present study (See Appendix D and G). Students responses to the LAI were scored separately for each variable within each of the three dimensions personal, environmental and behavioral. Students' answers were recorded verbatim and later scored

when they met the criteria that had been proposed. The unit of analysis was a sentence or phrase. The answer to any question could be classified in one or more of the 18 categories or in none of them. A category label other was included to score answers not included among the 18 categories.

The following are examples of the scoring procedure: An answer such as: "I get up at 6:30 am.." was scored under personal dimensions, time accounting category. An answer such as: "I usually study from 7:00 pm to 8:00 pm..." was scored under personal dimension, time budgeting category. An answer such as: "I keep a list of the words I got wrong" was scored under behavioral dimension, in the category of keeping records. An answer such as: "I study in my own bedroom" was scored under environmental dimension, in the category designated place of study. An answer such as: "I ask my brother for help" was scored under environmental dimension, seeking social assistance (other than teacher) category. A reliability check developed by Withall (1949) that had been used in previous studies (i.e., Zimmerman & Martinez-Pons, 1986; 1988) and in pilot testing was also used during the present study. The protocols were independently coded by two graduate students. The coders had been trained to reach an 80 percent level of agreement using the protocols of subjects interviewed during the pilot

study. Agreement was determined on the basis of the ratio of the number of categorical judgments in which the two coders agreed divided by the total number of learning activities identified. An 80 percent level of agreement was maintained during reliability check for the present study. Approximately 20% of the protocols were tested for reliability.

Design and Data Analysis.

The relationship was examined between three variables: academic achievement, self-regulation outcomes, and learning activities. The results of this study were analyzed using three types of statistical procedures: canonical correlations, regression analyses and Pearson correlations.

(1) Hypothesis one was tested in the following way: To determine if inner city students who are identified by their teachers as self-regulated actually achieve better in school, a canonical correlation was performed. The 12 items of the teacher scale served as predictors and mathematics and reading achievement as outcome variables.

(2) The second hypothesis focused on student activities and their academic achievement. To determine the degree to which students' choice of learning activities contributed to their achievement in school, a second canonical correlation was performed using the students' total activity scores for each of the three areas of LAI:

namely personal, environmental and behavioral (summing across 18 items in the scale as predictors) and math and reading achievement as outcome variables. It is hypothesized that self-regulation is significantly related to academic achievement.

(3) The third hypothesis that was addressed focused on the types of learning activities in which self-regulated students engage. Which student activities correlate with total teacher ratings? A regression analysis was performed to determine if the 18 activities hypothesized to reflect self-regulated learning were significant predictors of the self-regulation scores (RSSRL). This analysis would indicate relation between self-regulation outcomes in school and inner city students learning activities on their own.

(4) The fourth hypothesis involved relationship among the various types of student activities both between and within the three dimensions of self-regulation. A series of Pearson correlation analyses were performed among personal, environmental and behavioral dimensions.

# CHAPTER IV

## RESULTS

The students' means and standard deviations for the academic achievement measures, MAT-M and DRP scores are presented in Table 1. Rather than splitting the students into two achievement groups at 75th percentile, which would greatly reduce the variability of the data, it was decided to treat student achievement as a continuous variable for the statistical analysis. The resulting means of the MAT-M (M= 73.62 and M= 77.05) and DRP (M= 68.98 and M= 74.20) for the combined samples fell close to the 75th percentile as expected.

TABLE 1

Mean Scaled Scores and Standard Deviation of The Metropolitan Achievement Test in Mathematics (MAT-M) and The Degrees of Reading Power (DRP) Test by Grade

| Tests | Grade 7th | 8th |
|---|---|---|
| MAT-M | M = 73.62<br>SD= 13.87<br>(n= 45) | M = 77.05<br>SD= 16.20<br>(n= 55) |
| DRP | M = 68.98<br>SD= 13.68<br>(n= 45) | M = 74.20<br>SD= 13.13<br>(n= 55) |

Hypothesis 1

Hypothesis 1 stated that means of students' self regulation ratings as assessed by their teachers (the RSSRL), will be positively and significantly related to their academic achievement. To determine which type of (teachers' perceived) student self-regulation predicted academic achievement among inner city students, a canonical correlation was performed. The canonical correlation procedure was used to determine whether the self-regulation items of the RSSRL were related in any way to the two measures of academic achievement (MAT-M and DRP).

The canonical correlation between the items of the RSSRL and the two achievement measures proved to be significant ($R=.49$, $F$ 11,87= 1.13, $p < .01$).[1] The standardized loadings for the MAT-M measure on the canonical root was .95 and for the DRP was .11. The loadings given to teachers' reports of student use of self-regulated learning strategies on the canonical root, are presented in column 1 of Table 2. As with standardized regression weights, canonical loadings represent the conjoint weighing of all teacher items in the RSSRL scale for optimally predicting the canonical root. The results indicated that the teacher scale item #5 involving student class participation was the best predictor of the canonical root. The teacher scale

[1] Roy's greatest root criterion was used.

item #1 involving student soliciting additional information about the exact nature of the forthcoming test contributed the second largest loading, followed by the teacher scale item #10 involving student volunteering for special tasks, duties or activities related to course work and student soliciting additional information concerning homework assignments. These loadings do not, however, indicate the contribution of each teacher scale item when considered alone to the canonical root. Canonical loadings also take into account collinearity among the 12 items.

TABLE 2

RSSRL Loadings on and Correlations with the Canonical Root

| | Statistical Measures | |
|---|---|---|
| RSSRL | Loadings | r |
| Item 1 | .50 | .40** |
| Item 2 | .37 | .37** |
| Item 3 | - .06 | .31** |
| Item 4 | .14 | .34** |
| Item 5 | .52 | .41** |
| Item 6 | - .35 | .30** |
| Item 7 | - .08 | .27** |
| Item 8 | - .53 | .25** |
| Item 9 | .15 | .26** |
| Item 10 | .46 | .29** |
| Item 11 | .17 | .27** |
| Item 12 | .12 | .33** |

** $p < .01$

The relative contribution of individual teacher scale items can be ascertained from each item correlation with the canonical root. These results are presented in column 2 of Table 2. The correlation coefficients revealed that all 12 items of the teacher scale were significantly related to the canonical root. This analysis indicates that teachers' perceptions of various forms of student self-regulation are positively correlated with academic achievement. Therefore, hypothesis 1 was confirmed.

Hypothesis 2

Hypothesis 2 stated that the students' total scores on each of the Learning Activities Inventory (LAI) areas (personal, environmental and behavioral) will be significantly related to their reading and mathematical achievement. A canonical correlation was conducted in which students' mathematics and reading achievement was predicted from their total activity scores for each of the three areas of the LAI: namely personal, environmental and behavioral (summing across the items within each scale).

The canonical procedure was used to determine if student learning activities that are reflective of self-regulation were related in fact to the academic achievement variables. A significant canonical correlation resulted from the analysis, $R=.33$, $F_{3,96}= 4.02$ $p < .01$.[2] The

[2] Roy's greatest root criterion was used.

loadings given to students learning activities on the canonical root, are presented in column 1 of Table 3.

As mentioned before, the canonical loadings represent the conjoint weighing of all learning activities for optimally predicting the canonical root. The results indicated that the behavioral dimension was the best predictor of the canonical root, followed by environmental dimension, and then by the personal dimension. For this analysis also, canonical loadings take into account collinearity among the three dimensions. The relative contribution of individual dimensions can be obtained from correlations between each dimension and the canonical root. These results are presented in column 2 of Table 3. The correlation coefficients revealed that all three dimensions were significantly related to the canonical root.

TABLE 3

Students' Learning Activities Loadings on and Correlations with the Canonical Root

| | Statistical Measures | |
|---|---|---|
| LAI | Loadings | r |
| Personal Dimension | .12 | .22 * |
| Environmental Dimension | .30 | .22 * |
| Behavioral Dimension | .76 | .32 ** |

* $p < .05$
** $p < .01$

This analysis indicate that students' reported engagement in learning activities associated with self-regulation are positively correlated with academic achievement. Therefore hypothesis 2 was confirmed.

Hypothesis 3

Hypothesis 3 stated that students' self-regulation scores (as measured by the RSSRL teacher scale) will be significantly related to their out of class engagement in activities assumed to reflect self-regulated learning (as measured by the LAI).

The means and standard deviations for each of the learning activities are presented in Table 4. The mean for the combined personal activities was 9.82, for the combined environmental activities was 18.39 and for the combined behavioral activities was 4.14 (See Table 4).

As indicated, the three most frequent learning activities were for students seeking social assistance (M= 5.39), students seeking teacher's support (M= 4.77), and students seeking non-social information (M=2.70) which all fell within the environmental dimension of learning activities.

TABLE 4

Means and Standard Deviations of Learning Activities (LAI)

| Learning Activities | M | SD |
|---|---|---|
| PERSONAL DIMENSION | 9.82 | 4.48 |
| Time Accounting | 1.95 | 2.10 |
| Time Budgeting | .90 | 1.20 |
| Academic Worries | 1.76 | .59 |
| Organizing and Transforming | 2.52 | 1.59 |
| Rehearsing and Memorizing | 1.11 | 1.15 |
| Goal Setting | 1.58 | 1.24 |
| ENVIRONMENTAL DIMENSION | 18.39 | 5.30 |
| Designated Place of Study | 1.26 | .61 |
| Seeking Teacher Support | 4.77 | 2.16 |
| Seeking Non-social Information | 2.70 | 1.64 |
| Academic Activities with Friends | 1.95 | 1.22 |
| Seeking Social Assistance | 5.39 | 2.04 |
| Environmental Structuring | .16 | .39 |
| Reviewing Records | 2.16 | 1.50 |
| BEHAVIORAL DIMENSION | 4.14 | 1.92 |
| Free time reading | .49 | .67 |
| Homework | 1.62 | .71 |
| Keeping records | 1.12 | 1.11 |
| Self-judgement | .66 | .62 |
| Self-Reaction | .25 | .46 |

Three multiple regression analyses were performed in order to determine the learning activities that correlated with students' self-regulation. Self-regulation, the dependent variable, was measured using the total score for the RSSRL a teacher scale. All activities within each dimension (personal, environmental, and behavioral) were entered as a separate dimension group in three stepwise regression analyses. As seen in Table 5, organizing and

transforming was the most significant activity within the personal dimension ($R$= .36, $p$ < .001), entering the equation first. It was followed by time budgeting, the next significant activity within the personal dimension which increased the overall predictive value by $R$= .07 to a combined total of $R$= .43, ($p$ < .001). The other categories of learning activities within the personal dimension (time accounting, academic worries, rehearsing and memorizing, and goal setting) did not improve prediction of student self-regulation significantly.

Within the environmental dimension, reviewing records was the most significant predictor variable ($R$= .25, $p$ < .01), other categories or learning activities within the environmental dimension (specific place of studying at home, seeking academic support from teachers, seeking non-social information, seeking academic help from friends, seeking social assistance, and environmental structuring) did not improve the prediction further.

Keeping records was found to be the most significant behavioral predictor of self-regulation ($R$= .37, $p$ < .001), entering the equation first. Homework done as a priority ($R$= .45, $p$ < .001) entered the equation second and increased the overall predictivity by $R$= .08. The other independent variables (reading during free time, self-judgement and self-reaction), did not entered the equation.

TABLE 5

Multiple Correlations to Predict Self-Regulation Based on the Use of Learning Activities

| Predictor Variables[a] | Multiple R | Increase in R[b] | F | DF | Sign. |
|---|---|---|---|---|---|
| PERSONAL DIMENSION | | | | | |
| Organizing and Transforming | .36 | | 14.64 | 1,98 | .001 |
| Time Budgeting | .43 | .07 | 11.13 | 2,97 | .001 |
| ENVIRONMENTAL DIMENSION | | | | | |
| Reviewing Records | .25 | | 6.4 | 1,98 | .01 |
| BEHAVIORAL DIMENSION | | | | | |
| Keeping Records | .37 | | 15.08 | 1,98 | .001 |
| Homework | .45 | .08 | 12.34 | 2,97 | .001 |

[a]Predictor variables were entered into the equation in a stepwise manner.
[b]This indicate the increase in R due to the inclusion of the second step-wise prediction variable
[c]As indicated below, the correlation for the total scores ($r$= .59, $p$ < .05 ) was higher than for individual scores.

In order to determine the contribution of each activity to the students' self-regulation, a correlation (Pearson) was run between each of the 18 learning activities identified in the LAI, and the RSSRL measure of self-regulation, and the results are presented in Table 6. Unlike a regression analysis that takes into account collinearity between the learning activities, a correlation analysis assesses the separate relation of each learning

activity with student self-regulation. Seven of the 18 learning activities were correlated with the teacher scale at a significant level. Organizing and transforming ($r$= .36, $p$ < .001), time accounting ($r$= .27, $p$ < .01), time budgeting ($r$ = .25, $p$ < .01), rehearsing and memorizing ($r$= .24, $p$ < .01), reviewing records ($r$= .25, $p$ < .01), homework done as a priority ($r$= .30, $p$ < .001), and keeping records ($r$= .37, $p$ < .001).

In addition to these specific learning activities, the personal dimension total (r= .42, $p$< .001), the environmental dimension total (r= .28, $p$ < .01), and the behavioral dimension total (r= .37 $p$ < .001) were all significantly related to self-regulation, as seen in Table 6. In order to determine the combined predictive value of the three self-regulation dimensions, a regression analysis was performed. It was found that students' engagement in personal, environmental and behavioral activities out of class were predictive of their self-regulation ($r$= .59, $p$ < .05) in class (as rated by their teachers on the RSSRL).

The results indicate not only a strong relationship between self-regulation and total learning activities on each dimension, but they identify the learning activities in which self-regulated inner city students engage. Hypothesis 3 was, therefore, confirmed: Students' self-regulation scores as measured by the RSSRL the teachers scale were

significantly related to their out of class engagement in activities assumed to reflect self-regulation.

TABLE 6

Correlations Between Teachers Ratings of Student Self-Regulation, Student Learning Activities and Personal, Environmental and Behavioral Dimensions

| Learning Activities | r | p< |
|---|---|---|
| PERSONAL DIMENSION | .42 | .001 |
| Time Accounting | .27 | .01 |
| Time Budgeting | .25 | .01 |
| Academic Worries? | .04 | NS |
| Organizing and Transforming | .36 | .001 |
| Rehearsing and Memorizing | .24 | .01 |
| Goal Setting | .11 | NS |
| ENVIRONMENTAL DIMENSION | .28 | .01 |
| Designated Place of Study | .14 | NS |
| Seeking Teacher Support | .14 | NS |
| Seeking Non-social Information | .22 | NS |
| Academic Activities with Friends | -.01 | NS |
| Seeking Social Assistance | .17 | NS |
| Environmental Structuring | .06 | NS |
| Reviewing Records | .24 | .01 |
| BEHAVIORAL DIMENSION | .37 | .001 |
| Free time reading | .05 | NS |
| Homework | .31 | .001 |
| Keeping records | .37 | .001 |
| Self-judgement | .09 | NS |
| Self-Reaction | -.02 | NS |

Hypothesis 4

Hypothesis 4 stated that positive and significant

relations will be found between activities across the three dimensions--personal, environmental and behavioral as well as among activities within each dimension. A series of Pearson correlation analyses were performed. Table 7 presents the intercorrelation between activities in the personal, environmental and behavioral dimensions.

Table 7

Correlations Among Personal Environmental and Behavioral Dimensions, and with RSSRL

| | Personal | Environmental | Behavioral | RSSRL |
|---|---|---|---|---|
| Personal | 1.00 | .50** | .49** | .42** |
| Environmental | | 1.00 | .41** | .28* |
| Behavioral | | | 1.00 | .37** |
| RSSRL | | | | 1.00 |

* $p < .01$
** $p < .001$

Overall, the correlations between personal and environmental dimensions was .50, between personal and behavioral dimensions was .49 and between environmental and behavioral dimensions was .41 (all $ps < .001$). Since these analyses indicate that positive and significant correlations were found between the three dimensions of student activities, hypothesis 4 was confirmed.

In addition, significant correlations were found among

variables within two dimensions: personal and environmental. Significantly correlated learning activities are connected by a line in Figure 3. The corresponding r values are presented in Table 8. Among personal variables, the following correlations were found: between time accounting and time budgeting ($r= .33$, $p < .001$), between time budgeting and goal setting ($r= .26$, $p < .01$), and between organizing and transforming and rehearsing and memorizing ($r= .28$, $p < .01$).

Also, a number of significant correlations were found among environmental variables (see Figure 3). For example, students who sought support from teachers also sought support from others as well ($r= .27$, $p < .01$), and tended to associate with friends for academic activities ($r= .29$, $p < .01$). Significant correlations were also found between students seeking non-social information and students seeking social assistance ($r= .23$, $p < .01$), environmental structuring ($r= .34$, $p < .001$) and reviewing records ($r= .41$, $p < .001$). None of the behavioral variables were related to each other and thus none are connected visually in Figure 3 by a line.

Significant correlations between personal, environmental and behavioral learning activities are presented in Figure 4. As in Figure 3, significantly correlated learning activities are correlated by a line.

# TABLE 8

## SIGNIFICANT RELATIONS BETWEEN LEARNING ACTIVITIES WITHIN AND ACROSS PERSONAL, ENVIRONMENTAL AND BEHAVIORAL DIMENSIONS

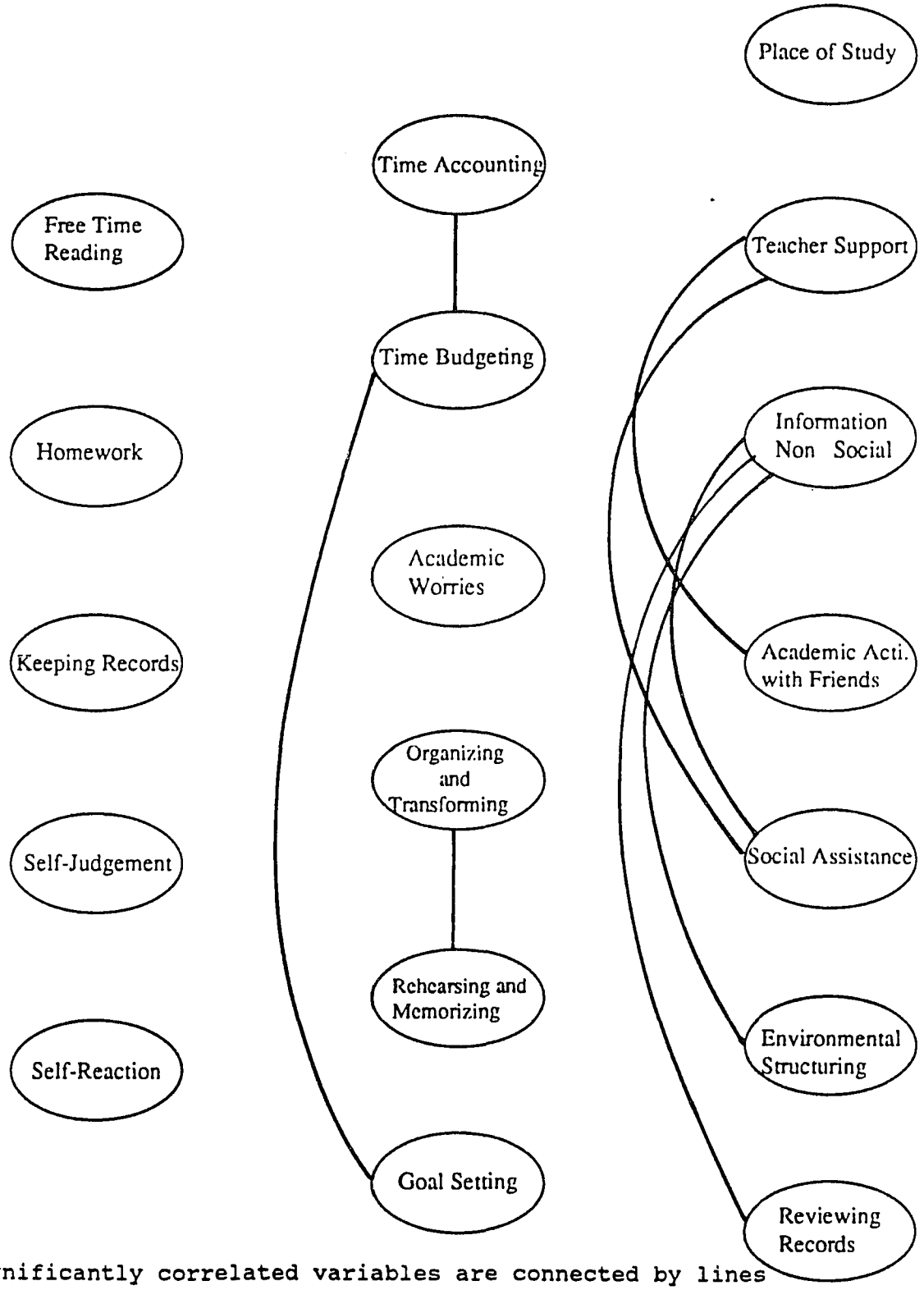
| | TIMEACC | TIMEBUD | ACAWORR | ORGTRANS | REHEMEMO | GOALSET | PLACEST | TRSUPPRT | INFONONS |
|---|---|---|---|---|---|---|---|---|---|
| TIME ACCOUNTING | 1.00 | .33** | -- | -- | -- | -- | -- | -- | .31** |
| TIME BUDGETING | .33** | 1.00 | -- | -- | -- | .26* | .27* | -- | -- |
| ACAD.WORRIES | -- | -- | 1.00 | -- | -- | -- | -- | -- | -- |
| ORG & TRANSFORMING | -- | -- | -- | 1.00 | .28* | -- | -- | -- | .27 |
| REH.& MEMORIZING | -- | -- | -- | .28* | 1.00 | -- | -- | .30* | -- |
| GOAL SETTING | -- | .26* | -- | -- | -- | 1.00 | -- | -- | -- |
| PLACE OF STUDY | -- | .27* | -- | -- | -- | -- | 1.00 | -- | -- |
| TEACHER SUPPORT | -- | -- | -- | -- | .30* | -- | -- | .100 | -- |
| NON SOCIAL INFO | .31** | -- | -- | .27* | -- | -- | -- | -- | 1.00 |
| ACAD WITH FRIENDS | -- | -- | .24* | -- | .24* | -- | -- | .29* | -- |
| SEEK SOC. ASSTANCE | .29* | -- | -- | -- | .29* | -- | -- | .27* | .23* |
| ENVIR. STRUCTURING | .29* | .31** | -- | -- | -- | -- | -- | -- | .34** |
| REVIEWING RECORDS | .33** | -- | -- | .28* | .39** | -- | -- | -- | .41** |
| FREE READING | .29* | -- | -- | -- | -- | -- | -- | -- | .36** |
| PRIORITY HOMEWORK | -- | .28* | -- | -- | -- | -- | .28* | -- | -- |
| KEEPING RECORDS | .25* | .25* | -- | .32** | .30* | -- | -- | -- | .27 |
| SELF-JUDGEMENT | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SELF-REACTION | -- | -- | -- | .26 | -- | -- | -- | -- | -- |

| | ACACFRDS | SOCASST | ENVSTRUC | REVRECOR | FREEREAD | HOMEWORK | KEEPREC | SELFJUD | SELFREAC |
|---|---|---|---|---|---|---|---|---|---|
| TIME ACCOUNTING | .-- | .30* | .30* | .33** | .29* | -- | .25* | -- | -- |
| TIME BUDGETING | .-- | .-- | .31** | -- | -- | .26* | .25* | -- | -- |
| ACAD.WORRIES | .24* | -- | .-- | -- | -- | -- | -- | -- | -- |
| ORG & TRANSFORMING | -- | -- | -- | .28* | -- | -- | .32** | -- | .26* |
| REH.& MEMORIZING | .24* | .28* | -- | .39** | -- | -- | .30** | -- | -- |
| GOAL SETTING | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| PLACE OF STUDY | -- | -- | -- | -- | -- | .28* | -- | -- | -- |
| TEACHER SUPPORT | .29* | .26* | -- | -- | -- | -- | -- | -- | -- |
| NON SOCIAL INFO | -- | .23* | .34** | .41** | .36** | -- | .27* | -- | -- |
| ACAD WITH FRIENDS | 1.00 | -- | -- | -- | .33** | -- | -- | .-- | -- |
| SEEK SOC. ASSTANCE | -- | 1.00 | -- | -- | -- | -- | -- | -- | -- |
| ENVIR. STRUCTURING | -- | -- | 1.00 | -- | -- | .26* | -- | -- | -- |
| REVIEWING RECORDS | -- | -- | -- | 1.00 | -- | -- | .39** | -- | -- |
| FREE READING | .33** | -- | -- | -- | 1.00 | -- | -- | -- | -- |
| PRIORITY HOMEWORK | -- | -- | .26* | -- | -- | 1.00 | -- | -- | -- |
| KEEPING RECORDS | -- | -- | -- | .39** | -- | -- | 1.00 | -- | -- |
| SELF-JUDGEMENT | -- | -- | -- | -- | -- | -- | -- | 1.00 | -- |
| SELF-REACTION | -- | -- | -- | -- | -- | -- | -- | -- | 1.00 |

* $p < .01$
** $p < .001$

FIGURE 3
SIGNIFICANT RELATIONS BETWEEN LEARNING ACTIVITIES
WITHIN PERSONAL, ENVIRONMENTAL AND BEHAVIORAL DIMENSIONS

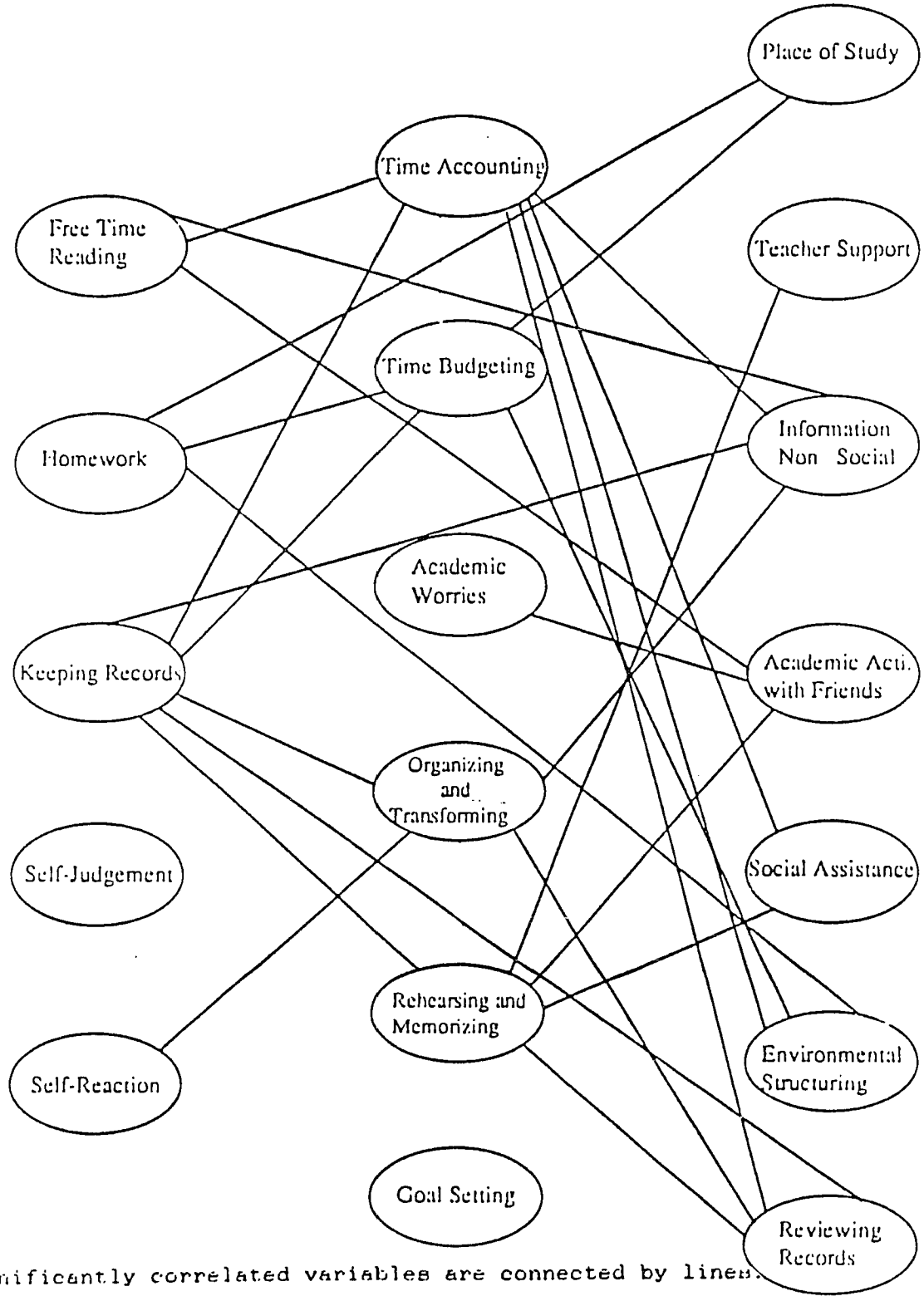





Significantly correlated variables are connected by lines

FIGURE 4
SIGNIFICANT RELATIONS BETWEEN LEARNING ACTIVITIES
ACROSS PERSONAL, ENVIRONMENTAL AND BEHAVIORAL DIMENSIONS






Significantly correlated variables are connected by lines.

The corresponding r values are presented in Table 8. It is visually apparent in Figure 4 that time accounting was the activity that was most frequently correlated with other learning activities. It was correlated with seeking nonsocial information ($r= .31$, $p< .001$), seeking social assistance ($r= .29$, $p< .01$), environmental structuring ($r= .29$, $p< .01$), reviewing records ($r= .33$, $p< .001$) and free time spent reading ($r= .29$, $p< .01$). Rehearsing and memorizing was the second most frequently correlated learning activity. It was correlated with seeking support from teachers ($r= .30$, $p< .01$), academic activities with friends ($r= .24$, $p< .01$), seeking social assistance ($r= .29$, $p< .01$), reviewing records ($r= .33$, $p< .001$) and keeping records ($r= .25$, $p< .01$). Organizing and transforming and time budgeting tied for third (See Table 8 and Figure 4).

These data suggest that personal activities may play a central role in mediating the other two dimensions of self-regulated learning.

# CHAPTER V

# DISCUSSION

## Summary

Prior studies found that students attending inner city schools must contend with disadvantaged learning environments such as crowded homes, poorly maintained facilities and classmates from (a) different ethnic groups with limited English language skills (Fernandez and Nielsen, 1986), (b) with diminished levels of achievement and high dropout rates (Ekstrom, Goertz, Pollack, and Rock, 1986; Shanker, 1988; West, 1985), and (c) with limited financial resources. The goal of the present study was to investigate the use of self-regulated learning processes by students who succeed in inner city schools despite these obstacles.

This study explored a view of students' achievement and learning suggested by cognitive social learning theorists (Bandura, 1986; Schunk, 1986; Zimmerman, 1986, 1989a, 1989b) That assumes that students can learn to become active managers of their own learning. It has been documented that children who initiate achievement-related behaviors and learning on their own achieve more than those who are dependent on direct interpersonal controls and rewards (Ryan & Connell, 1988). Self-regulation theorists have discussed anecdotal evidence that students may learn and achieve despite many environmental obstacles (Bandura & Schunk,

1981; Schunk, 1984; Zimmerman, 1983, 1986). Historical figures such as Benjamin Franklin and Abraham Lincoln are cases in point (Zimmerman, 1990).

Researchers have shown empirically that students who are self-regulated learners employ more strategies to achieve their academic goals (Zimmerman, 1989c) and their use of strategies was highly correlated with performance on standardized academic tests (Zimmerman & Martinez-Pons, 1988). However, these initial studies were conducted with middle class children attending highly advantaged suburban schools. The present study represents a first attempt to investigate a relation between the use of self-regulated learning and academic achievement by students attending inner city schools. In addition, the study sought to describe use of self-regulated strategies in the learning activities of successful students living in disadvantaged academic and home environments.

The inner city school selected for the present study reflected the typical disadvantaged characteristics of these institutions. It was characterized by large number of families with limited economic resources, approximately 75% of the students were eligible either for free lunch or reduced price lunch. Another characteristic of inner city schools, diminished levels of academic achievement on standardized tests (National Census Statistics, 1990) was evident. In citywide achievement tests, the students in the

selected school scored very low: Approximately 40% of the students scored in the bottom quartile on either the reading or the math citywide tests. The school was also characterized by high levels of ethnic minorities often with limited English language skills (Fernandez and Nielsen, 1984). Asian, Black and Hispanic students made up 80% of the population in this school, compared with only 20% White.

Although the achievement level of the school was below national norms, the students selected for this study represented regular and high achievers according to national norms. This sample was chosen because the goal of the study was to investigate students of similar achievement levels attending an inner city school using the same selection criteria used in prior research on students in suburban schools (Zimmerman & Martinez-Pons, 1988).

Support for the Hypotheses

It was predicted that students' self-regulation scores would be positively and significantly related to their academic achievement. The data revealed that inner city students' self-regulation score (derived from teachers' observations of their level of performance in class) was correlated positively with their academic achievement. Correlation coefficients revealed that all 12 items of the RSSRL teacher scale were significantly related to the canonical root of two achievement measures, the MAT-M (math) and the DRP (reading). Thus, inner city students who

achieved at exemplary levels displayed greater self-regulation during their performance in class. These achievers were rated by their teachers as more metacognitively and behaviorally proactive regarding their own learning processes. It thus appears that self-regulation was related to achievement among inner city students as it was among suburban youngsters. Furthermore, certain forms of self-regulated learning by inner city students were related to their academic achievement. For example, teacher scale item #5 involving self-initiated class participation was the best predictor of student achievement. Although the teacher scale did not measure specific examples of students class participation, students did provide evidence of their participation in their descriptions of their daily activities. For example,

> "If I don't understand something in class, then, I just rise my hand and ask the teacher to show me an example. I don't like to sit in the back of the room and not participate. If I don't understand something, I just go right out and say it. I'm not going to go home and have trouble afterwards. If the teacher say: Come back after school, then, I'll come after school and she will teach me, but I don't have to do that usually".

Interestingly, their teachers also indicated that self-regulated students were better prepared to participate during class on a daily basis. According to their teachers, the second most effective form of student self-regulation on achievement was soliciting additional information about the nature of the forthcoming test. These students inquired to find out what their teacher expected on the next test. For

example,

> "I usually ask the teacher when she is going to give me a test. I ask her what are the topics, and what pages do I have to study in the book that we have".

Students Reported Use of Self-Regulated Strategies for Learning and Academic Achievement.

The second hypothesis predicted that students' scores on each of the Learning Activities Inventory (LAI) areas (personal, environmental and behavioral) would be significantly related to their verbal and mathematical achievement. This hypothesis was based on the assumption that students' descriptions of themselves as learners and the processes they use to regulate their learning are important factors in their academic achievement (Zimmerman, 1986). Hypothesis two was confirmed: Students' engagement in learning activities associated with self-regulation were positively correlated with academic achievement.

This is an important new finding. Prior measures of self-regulated learning strategies were derived from hypothetical learning tasks that students typically encounter in school (i.e., Zimmerman & Martinez-Pons, 1986) or from rating scales (i.e., Weinstein, 1987). In contrast, the LAI is derived from student descriptions of their daily activities. Thus the importance of self-regulated learning processes in students' academic achievement has been established using a new and distinctive instrument.

Findings from this study indicate that inner city students who are self-regulated achieve better in school. Both teachers' ratings of students' self-regulated learning and inner city students' reports of self-regulated activities for learning were highly correlated with the students' academic achievement. According to the social cognitive theory (Zimmerman, 1986), self-regulated students can learn to overcome environmental limitations by using personal processes to strategically regulate their learning environment. Findings in this study provide support for this view. Academically successful inner city students, reported many more strategic efforts to overcome environmental limitations than their less successful classmates.

Teachers Observations of Students Use of Self-Regulated Learning Strategies and Students Reported Engagement in the Use of Self-Regulated Learning Strategies.

The third hypothesis for the present study focused on the types of learning activities in which self-regulated students engage, and the correlation of these activities with teacher ratings. It was found that students' personal, environmental and behavioral activities out of class were predictive of their self-regulation ($r$= .59) in class (as rated by their teachers). The multiple regression analysis indicated that organizing and transforming was the most significant learning activity within the personal dimension

of self-regulation. Students indicated overt or covert rearrangement of instructional materials to improve their learning in statements such as:

> "I make an outline before I write my paper", or "For doing a report, I usually use index cards and I put labels on them like in one card I put food of a country, in another, Geography and in that way, I can organize my report", or "When doing a math assignment, I always write the problem in a separate piece of paper and I always write different methods of solving the problem so I have different things to fall back on..." or "When doing a writing assignment, I write down my heading, I look up the information, I read it, outline the important part and I just write it in my own words", or "When studying for a test, I find like a special method to remember the aims. Like say, if it is a whole bunch of countries, I take the letter of each country and make up a sentence so I can memorize the sentence. Each letter of the sentence would represent a country".

Organizing and transforming had been emphasized by Corno and Mandinach (1983), and was found to be predictive of achievement among high school students in a study by Zimmerman and Martinez-Pons (1986). The present results indicated that organizing and transforming was the learning strategy most highly predictive of students' self-regulation.

In terms of linkages to other strategies, time budgeting was the second most important. Examples of this strategy are:

> "After school, I usually go home, I relax for about one hour and then I do my homework until I'm finished and if it is before 8 or 9 o'clock, I just relax and then I go to sleep at around 10 o'clock". or "I get up at about 6:30 and about 6:45 I call my mom, then I have breakfast, then I leave, then I get on the train for about 30 minutes, then I get to school, I go to the cafeteria and talk to my friends till about 8:40..."

Other researchers have also found that time budgeting or time management practices were related to academic achievement (Britton & Tesser, 1991). In the present study, students' reports of time budgeting for study outside of the classroom or at home were reliable predictors of teachers' rating of the students' self-regulation in class. For example, these students made time budgeting statements such as "I study one hour a day" or "I study from 7 pm to 7:30 pm".

Further analyses, involving Pearson correlations indicated that in addition to time budgeting and organizing and transforming, other two learning activities within the personal dimension were correlated significantly with teachers' measures of self-regulation: Time accounting and rehearsing and memorizing. Students' awareness of specific times at which activities take place, was evident in statements such as:

> "I get up at 7:am", or "I arrive to school at 8:30 am", or "When I'm living in my uncle's house, I get up at 7am. When I stay with my mom, I get up at 7:30 am and I am at school by 8:30 am. When I am in school, I go to my regular classes and at 3 o'clock I go home and I get there around 4:00. I do my homework at 5:00, I finish my homework and then I'm free to watch TV and play games and that kind of stuff... On weekdays I go to bed at 10:00, on weekends I go to bed later since I don't have to get up early."

Students' self-initiated efforts to rehearse and memorize study learning material was also highly linked to student use of other strategies. This strategy was evident in statements such as:

> "In preparing for a math test, I keep writing down the formula until I remember it", or "When I'm preparing for a test, I always study the notes and I write little tests for myself, little quizzes... I also write the answers in a piece of paper and I turn them over and then I study the questions and I answer the questions and then I turn the page of answers over and I compare and I find out if I've gotten the correct answers and that's how I test myself", or " If I have a French test, I just do memorization. I read all of the material first so I become familiar with it. I cover one half of the paper. I cover the answers and if I can't repeat, I just look at it again and I try again".

Students' self-initiated efforts to regulate their learning environment proved to be predictive of teachers' perceptions of students' use of self-regulated learning practices in the classroom. Students who reported initiating a review of their records were more likely to be perceived by their teachers in the classroom as self-regulated learners. There was a significant positive correlation between the environmental dimension of students learning activities and teachers scores.

A strong correlation was found between students' self-regulation in class and in specific learning activities. Students who reported keeping records and doing homework regularly and as a priority were more likely to be perceived by their teachers as self-regulated in the classroom. The multiple regression analysis conducted indicated that both keeping records and doing homework as a priority were reliable predictors of the teachers' ratings of their students self-regulation. Students reported keeping records in statements such as:

> "I keep a list of the words I got wrong" or " When studying from a textbook, if I find something important, I get a piece of paper and just write down the name of the person and what he or she did or something like that and I have like a study sheet".

Students reported doing homework regularly and as a priority with statements such as: "I do my homework first". It seems that inner city students who engage in self-initiated learning activities outside of the classroom, such as time accounting, time budgeting, organizing and transforming, rehearsing and memorizing, reviewing records, keeping records and homework done regularly and as a priority, are more likely to be perceived by their teachers as self-regulators in class.

The correlation between the teacher RSSRL and the LAI broadens the construct validity of self-regulated learning as a capability and helps establish the concurrent validity for the LAI scale. Previously Zimmerman and Martinez-Pons (1988) demonstrated both convergent and discriminant validity of a construct of self-regulation using a student strategy measure to hypothetical problems (SRLIS) and the same teacher rating measure used in the present study, the RSSRL. A canonical correlation of .70 was established between these two measures. In the present study also, the LAI was highly correlated with the teacher scale (R=.59), and thus the LAI has been shown to display convergent validity with the RSSRL. Therefore, the construct of self-regulation has been confirmed with a third measure.

According to Campbell and Fiske (1959) the construct validity of a construct is strengthened when new and distinctive measures are used to assess it. The LAI differs from the RSSRL teacher measure because it is derived from students' descriptions of their activities rather than from their teacher's ratings. The RSSRL, like the LAI, is derived from students however, the RSSRL focuses on students' responses to hypothetical learning tasks whereas the LAI focuses on informal descriptions of students activities outside of class. Converging correlations between three such distinctive measures diminishes the possibility that self-regulated learning is merely an artifact of any specific measurement instrument.

Relationship Among Dimensions.

Hypothesis number four which predicted a significant correlation between each of the three general sources of student self-regulation-namely personal, environmental and behavioral dimensions, was confirmed as well. These findings provide support for a triadic view of self-regulated learning involving environmental, behavioral and personal components. This model of self-regulated learning, which was developed by Zimmerman (1989a) from cognitive social learning theory and research, analyzes student self-regulated learning on the basis of reciprocal relation between these three interdependent influences. Although the present study was not viewed as a direct test of Zimmerman's

reciprocal influences hypothesis model, the model was used originally to guide the formulation of hypotheses. It is clear that the results were supportive of this hypothesis.

Finally, the results of the present study indicate that positive and substantial correlations exist between specific personal, behavioral and environmental activities of students. It appears that inner city students who engage in self-initiated learning activities in one dimension are more likely to engage in other self-initiated learning activities within other dimensions as well ( See Figure 4). For example, inner city students who engage in time accounting, are more likely to engage in seeking non-social information, seeking social assistance, structuring their learning environment, reviewing records, spending some of their free time in learning activities, and keeping records. Time accounting was found to be the learning activity most frequently correlated with other learning activities. Likewise, it appears that inner city students who engage in self-initiated rehearsing and memorizing activities, are more likely to engage in other self-initiated learning activities such as seeking social assistance, engaging in academic activities with friends, reviewing records, seeking non-social information, organizing and transforming study material and keeping records.

Recommendations for Future Research.

Results of the present study suggest that student

engagement in self-regulated learning activities outside of the classroom, often at home, are related to their achievement in school. However, the present data probably underestimate the relationship between these two variables because the lower half of the sample of achievers was excluded. It is important in future research to determine what level of self-regulation exists among these youngsters as well. This information will be vital if attempts are made to increase the level of self-regulation and students learning activities outside of the classroom. An important next question is exactly how to accomplish this. The results provide a few hints. For example, a significant correlation was found between students' completion of homework as a priority and time budgeting and environmental structuring. It is possible that assignment of homework activities in conjunction with self-regulated strategy training might prove effective. To date, no studies have been conducted on this issue, however, this hypothesis should be investigated, particularly among students attending inner city schools.

Educational Implications.

Research on self-regulated academic learning has shown that students' academic achievement is related to their use of various strategy processes and to their perceptions of themselves as learners, namely their self-efficacy beliefs (Zimmerman & Martinez-Pons, 1990). All students attending

inner city schools need not be viewed as academically limited. Results of the present study suggest that when students in disadvantaged environments actively initiate and regulate their instructional experiences, they can enhance their academic success significantly. This suggests that it may be possible to teach unsuccessful students to exercise greater self-control over their learning environments. Although this study does not indicate a causal relationship between strategy use and academic achievement, there is a body of research (Mc Keachie, Pintrich & Lin, 1985) which suggest that strategy training can improve achievement. Thus, it is reasonable to infer that efforts to teach students the kinds of strategies measured in this study would also raise their academic achievement. In addition to their knowledge of strategies, students must also be made aware of how use of learning strategies can improve their academic effectiveness and why it is important to monitor the effectiveness of strategies as they use them. Through strategy use and outcome monitoring, students' self-efficacy and motivation to continue to use self-regulated learning strategies will increase (Zimmerman & Martinez-Pons, 1992).

This study provided important information concerning the use of self-regulatory processes by regular and high achieving students who learn in very disadvantaged environments. The study showed that students who manage to achieve under these difficult circumstances were found to be

active self-regulators of their learning processes. Such information should be helpful not only for educators but for parents and students living in the inner city.

# APPENDIX A

## CONSENT FORM

Dear Parents:

I am a doctoral candidate in the Educational Psychology Department of the CUNY Graduate center and I am conducting a research project on the learning activities of urban school children. This research project is a requirement for my Ph.D. degree.

As a part of this project I will be interviewing Junior High students and will want to interview your child while he or she is at school. There will be one session. The session will consist of specific questions to your child about his or her learning activities. The interview will be tape recorded only if your child consent to it. Access to to your child's standardized scores is also needed. The data will remain anonymous.

If you consent to allow me to interview your child, please return this form to your child's teacher. All information obtained will be considered strictly confidential. The results of this research will help further the educational process of urban school children.

Sincerely,

_____

Concepcion Rocha Wibrowski
Doctoral Candidate

---

I consent to allow _____ to
(Your child's name)

participate in the project on learning activities. I understand that participation in this project is voluntary and I may withdraw my child's participation at any time.

_____

Parent or Guardian's signature

# APPENDIX B

## RATING STUDENT SELF-REGULATED LEARNING: A TEACHER SCALE (RSSRL)

Choose the appropriate scale value and mark the number in the space before each item

Never Seldom Often Usually Always
1.....2.....3.....4.....5

Student's Name _____

__1. Does this student solicit additional information about the exact nature of the forthcoming tests?
__2. Does this student solicit additional information your expectations or preferences concerning homework assignments?
__3. Does this student display awareness concerning how well he/she has done on a test before you have graded it?
__4. Does this student complete assignments on or before the specified deadline?
__5. Is this student prepared to participate in class on a daily basis?
__6. Does this student spontaneously express interest in course matter?
__7. Does this student offer relevant information that was not mentioned in the textbook or previous class discussions?
__8. Will this student seek assistance from you on his/her own when he/she is having difficulty understanding schoolwork?
__9. Does this student ask unusual or insightful questions in class?
_10. Does this student volunteer for special tasks, duties, or activities related to schoolwork?
_11. Does this student express and defend opinions that may differ from yours or those of classmates?
_12. Does this student solicit further information regarding your grades or evaluation of his or her school work?

From: Zimmerman, B.J. & Martinez Pons, M. (1988). Construct validation of a Strategy Model of Student Self-Regulated Learning. Journal of Educational Psychology, 80, 284-290

# APPENDIX C

## LEARNING ACTIVITIES INVENTORY (LAI)

Six Contexts:

I. Studying at home.
II. Classroom learning.
III. Writing assignment.
IV. Math assignment.
V. Test taking.
VI. Motivation.

### I. STUDYING AT HOME.

1. Describe a typical school day in your life. Begin with the time you get up and describe what you do until you go to bed at night.

2. What do you like to do during your free time? (Probe: Do you read, go to museums, watch TV? If reading, name some of the books you read; if watching TV, what kinds of programs?)

3. At home, do you have adequate books, materials to study? (If not) Where do you get them?

4. At home, where do you study? When do you study? With whom do you study?

5. Do you study during weekends? Where?

6. Do you ever need help with your homework? Who do you ask?

7. What do you do if you haven't finished your homework when you normally go to bed?

8. Do you study after school?

### II. SCHOOL LEARNING ACTIVITIES

9. Do you take notes in school? Do you organize your notes outside of class? How?

10. What kind of support do you ask for from your teachers?

11. When you are having academic difficulties in school, outside of class, to whom do you go for help? (Probe for specific names).

12. Do you study between classes?

13. Do you have friends? What do you usually do with them?

14. Do you talk to your friends about things you are learning? (Academic matters). Describe those things.

15. Do you ever spend time worrying about school? Tell me about it.

III. WRITING ACTIVITIES.

16. When doing a writing assignment, What do you usually do? Do you usually ask for help? If so, whom do you ask ? (Probe for specific names or relationships, sister, brother, teacher, friend, parent, grown up).

17. When doing a writing assignment, do you have any particular method? If so, describe the steps you follow.

18. What do you do when writing a paper on a topic with which you are not familiar?

IV. MATH ACTIVITIES.

19. When completing a math assignemnt, what do you usually do? do you usually ask for help? If so, whom do you ask? (Probe for specific names or relationships).

20. When doing a math assignment, do you have any particular method? If so, describe the steps you follow.

21. What do you do when completing a math assignment on a topic that is difficult for you?

V. TEST PREPARATION ACTIVITIES.

22. What do you do when preparing for a test? Describe what you do. (To see if there is a plan).

23. How do you know if you are prepared for a test?

24. Do you have any way of organizing information that you might need on a test? If so, describe it.

25. Can you figure out a way of finding out what will a teacher ask in a test? How?

26. After taking a test, do you do anything about questions you might have missed? What do you do?

VI. MOTIVATION ACTIVITIES.

27. How important is your achievement in school to your parents? Do they have any specific expectations? What are they?

28. Have you set any goals for yourself as a student? If so, what are they?

29. Do you set daily goals for yourself? What kind?

30. Do you have any relative who has done well in school? Who is he or she? What did he or she achieve?

31. What do you find most rewarding as a student? Describe it. What do you like most about learning?

32. What do you want to be when you get out of school? What types of things will you want to do?

# APPENDIX D

## LEARNING ACTIVITIES INVENTORY (LAI) CATEGORIES DEFINITIONS

### PERSONAL DIMENSION

| CATEGORIES | DEFINITIONS |
|---|---|
| 1. Time Accounting | Statements indicating awareness of specific times at whic activities take place. e.g. "I get up at 6:00 am", "I arrive home at 3:00 pm". |
| 2. Time Budgeting | Statements indicating the amount of time used for a specif activity. e.g., "I study one hour a day". "I study from 7pm to 7:30 pm". |
| 3. Academic Worries | Statements indicating academic worries. e.g., "I worry about my report card". |
| 4. Organizing and Transforming | Statements indicating student-initiated overt or covert rearrangements of instructional materials to improve learning. e.g., "I make an outline before I write my paper". |
| 5. Rehearsing and Memorizing | Statements indicating student-initiated efforts to memorize material by overt or covert practice. e.g., "In preparing for a math test, I keep writing the formula down until I remember it". |
| 6. Goal Setting | Students statements indicating setting of educational goals or subgoals and planning for sequencing, timing and completing activities related to those goals e.g., "First, I start studying two weeks before exams, and I pace myself". |

## BEHAVIORAL DIMENSION

| Categories | Definitions |
|---|---|
| 1. Free Time Reading Activities | Statements indicating free time spent reading. |
| 2. Homework Activities | Statements indicating whether homework is done regularly or as a priority. e.g., "I do my homework first". |
| 3. Keeping Records | Statements indicating students efforts to record events or results. e.g., "I kept a list of the words I got wrong". |
| 4. Self-Observation Self-Judgement | Students statements of self-initiated reporting or recording of own actions, and comparison to a norm e.g., "If I don't understand...", or "If it is not clear..." |
| 5. Self-Reaction | Students statements of self-initiated reaction to a particular learning situation. e.g., "If it is too noisy I close the door". |

ENVIRONMENTAL DIMENSION

| Categories | Definitions |
|---|---|
| 1. Designated Place of Study | Statements indicating where the studying takes place at home. e.g., "I study in my own bedroom". |
| 2. Seeking Support from Teachers | Statements indicating academic support expected from teachers e.g.,"I expect the teacher to answer my questions when I don't understand something". |
| 3. Seeking (non-social) Information | Statements indicating students' non-social sources of information. e.g., "I go to the library". |
| 4. Academic activities | Statements indicating activities with friends realized with friends. e.g. "She helps me to study". |
| 5. Seeking Social Assistance | Statements indicating student's initiated efforts to solicit help from parents or other adults. e.g., "If I have problems with math, I ask my mother to help". |
| 6. Environmental Structuring | Statements indicating student-initiated efforts to select or arrange the physical setting to make learning easier. e.g., "I isolate myself from anything that distracts me". |
| 7. Reviewing Records | Student's statements of self-initiated efforts to reread notes, tests or textbooks to prepare for class or further testing e.g., "When preparing for a test, I review my notes". |

# APPENDIX E

## DETERMINENTS OF SELF-REGULATED LEARNING

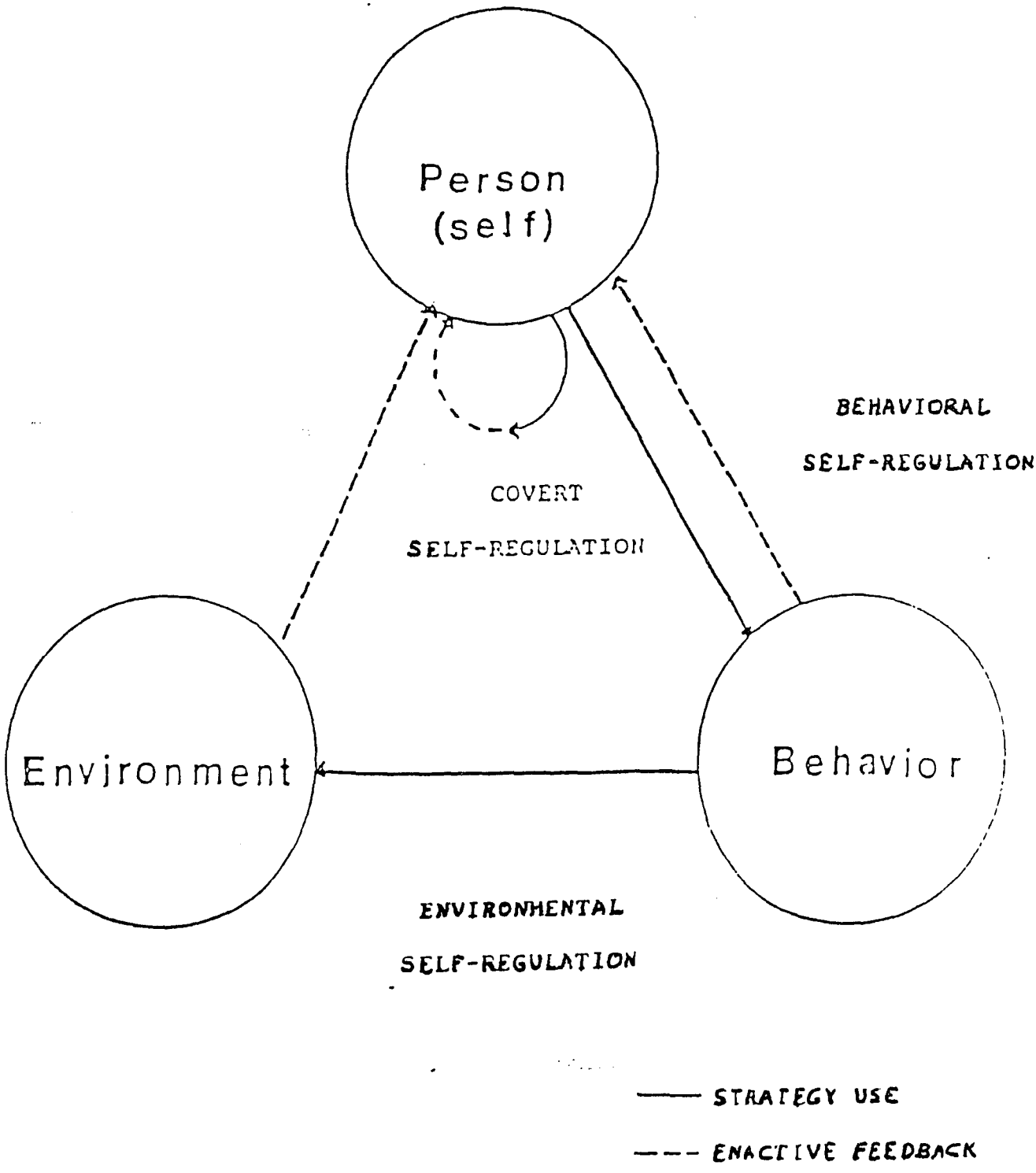
| Learning Environment Influences | Person (Self) Influences | Behavioral Influences |
|---|---|---|
| Physical Context | Knowledge | Self-Observation |
| .Structure | .Declarative | .Reporting |
| e.g., academic task | .Self-regulative | .Recording |
| .Enactive Outcomes | | |
| e.g., achievement | Self-Efficacy Beliefs | Self-Judgement |
| | | .Rating |
| Social | Goal-Setting | .Checking |
| .Modeling | | |
| .Direct Assistance | Metacognitive Processes | Self Reaction |
| .Verbal Persuasion | .Planning | .Behavioral |
| .Symbolic Information | .Rule Use | .Personal |
| | .Strategy choice | .Environmental |
| | Affect | |

From: A Social Cognitive View of Self-Regulated Academic Learning. Barry J. Zimmerman, 1989.

APPENDIX F



TRIADIC ANALYSIS OF SELF-REGULATED FUNCTIONING



# APPENDIX G

## SCORING

The following is an example of the scoring procedure for the Learning Activities Inventory (LAI). In this structured interview, students' answers were scored verbatim and later given a point when they met the criteria that have been proposed.

Examples:

| Answer | |
|---|---|
| "I get up at 6:30 am.." | Scored under Personal Dimension, time accounting category. |
| "I usually study from 7 pm to 8 pm.." | Scored under Personal Dimension, time budgeting category. |
| "I keep a list of the words I got wrong.." | Scored under Behavioral Dimension, keeping records category. |
| "I study in my own bedroom.." | Scored under Environmental Dimension, designated place of study category. |
| "I ask my brother for help.." | Scored under Environmental Dimension, seeking social assistance other than teacher category. |

# APPENDIX H

Examples of Students' Self-Regulated and Non Self-Regulated Learning Answers for the Homework Activities Question.

| Interviewers's Question | |
|---|---|
| What do you do if you haven't finished your homework when you normally go to bed? | |
| **Students' Responses** | |
| **Self-Regulated** | **Non Self-Regulated** |
| a. I work on it and finish before I go to bed. | a. I'll do it in school next day. |
| b. I wash my face and I don't stop [doing homework] until I finish. | b. I'll do it at lunch time. |
| c. I set the alarm clock and I do it very early in the morning. | c. I say to the teacher that I didn't know how to do my homework. |
| d. I always finish my homework. | d. I hand it in late. |

Note: Students' responses that indicate homework is done as a priority were classified as self-regulated.

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