CHAPTER FIVE

THE INFLUENCE OF ENVIRONMENTAL VARIABLES ON ACADEMIC ACHIEVEMENT

5.1 INTRODUCTION

Environmental variables describing the nature of the social (paragraph 2.4.3.1) and physical setting (paragraph 2.4.3.2) in which the family lives, have an influence on the child's cognitive development and school achievement (Stokols, 1978:750; Zimmerman, 1989:336; Scott-Jones, 1984:267). Environmental variables such as family and school variables (Marjoribanks, 1979:131; Cicirelli, 1987:366) are considered to be important variables that influence academic achievement. With relation to family variables, a distinction can be made between family-status variables and family-process variables (Scott-Jones, 1984:268). Family-status variables will be discussed in paragraph 5.2, whereafter family-process variables will be discussed in paragraph 5.3, followed by a discussion of school variables in paragraph 5.4.

5.2 FAMILY STATUS VARIABLES

Family-status variables describe the status of a family (Scott-Jones, 1984:267; Marjoribanks, 1979:78; Walberg, 1984:397). Status variables include family configuration (paragraph 5.2.1), single-parent families (paragraph 5.2.2), maternal employment (paragraph 5.2.3), socio-economic status (paragraph 5.2.4), and poverty (paragraph 5.2.5).

5.2.1 FAMILY CONFIGURATION AND ACADEMIC ACHIEVEMENT

Family configuration which includes variables such as family size (Marsh, 1990:331), sibsize (Steelman, 1985:367), birth order and the spacing between siblings (Steelman, 1985:356; Powell and Steelman, 1993:367) are postulated to influence academic achievement (Scott-Jones, 1984:269).

5.2.1.1 Family size and academic achievement

Family size can be defined as the number of members constituting the family (Powell and Steelman, 1993:368; also see paragraph 5.2.1.2). Families can be differentiated

into small and large families on the basis of the number of members constituting a family. Families are also classified into two types, namely, nuclear and extended families (Morrish, 1972:163).

The nuclear family consists of a parental couple (father and mother) with their children (brothers and sisters), thus only two generations living in the same house (Morrish, 1972:163). In comparison with the nuclear family which is generally small in size, the extended family is usually much larger. The extended family is composed of grandparents, parents, blood-related children, adopted children, half-sibs, etc (Morrish, 1972:163; Steelman, 1985:335). The extended family is therefore not only larger in size, because it consists of many members, but may also be characterised by more than two generations living in the same house (Morrish, 1972:163).

It is not the classification of a family as nuclear or extended that determines the size of a family as small or large, but the number of persons in the family. Thus, a nuclear family consisting of a father/mother and five children may be considered to be a large family while an extended family (father, mother, grandfather, grandmother, and one or two children) may still be considered to be a small family.

Mwamwenda (1989:21) points out that the family is an environment where the child and parents interact. In a small family, because of the small number of children, parents have more time to attend to their children and their cognitive development by teaching them language (i.e., mother tongue), answering questions and giving them the support they need than in a large family where there are many children (Govako, 1990:63). In a large family, parents do not have sufficient time to attend to the individual needs of all their children and their cognitive development because of the large number of children (Poston and Falbo, 1990:439).

Parents' interaction with the child, the support they offer financially and the care they give have a positive influence on the child's academic achievement as it enables the child to go on educational tours to explore his environment (Poston and Falbo, 1990:449). Van der Westhuizen (1987:81) and Schutte (1994:49) argue that sometimes parents of large families lack the necessary financial support, good shelter, and individual attention important for the cognitive development of their children, hence their children perform poorly in academic tests. Being a large family of low socio-economic status, for example, is supposed to have very negative effects on the cognitive development of the child because the family of low socio-economic status may not be able to support their children financially. On the other hand, a large family of high socio-economic status

may not have the same negative influence as the advantages of a high socio-economic status may nullify the negative influences of many children.

According to Marjoribanks (1992:266), the activities of the family: i.e., intellectuality in the home, language models, academic guidance, and work habits in the family, positively contribute to the cognitive development of the child as he learns from parents in the family, for example, by listening and imitating them when they talk, and when performing the family work.

Kellaghan (1994:2253) argues that extended families in developing countries, in contrast to developed countries, provide positive opportunities for interpersonal relationships that are not available in nuclear families, because extended families are usually large families in which an individual child can easily interact with older members who all serve as sources of intellectual stimulation. In a study in East Africa on family size and academic achievement, measured by standardized tests of ability and external achievement examinations at primary and secondary levels, a positive rather than a negative relationship between large families and educational achievement was revealed (Kellaghan, 1994:2253). In large extended families, for example, adults can spend sufficient time with and give attention to each of many children as there are many adults (i.e., grandfather, grandmother, father, mother, uncles and aunts), in the family who spend time with the children. When the mother and the father are away from home at work, a grandfather or grandmother or an aunt, may remain and interact with the children in the family. Thus, extended families provide opportunities for interpersonal relationships that are not available in nuclear families (Kellaghan, 1994:2253).

Exploring whether the negative relationship between family size and the academic achievement of children from broken and intact families established in developed countries also holds in a developing area like the Transkei, Cherian (1990:125) found that children in small families in the Transkei outperform those in large families. A significant negative relationship between family size of children and their academic achievement regardless of whether the family was broken or intact was found (Cherian, 1990:126). Cherian's study thus confirmed that the negative relationship that exists between family size and academic achievement of children from broken and intact families in developed countries also holds in a developing area like the Transkei.

5.2.1.2 Sibsize and academic achievement

Though family size and sibsize are narrowly related and interdependent, they are treated separately in order to separate their influences. Sibsize is defined as the total number of

children (brothers and sisters) in a family (Steelman, 1985:354). Steelman (1986:373) states that there is a relationship between sibsize and intellectual outcomes as parents are better able to educate their siblings when they are few. According to Marjoribanks (1992:266), a family with fewer siblings is associated with a richer learning environment, because since the siblings are few, parents can easily spend more time interacting with them and give each one sufficient attention and the necessary support they need. A larger sibsize family has a negative effect on the children's academic abilities as parents cannot spend sufficient time with and give attention to each of the many children. Large families are also associated with lower socio-economic status (Steelman, 1986:374). With reference to the relation between lower socio-economic status and family size, Marjoribanks (1979:78) reports that parents in lower-socio-economic status groups are found to marry earlier, bear children more quickly, and continue to conceive children to a later age than parents from higher socio-economic status groups.

Mwamwenda (1989:35) suggests that sibsize can also play a positive role in the child's intellectual development, in the absence of parents. When the parents are away at work, older siblings may interact with the younger siblings at home, by teaching them how to read and write. The older siblings in the family thus serve as intellectual resources for the younger children within the family and, similarly, younger children are likely to seek assistance from the older siblings. In this connection, Blake (1989:34) asserts that in very large families, lastborn and next-to-lastborn children, attain the most education and children born early in the middle part of the sibling number distribution get the least education. These results support the hypothesis that older siblings are earners and providers rather than competitors for resources.

5.2.1.3 Birth order and academic achievement

Birth order is defined as the relative rank of a child in terms of the age hierarchy among siblings in the family (Steelman, 1985:354). With relation to the mental development of the child, Marjoribanks (1979:96) submits that the relations between birth order and intelligence can be accounted for by the age spacing between siblings. The spacing between siblings can be defined as the distance in time or the birth interval between consecutive children in the family (Steelman, 1985:355). Children born in closely spaced families are less likely to be exposed to an intellectually or stimulating environment than children born in widely spaced families. If the spacing is one year or less between siblings, the elder one will not be able to influence the mental development

of the younger one, as there is little difference in age and thus in level of cognitive development (Steelman, 1985:356; Powell and Steelman, 1993:337).

According to Powell and Steelman (1993:368), intellectual performance decreases with birth order when there is a close spacing between successive children, as each child has access to a less favourable intellectual environment. The principle being that all the members of a family (parents and sibs) contribute to the intellectual environment of the family. With close spacing, for example one year between births, older or first borns have not had enough time to develop their cognitive abilities and skills. With widely spaced births for example, two years or more, older children have had more time to develop their cognitive abilities and skills, and can thus contribute more to the intellectual environment of the family than close spaced sibs. Being born into a richer intellectual environment provides more and better opportunities for developing cognitive abilities.

In a study on the relationship between spacing and academic performance, Powell and Steelman (1993:368) allude that birth order or family size is often used as a surrogate for spacing. In analysing data from a large national survey and using a direct measure of spacing, Powell and Steelman (1990: quoted by Powell and Steelman, 1993:368) found that the more compressed the sibship, the lower the grade-point averages and test scores for adolescents. Another study which focused on academic performance measured by performance on standardized test or grade-point averages, revealed that the larger the family the worse a child's prospects for educational attainment (Powell and Steelman 1993:368).

Marjoribanks (1979:97) asserts that longer birth intervals give older children the advantage of being a small family for a longer period of time and during an early stage of growth allowing parents to pay more attention to the child and interact with him/her alone. For younger children, it is to their intellectual advantage to have their births postponed, because the later they arrive the more mature and intellectually stimulating the family environment will be into which they enter and in which they will develop (see paragraph 5.2.1.2), (Powell and Steelman, 1993:368).

Children, for example, who have a difference of four years in their birth order are at an advantage because when the younger child is four years old, the elder one will be eight years old, which will enable him to serve as teacher of the younger one (Steelman and Powell, 1985:118), thus to serve as an intellectual source for the younger sibling(s). Scott-Jones (1984:287) reports that kindergarten and first-grade children who were

helped to learn by a sibling who was 4 years older, performed better on an object-sorting task than children helped to learn by siblings who were 2 years older.

Powell and Steelman (1993:368) though, warn that as the number of siblings increases in the family, there is a probability of physical health problems or genetic disorders that can depress academic performance (Powell and Steelman, 1993:368). Some researchers also posit that parents who have many children tend to be less talented intellectually and may transmit this liability to their children (Powell and Steelman, 1993:368).

5.2.2 SINGLE-PARENT FAMILIES AND ACADEMIC ACHIEVEMENT

Single-parent family refers to a family with one parent, either mother-only or father-only (Marsh, 1990:329; also see paragraph 5.2.3). According to Brown (1982:91), when one assesses the impact of the single-parent family, the question is whether the single-parent family is associated with poor performance on measures of cognitive development and achievement.

Marsh (1990:328) asserts that children from single-parent families are characterized by lower school achievement than children from two-parent families as the usually lower income of single-parent families may have a negative affect on the academic achievement of a child (Lawson, Gaushell and Karst, 1993;288). McCartin and Meyer (1988:385) reason that when both parents work, their income can contribute positively to the child's academic development. With a single-parent family, especially a mother-only family income may be insufficient. Consequently single-parent families, because of the low income will not be able to pay, for example, for enough books for the children, a balanced diet, educational field trips and to offer a conducive study environment which will positively influence their academic achievement (Belsky and Eggebeen, 1991:1085). According to Vandell and Ramana (1992:939), single-parent families occur more frequently among lower socio-economic groups.

In a study on the academic achievement of children who live with both parents and children of single-parents, Jubber (1994:139) found that children who lived with both their parents did better on average than those who lived with a divorced or single-parent. From the data collected in this study, it was also claimed that single-parents affect school performance more negatively than two-parents families as single-parents cannot afford to support the children alone because of low-income (Jubber, 1994:139). The study also revealed that, a very large percentage of those who scored A or B aggregates were children who lived in intact families (Jubber, 1994:139).

5.2.3 MATERNAL EMPLOYMENT AND ACADEMIC ACHIEVEMENT

Maternal employment refers to the working mother (Vandell and Ramana, 1992:938). Vandell and Ramana (1992:938) report that many researchers and policymakers are asking whether and in what ways maternal employment can positively affect children's intellectual development. In comparison to families in which mothers are employed, unemployed mothers are more likely to have families that are living in poverty (Vandell and Ramanan, 1992:947). Maternal employment on the other hand, is associated with children having higher quality home environments as assessed by the HOME scale. These associations are counter to the cultural ideal in the United States, that young children be cared for in their own homes by their own mothers. This ideal could be a costly one for economically disadvantaged families. According to Vandell and Ramana (1992:947), a mother staying home with the children can deprive families of the financial resources to escape from poverty. Staying home can result in low-income families being less able, because of their economic circumstances, to provide their children with an environment that fosters cognitive development.

Vandell and Corasaniti (1990:24) argue that with high-income families, the financial support associated with maternal employment is substantial. Children whose mothers are employed demonstrate better developmental progress than low-income children whose mothers are not employed because employed mothers can support their children in a positive way. An employed mother can bring the child up in a healthy environment as her income is a source of support to pay for educational trips, fees, books and healthy food (Vandell and Ramanan, 1992:939).

According to Greenberger and O'Neil (1992:432), maternal employment has more positive effects on girls' academic achievement than boys, because boys' higher average physical activity and aggresiveness compared to non-aggressive girls, and the resultant need for greater control of boys might tax the patience of mothers. According to Hoffman (1989:284), full-time employed mothers have a negative effect on boys because they may not have time to provide the extra supervision and control that the intellectual development of boys appears to require, whereas part-time employed mothers might have a positive effect on their boys' academic achievement, because they (mothers) lack the strains of either full-time employment or full-time motherhood (Belsky and Eggenbeen, 1991:1087).

5.2.4 SOCIO-ECONOMIC STATUS AND ACADEMIC ACHIEVEMENT

According to Monteith (1979:119), socio economic status refers to the grouping of people according to their income and the ways whereby such income is earned. Socio-economic status appears to be a better predictor of children's performance than other status variables because families with a higher socio-economic status are in a better position to buy more nutritious foods which help resist fatique and provide energy (Henderson, 1981:105). Higher socio-economic status families tend to bear fewer children than lower socio-economic status families which enables them to support their families better (Steelman, 1985:557) (also see paragraph 5.2.5). Higher socio-economic status parents are also more interested in their child's educational success, and are associated with richer learning environments (Jubber, 1988:289). On the contrary, children from lower socio-economic status families will deteriorate cognitively because of inferiority, hunger and poverty (Steelman and Mercy, 1983:159). In a study on the relationship between socio-economic status and academic achievement, Jubber (1988:289) reported that children of affluent families with better nutrition and better health care achieved higher scores on an IQ test than children from lower socio-economic status families.

Children from lower socio-economic status families are less likely to complete school, i.e., are more likely to drop out (Kelly, 1994:5226). Kelly (1994:5227) reports that surveys of early school leavers underscore the importance of socio-economic reasons, i.e., some families cannot afford to pay for school fees, books, transportation and uniforms. Children report shame at their relative poverty, reflected in their clothes and lack of lunch (Kelly, 1994:5227). Such factors seem to cause low expectations for student success (Kelly, 1994:5227) which has a negative influence on academic achievement.

In conclusion, family income/socio-economic status contributes directly to a child's cognitive development (Jubber, 1990:40). Its more positive effects relate to such things as the relationship between income and nutrition, health, the quality of school attended, preschool education, the quality of the home as an information environment, the value attached to education, and the ability of the family to supply the kinds of educational support, equipment and experiences which foster school success (Jubber, 1990:4).

5.2.4.1 Mother's level of education and academic achievement

The mother is a key determiner of early intellectual development, because for most children, it is their mother who has the most important influence on their intellectual

development in the pre-school and early school years (Jubber, 1988:291). One measure of the quality of the mother as a cognition enhancing agent is the level and amount of formal education she herself has received, because the knowledge and experience of formal learning and schooling she possesses is of value to her child (Baker and Stevenson, 1986:158-159; Jubber, 1988:291). In a study of the mother's education and the academic achievement of the child, Jubber (1988:291) reports that children of graduate or post-graduate mothers achieved higher scores on an IQ test than children of mothers with grade 8 or less.

The mother's intellectual attitudes and abilities constitute the home as an informational environment for the young child during its early years because language, knowledge and other information are obtained at home from the mother (Jubber, 1988:291; Troost, 1980:37). Children born to mothers who have formal education and whose mothers are able to spend a lot of time with them, enjoy an advantage over children not so fortunate because when the mother is close to the child, and the way in which she praises and approves the child's language development, etc., establishes warmth, contact and interactions which positively affects the child's cognitive development (Mwamwenda, 1989:37).

The children of formally better educated mothers achieve more than the children of formally poorly educated mothers (Jubber, 1988:291) because formally better educated mothers who were themselves successful at school and achieved a high level of formal schooling are very keen to help their children with the completion of homework assignments, reading and writing (Jubber, 1988:291; Hess, 1982:108).

Baker and Stevenson (1986:162) contend that mothers with more education tend to have two important resources: namely, they know more about their children's school performance, and they have more social contact with school personnel. Therefore, when their children have a problem, they are more likely to know about the problem as well as how to use the school's resources to respond to the problem (Lee and Croninger, 1994:289)

Mothers who have at least a college education know more about their children's academic performance and have more contact with the teachers and are more likely to take action to manage their children's academic achievement and school career by monitoring performance, motivation and school demands when their children's performance requires assistance (Caldas, 1993:206; Baker and Stevenson, 1986:156). Mothers with a college education have a positive influence on the academic achievement of their children as they are also more likely to choose college-preparatory courses for

their children, regardless of their children's academic performance (Baker and Stevenson, 1986:163). They (mothers) encourage a change of friends for school reasons, deny privileges also for school reasons, prepare their children academically for high school, and contact the teachers about their children's school problems (Baker and Stevenson, 1986:163).

Baker and Stevenson (1986:164) contend that children of better educated mothers achieve better than children whose mothers have no or little education, because better educated mothers are not only more able to identify their children's best and worst subjects and to offer an overall evaluation of their children's performance, but are also more likely to have seen their children's last report card. Better educated mothers are also more likely to have had contact with the school. They are more likely to have met with their children's teachers and to have attended parent-teacher conferences and school events (Baker and Stevenson, 1986:161). However, Baker and Stevenson (1986:162) suggest that an educated mother is more likely to override the school's recommendations and to increase the number of college-preparatory courses for her child (Baker and Stevenson, 1986:162).

5.2.4.2 Father's level of education and academic achievement

According to Poston and Falbo (1990:449), there is no difference between the educated mother's influence on a child's intellectual development and that of the educated father (see paragraph 5.2.4.1). As is the case with mothers, better-educated fathers interact with their children in ways conducive to intellectual development, for example, better-educated fathers are more likely to provide stimulating toys and to encourage their children to explore their environment than less-educated fathers (Pilot and Falbo, 1987:310; Lee and Croninger, 1994:289).

According to Bradley, Caldwell and Elardo (1977:698), better-educated fathers also provide a more ordered environment, by means of disciplinary techniques that are linked to rules that are explained to the child. Thus, children of better-educated fathers are more likely to acquire an orientation to schooling and the basic skills necessary for successful school performance (Poston and Falbo, 1990:449).

5.2.4.3 Mother's occupation and academic achievement

Greenberger and Goldberg (1989:24) and Jubber (1988:292) assert that there is a positive relationship between the mother's work category and her child's school achievement. The children of mothers who do professional, managerial or high

administrative work for example, achieve better than those of mothers who do sale, clerical, skilled or semi-skilled work (Jubber, 1988:292).

The mother's occupation gives some positive indication of the quality and quantity of school relevant information the mother has at her disposal and is able to transmit to her child as she will usually be closer to the child and respond to the questions posed by the child (Jubber, 1988:292; 1990:6; Scott-Jones, 1984:269).

5.2.4.4 Father's occupation and academic achievement

According to Jubber (1988:292) and Scott-Jones (1984:278), the relationship between the father's work category and the school achievement of the child is very similar to that for the mother's work category. The father's occupation relates positively to the child's academic achievement. The children of fathers in professional, managerial and high administrative posts, for example, achieve better than the children of fathers in sales, clerical, skilled, semi-skilled and unskilled posts (Jubber, 1988:293).

5.2.4.5 Grandparents' occupation and academic achievement

Jubber (1988:293) and Govako (1990:67) believe that strong associations are generally found not only between parental academic achievements and those of their children, but also between grandparents and their grandchildren. In a study about the occupations of grandparents and the academic achievement of their grandchildren, Jubber (1988:293) and Govako (1990:67) reported that the grandparents are able to make a positive and direct impression on their young grandchildren's academic achievement as they are close to them and have great love for them. Jubber (1988:293) says that occupationally well positioned grandparents have a great advantage of transmitting the kinds of skills, knowledge and attitudes which encourage and facilitate good academic achievement to their grandchildren, as they (grandparents) provide their grandchildren with the kinds of equipment, resources and study environment that promote good academic performance and are also able to send them (grandchildren) to the best schools (Jubber, 1988:293).

5.2.4.6 The level of education of mother's and father's friends and academic achievement

According to Jubber (1988:293), the average level of education of the majority of the parents' friends could, on the basis of their interaction with the children, represent another dimension of the home and family environment which is a major factor

contributing to the achievement of children (Lee and Croninger, 1994:298). In a study of the level of education of the majority of the parents' friends, the results revealed that there is a positive correlation between the level of education of the majority of the parents' friends and the children's academic achievement (Jubber, 1988:293).

5.2.5 POVERTY AND ACADEMIC ACHIEVEMENT

Poverty can be defined as an environment or the circumstances in which children grow up that is negatively related to children's academic achievement, particularly in reading and literacy (Allington, 1990:103; Booyse *et al.*, 1991:30; Pretorius, 1979:211; Raminez, 1988:42-51). Poor socio-economic circumstances and an environment which is culturally poor and lacks opportunities may hamper the child's development and learning to such an extent that his potential cannot develop fully (Pretorius, 1979:211; Sherron, 1991:67). Poor children begin to fall behind their more affluent peers around the fourth grade. This deficit increases through the eighth grade, as students make the transition from "learning to read" to "reading to learn" (Lee and Croninger, 1994:286). Although students from all social backgrounds fail to develop the reading skills in the upper grades, failure is more pronounced for students from economically disadvantaged families (Booyse *et al.*, 1991:30; Hemalin, Seltzer and Lin, 1982:258).

According to Lee and Croninger (1994:287), a notable issue revealed by a longitudinal study of the language development of elementary school children from low-income families, is that poor children's literacy failures result from a negative relationship between home and school experiences. The home in these cases does not develop the literacy skills of the children. Poor children are therefore more dependent on school-related opportunities to develop literacy skills (Lee and Croninger, 1994:287).

The home literacy environment and the parents' involvement at school are related to the reading ability of elementary school children from low- and high-income families (Sherron, 1991:69; Epistein, 1986:280). Children from high-income families whose parents read frequently, who seek out literacy experiences for their children, who attend school meetings and events, gain more in reading comprehension than low-income children whose parents do not engage in such activities (Sherron, 1991:69). Chall, Jacobs and Baldwin (1990:134) report that unlike children from high-income families, children from low-income families depend on school-related opportunities to develop literacy skills, particularly when home supports are weak or ineffectual, because parents from low-income families do not engage themselves with the learning activities of their children (i.e., attending school meetings, checking their children's academic tasks such as homework and school-daywork, and asking teachers about their children's progress).

With relation to the home as an important source of literacy development of the child, Mickelson (1990:44) describes the lack of faith in education held by black students who fail to perform in school at levels expected of people who believe that education is important. According to Mickelson (1990:44), blacks are facing a job ceilling, and they (blacks) are aware of it. Such knowledge channels and shapes their children's academic behaviour.

Job ceilling refers to practices that do not permit blacks to compete freely for the jobs for which they are qualified, and as a result, they are confined to the least desirable jobs, often in secondary labour markets (Mickelson, 1990:44). As the job ceilling is faced by black adults, it prevents them from receiving rewards commensurate with their educational credentials. Black children also see that their efforts in school often do not have the same outcomes for members of their groups as similar efforts for whites.

Mickelson (1990:45) asserts that black children perceive the opportunity structure differently from whites and consequently tend to put less effort and commitment into their schoolwork. This explains why on the avarage black students perform less well than white students.

A comparison by Mickelson (1990:45) between the experiences of white European immigrants and blacks with education opportunity revealed that the employment and income possibilities that existed for educated members of certain groups positively affected the education attained by their children, and that the diminished occupational rewards for blacks with a given level of education had a negative feedback effect on the incentives for education among blacks. This study also reveals that the lower achievement of blacks, is due, in part, to black students' accurate perception that for people like them, educational efforts and credentials are not rewarded in the opportunity structure in the same ways as for whites. The main issue concerns the lower pay and fewer jobs of the parents that shape adolescents' perceptions of the value of schooling for their future which in turn affect their academic behaviour.

Parents of poor children also have had less positive experiences with schools than the parents of advantaged children. Many poor parents failed to complete high school themselves, and only remember school as a difficult and trying experience (Orland, 1990:256). Poor children frequently attend school with other poor children and when these schools are located in urban areas where particular difficulties may arise, it would distract the children from learning (in the South African context such distraction may be, for example, strikes and class-boycots) (Lee and Croninger, 1994:290). Students in such schools are aware of the social and educational ineqaulities they face, which often

undermine their motivation and encourage the formation of peer cultures in opposition to academic achievement (Lee and Smith, 1993:166).

High concentrations of poor children also pose unique problems in the organization of classroom instruction, as these children often require more assistance and make it difficult for teachers to maintain a good instructional pace (Sherron, 1991:69).

Miller-Jones (1988:82), Meacham (1983:122) and Sherron (1991:69) point out that poor children live in a unique environment where they lack sufficient food, shelter, a quiet place to study and adequate lighting. Such conditions are not conducive for the cognitive development of the child (Miller-Jones, 1988:82). Healthy food mediates the family's influence on cognitive development and school achievement because healthy food builds up children's resistance to diseases such as diarrhoea, cholera, ascaris, trachoma, typhoid and measles, which impede learning (Dzebu, 1990:51; also see paragraph 5.2.4).

A further disadvantage of poor communities in South Africa is their distance from the nearest clinic, especially in the rural areas (Dzebu, 1990:51; Schneider, 1984:6-7). A lack of health facilities means that children often have to be taken to distant places for medical attention. Consequently they lose out on school time which has a negative effect on the attentional and motivational processes that are important for learning (Dzebu, 1990:51; Hansen, 1984:5; Sherron 1991:69).

5.3 FAMILY-PROCESS VARIABLES AND ACADEMIC ACHIEVEMENT

Family-process variables refer to the interaction between parents and their children (Scott-Jones, 1984:279). Family-process variables include maternal strategies for teaching children, the time spent on learning, and parental expectations (Marjoribanks, 1979:137; Jubber, 1988:293).

5.3.1 MATERNAL STRATEGIES AND ACADEMIC ACHIEVEMENT

Maternal strategies refer to the parents' style of interacting with their children, especially the mother's strategies for teaching her child and managing her child's school career to maximize the child's academic achievement (Baker and Stevenson, 1986:156; Steelman, 1985:359).

The mother plays an important role in the language development of the child (Blake, 1981:423; Mwamwenda, 1989:116). According to Mwamwenda (1989:116), the way in

which mothers talk to their children is positively related to academic achievement because the sentences which the mothers use to communicate with their babies are shorter and less complex than the sentences used to communicate with the older children and, can be understood by little ones (Mwamwenda, 1989:116). When mothers communicate with their children they modify their speech so that the language they use is different from that used to communicate with older children. The younger children's language is phrased in an almost telegraphic form, for example, "Daddy coming". In response to what the child says, the mother might respond in full sentences such as "Yes daddy is coming" (Mwamwenda, 1989:116). When speaking to the child, the mother's correct sentence pronunciation and construction might promote good language development as the child would imitate the mother (Mwamwenda, 1989:117). As children get older, they manage to master the language skills and learn more language vocabulary which enables them to attain the academic goal (Scoot-Jones, 1984:280).

In an analysis of maternal teaching styles, Hess and Shipman (1965:881) revealed that there were large differences among social status groups in the ability of mothers to teach their children to learn. In this study upper-middle-class, upper-lower-class and lower-lower-class mothers who were teaching their children how to group or sort a small number of toys, were compared. The upper-middle-class mothers oulined and explained the task to their children and gave sufficient help to permit the children to proceed on their own. Thus, explicit information about the task and what was expected of the children was given. They offered support and help of various kinds, and made it clear that they forced their children to perform. The upper-lower-class mothers' style offered less clarity and precision. They did not define the task to their children. The children were not provided with ideas or information that could aid them in attempting to solve the problem and neither were they told what to expect. The lower-lower-class mothers were even less explicit. Their children were not provided with the information they needed to solve or to understand the problem.

Each teaching session was concluded with an assessment by a staff member to determine what the children had learned from the concepts taught by their mothers. The children's achievement was scored in two ways: first, the ability to correctly place the objects and, secondly, the ability to verbalize the principle on which the sorting or grouping had been made.

The performance of children from upper-middle-class homes was well above that of children from upper-lower- and lower-lower-class homes in sorting tasks, particularly in offering verbal explanations for the bias in making decisions. Over 60% of the upper-middle-class children placed the objects correctly in all the tasks, while the upper-lower-

and the lower-lower-class children achieved as low as 29% for the correct positioning. Approximately 40% of the upper-middle-class children who were successful were able to verbalize the sorting principle. Upper-lower- and lower-lower-class children were less able to explain the sorting principle, and their achievement ranged downward from the upper-middle-class level to one task on which the child was able to verbalize the basis of his sorting behaviour correctly. These differences paralleled the abilities and teaching skills of the mothers from different social-status groups.

5.3.2 TIME SPENT ON LEARNING AND ACADEMIC ACHIEVEMENT

Time spent on learning refers to the time required by children to carry out learning activities (Wang and Lindvall, 1984:169; Bangert, Kulik and Kulik, 1983:144). Wang and Lindvall (1984:170) contend that the time spent on a learning task is an essential condition for student achievement as it concerns the amount of learning that actually takes place and reflects each student's motivation and interest in the specific learning task (Wang and Lindvall, 1984:170). Their contention (Wang and Lindvall, 1984:171) is that by incorporating time as a variable in planning for homework/learning, a student is allowed the flexibility to effectively do his/her homework because he/she will know that at a particular time he/she must do the homework or learn (also see paragraph 3.8.1).

In a study on time spent on learning, Denham and Lieberman (1980:169) found that students who give themselves more time for academic tasks achieved better than students who did not give themselves time for academic tasks (Walberg, 1984:399). On the other hand, Jubber (1988:296) argues that it is also possible that students doing badly at school might work longer hours in an attempt to improve their performance while those doing well would spend less time on their academic tasks which might have a negative influence on future performance.

5.3.3 PARENTAL EXPECTATIONS AND ACADEMIC ACHIEVEMENT

Parental expectations include factors such as parental occupation and parental knowledge of the relationship between formal education and life prospects (Jubber, 1988:294). Jubber (1988:294) points out that parental expectations motivate and direct a child's education because when he/she realises that his/her parents' expectations for him/her are high, he/she might try his/her utmost to learn very hard (i.e., to exert more effort) to attain his/her academic goals (Pendarvis, Howley and Howley, 1990:104). According to Jubber (1988:293), the child's performance also helps to shape parents' expectations for

their children with regard to school and post-school education when they notice their children's improvement in learning as successful progress.

During a survey of the home and family environment and its impact on school achievement, Jubber (1988) interviewed white parents about their education expectations for their children. Parents were asked how much education they expected their children to receive. The data indicated that parental expectations were high and correlated statistically with school achievement. These results were interpreted to suggest that parental expectations play a motivating and directing role in children's education (Jubber, 1988:294).

Marjoribanks (1984:692; 1985:142) used a structured questionnaire to gather information about adolescents' perceptions of their parents' educational and occupational aspirations for them; the encouragement they received from their parents in relation to schooling, and their parents' general interest in their education. From the responses two scales were constructed, labeled adolescents' perceptions of mother's support and father's support for learning. During the initial survey, the data were combined to obtain an aggregate of the scores. The parental educational and occupational aspirations were combined into a single aspiration index. The data indicated that parental expectations were high and correlated statistically with school achievement, i.e., the child's academic promise and the positive effect which parental expectations have on achievment.

Mickelson (1990:53) though, reports on an attitude achievement paradox among black students. According to this paradox, blacks have a positive attitude towards school but their academic performance is low. Thus what blacks say about education and what they do differ as their positive attitudes towards education are coupled with a lower performance rate (Mickelson, 1990:53). (This paradox may also be explained by the job ceiling effect discussed in paragraph 5.2.5).

5.4 SCHOOL VARIABLES AND ACADEMIC ACHIEVEMENT

School variables refer to school learning environments which facilitate or debilitate the learning of students to attain their academic goals (Wang and Lindvall, 1984:161). School variables include, among others, rural versus urban schools, the size of the school, the class size, the age of the child, and the language of instruction (Holiday, 1992:16).

5.4.1 RURAL SCHOOLS VERSUS URBAN SCHOOLS

Rural schools refer to schools which are situated in villages, while urban schools are those situated in towns and cities (Denisova, 1990:25; Dzebu, 1990:51; Baine and Mwamwenda, 1994:124). Rural schools usually are smaller than urban schools because of a lower pupil enrolment (Gumede, 1989:97).

Concerning the difference between the academic achievement of rural schools pupils and urban schools pupils, Venter (1983:42) and Gumede (1989:98) have reported that pupils from urban schools perform better than pupils from rural schools, because urban schools have better learning facilities.

Baine and Mwamwenda (1994:118) contend that the inadequency of school facilities in some rural areas such as a lack of classrooms, dilapidated buildings, and poor living conditions, cause a serious loss of schooling time, because when the child has to look for a stone or a log to sit on time is wasted leaving less time for instruction and learning. Logs and available stones for example, serve as benches, desks, chairs or tables, while in urban schools, all the physical facilities are available (Dzebu, 1990:53).

According to Takalo (1991:15), equipment such as television sets or overhead projectors, laboratories, libraries, etc., which enable students to learn properly is seldon found in rural areas. At some schools, lessons are commonly conducted under trees since there are no classrooms (Takalo, 1991:15). During the summer (rainy season) and winter (cold weather), lessons have to be terminated to enable the children to go home as they are exposed to bad weather which can inflict a bad cold on them (Dzebu, 1990:53). Such conditions have a related negative influence on the cognitive development of the child.

5.4.2 SCHOOL SIZE AND ACADEMIC ACHIEVEMENT

School size involves the number of pupils who attend a particular school during a particular year (Gumede, 1989:99). Based on student enrolment, schools are classified into large schools and small schools (Hamilton, 1985:70; Schwartz, 1981:100). In a study on the influence of large and small schools on academic achievement, Gumede (1989:101) reported that pupils in large schools performed better than pupils in small schools. According to Gumede (1989:101), the difference in achievement was attributed to the better facilities such as the well equipped libraries and laboratories found in large schools while there were no learning facilities in the small schools.

According to Alspaugh (1994:593), the relationship between school size and academic achievement appears to be dependent on whether the schools are small or large. Increasing school size up to a point may increase achievement. Increasing school size beyond that point though, may have a negative effect on academic achievement. Increasing the size of small schools makes them more economically efficient, but when they become too large, they become inefficient because of the increased enrolment of students (Fowler and Walberg, 1991:190) and managament problems. Alspaugh (1994:593) says that when schools get larger, there appears to be a decline in the individual participation of parents and students in school affairs. As a result, the effect of school size on academic achievement may be different for variations in the sizes of small schools as compared to variations in the sizes of large schools (also see paragraph 5.3.3).

5.4.3 CLASS SIZE AND ACADEMIC ACHIEVEMENT

Class size is defined as the number of pupils who regularly meet in a room under the guidance of a teacher (Gumede, 1989:108; Durkin, 1990:23). Holiday (1992:15) and Robinson (1990:82) believe that students' achievement can be more effective if classes are reduced from an average of 30 or 45 to 10 or 15, because small classes make it easier for teachers to give individual attention (Alspaugh, 1994:597). Alspaugh (1994:597) postulates that the larger class size may be more stressful for both the teachers and students, as the teachers in such classes must be better organized and keep the students busy to maintain an orderly class atmosphere so that there may be less time for the learning task.

In a nutshell, Alspaugh (1994:197) concludes that teaching is a personal thing which is positively or negatively related to academic achievement depending on an individual. Most teachers and students for example, prefer small classes so that they can conduct laboratory activities easily and have follow-up discussions, because large classes have little impact on the academic achievement of most pupils in most subjects (Robinson, 1990:82).

In a meta-analysis of 30 comparisons between smaller and larger classes, Blatchford and Mortimore (1994:424) found that 25 comparisons favoured smaller classes. Teacher morale was higher, attitudes to students better, and satisfaction with performance was greater in smaller classes. Turner (1990:36-37) contends that it is easier to manage the enhancement of pupils self-esteem in a class of 18 in comparison with 26, while Clarke (1981:64-65) also feels that in smaller classes teachers are more caring toward pupils, as

there is more opportunity for pupils to confide personally in teachers because there are not many pupils.

5.4.4 AGE OF THE CHILD AND ACADEMIC ACHIEVEMENT

The age at which a child begins formal schooling has been an issue for years (Hauck and Finch, 1993:75; Langer, Kalk and Searls, 1984:62). Many professional educators, psychologists, and parents have expressed opinions about the optimal age for school entry, but most are still uncertain about what is best for each child (Cameron and Wilson, 1990:261).

The month in which the child is born is crucial because it determines the age of a child in his/her own class, whether he/she is among the older students in the class, among the younger in the class, or somewhere in the middle (Sweetland and De Simone, 1987:407; Russell and Startup, 1986:840). Hauck and Finch (1993:75) and Dietz and Willson (1985:93-94) contend that a student may actually be a full year younger than another student in the same class. Thus, it is not suprising that some inequalities of achievement will be apparent between the younger and older students in the same class.

In a study of more than 6,000 students, Hauck and Finch (1993:75) compared younger to older students' reading and math grasp of the same grade level of the same school system. The achievement of the younger students was almost identical to that of the older students. A higher rate of retention in the younger students compared with that of the older students was also evident (Oslon, 1989:101).

Cameron and Wilson (1990:260-263) report that in a controlled study of the relationship of relative age to achievement, differences in achievement between younger students and their older classmates were significant but small when measured in the second grade and again in the fourth grade. Students who had been deliberately held back from beginning first grade at the scheduled starting age, appeared not to have gained anything from the delayed school starting age (Davis, Trimble and Vincent, 1980:136; Hauck and Finch, 1993:75).

An analysis of the avarage academic achievement in English per age group in a specific standard reveals that the younger students achieve higher marks in English than the older students in the same standard (Mathebula, 1992:66). The average age of standard 7 students ought to be 14 years. Students who never failed a year (the 13 and 14 year age groups) achieved better than older students who failed a year or more or who missed a number of schooling years. Mathebula (1992:66) concluded that the academic

achievement of students who failed more than one year or missed school, deteriorates progressively according to the number of years they failed or missed school.

5.4.5 LANGUAGE OF INSTRUCTION AND ACADEMIC ACHIEVEMENT

Language of instruction refers to the language which is used by the teacher in class to instruct students (Wang and Lindvall, 1984:161; Gordon, 1979:201; Consilio, 1974:302). In multi-lingual African countries choosing one language over another though may be resisted by various linguistic groups (Baine and Mwamwenda, 1994:125). In South Africa for example, in black schools, the students' mother tongue is used as the medium of instruction during the first three or four years of education, then English becomes the medium of instruction while the mother tongue is retained as a school subject (Jansen, 1989:220). Some languages such as black languages though are less suitable than others for technical, academic and scientific instruction making it necessary to use English as medium of instruction (Wang and Lindvall, 1984:165; Baine and Mwamwenda, 1994:125).

According to Baine and Mwamwenda (1994:125), some black teachers lack confidence in the use of English. Teachers therefore sometimes continue teaching in the mother tongue when they should be using English, hence students do not master English and therefore have difficulty in learning from English instruction at higher grades (Bergman and Schuder, 1993:13).

5.5 CONCLUSION

This chapter focused on the influence of environmental variables on academic achievement. Different variables such as family status variables, family process variables and school variables were discussed. With relation to family variables, a distinction was made between family status variables and family process variables.

The literature review revealed that children from small families outperform children from large families on academic tests. With relation to sibsize and birth order parents are better able to educate their siblings when they are few, while a larger sibsize has a negative effect on the children's academic abilities. If birth order spacing is one year or less between siblings, the elder one will not be able to influence the mental development of the younger one (Powell and Steelman, 1993:368). Concerning children from single-parent families, they are lower on school achievement than children from two-parent families, as the lower income of single-parent families may have a negative effect on the

resources that have an influence on the academic achievement of a child. With relation to the difference between the academic achievement of rural schools pupils and urban schools pupils, the literature revealed that pupils from urban schools perform better than pupils from rural schools because urban schools have better learning facilities (Gumede, 1989:98).

In the final analysis, one comes to the conclusion that environmental variables are important variables that influence academic achievement.