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Effects of Parental Schooling and Family Size on the Academic Performance of the Adolescent Learner in Zimbabwe

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Abstract
The paper presents a descriptive, cross-sectional survey on the influence of family size and parental schooling on learners' cognitive performance in Manicaland, Zimbabwe. Cluster sampling was used to select eleven high schools from the 22 public high schools. Stratified random sampling was used to select 110 forms 3 & 4 adolescent learners. Data from 110 secondary school learners (aged 14-18; 50% male) was unleashed basing on school children's experiences within their families and homes. Focus group discussions were conducted in each cluster at a central venue that was convenient for the learners. Data was triangulated with that collected through an open-ended questionnaire. Percentages and narratives were employed to analyse and present data. Arguing from a family`s ecological systems perspective, the study established that the two variables were interrelated and each adversely affected the cognitive performance of learners. When juxtaposed, the issue of a large family size was implicated as having a higher risk factor in that it perpetuated family poverty especially in low income families. This led to negative pile up factors that affected the cognition of learners. Children from smaller family sizes enjoyed a more balanced home environment where parental aid on school tasks was debuted. Some parents lacked knowledge and expertise on some school concepts, resulting in very low or no parental scaffolding in school tasks. Parenting styles such as child- and grand-parenting, noisy siblings, domestic violence and politics were noted as contributory family`s macro and micro system factors that led to low cognitive achievement of learners in many school tasks. The practical implication deduced was that parents and caregivers were to be reminded that they were their children's first and foremost teachers. They should work collaboratively with school authorities in order to enhance sustainable and positive cognitive performance in all learning tasks.

Keywords: cognition, learners, family-size, parental-education

1.0 Introduction
Many differences exist in family definitions and backgrounds. The family backgrounds range from family size, socio-economic status, parental schooling, home language, family culture e.g. parenting style, Religion, level of motivation, type of family, etc. Since time immemorial, research has established that a family's background can affect a learner's academic achievement in many school subjects (Snowman & McCown, 2014). A number of home environmental variables are reflective of an individual's cognitive performance (Weinstein and Rosen, 2014). However, research on home environmental variables and cognition of learners is rather limited in Zimbabwe (Ganga, 2013). The influence of family size and parental schooling on a learner's

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academic performance, for instance, is under-researched yet it is critical in understanding what influences learning and cognition.

The relationships between family characteristics and the intellectual performance of children can be studied in both qualitative and quantitative terms. Questions on cognition and home environmental variables have been raised as the subject of debate amongst many researchers. Some researchers on cognition in Mwamwenda (2010) contend that children, who belong to large families, tend to have lower school achievements than those in smaller families. In concurrence, Child (2003) claims that some family background characteristics are associated with low cognitive performance. The characteristics are also interpreted as reflecting cultural deficits in the socialisation of minority groups and poor families. Does this therefore, mean that the vast numbers of Zimbabwean children who are bred in large extended families are low intellectual achievers? A number of research studies carried out amongst Western societies seemed to be biased in favour of families where family life was normal. Research findings were also generalised globally yet there are many great differences in socio-economic status, family definitions, beliefs, attitudes, values, parental guidance skills and many other factors that differ from family to family.

According to Ohuche and Otaala (1981) in Mwamwenda (2010), mechanisms of human cognition are universally the same at infancy but not in later years because of the external environment. The later years can be viewed as a learner's school years. It is the school that helps to unveil a learner's intellectual capabilities. This study, therefore, tries to view concurrently, the effects of a learner's parental schooling and family size on a learner's academic performance in a selected town in Zimbabwe.

1.1 Research Questions

1. How do the selected learners perceive the influence of family size and parental schooling on their cognitive performance?
2. To what extent does each of the two home environmental variables influence the cognitive performance of the learners?

Theoretical Framework

This study is centred largely around the ecological systems theory propounded by Bronfenbrenner (1977, 1979, 1986) whose assumptions are based on the interdependence between different organisms and their environments (Donald, Lazarus & Lolwana, 2010). The relationships between organisms and their environments are seen holistically. In a family every individual is essential to another in order to sustain the cycles between birth and death. The links between organisms or people within their entire systems depend largely on one another. The theory sees different levels and groups of people as interactive systems where the functioning of the whole is dependent on the interactions between all the parts.

The adolescent learners in this study are part of a system that can be affected by different aspects such as members of the extended family, siblings, teachers, neighbours, peers, the curriculum and the school administration. Interdependence here is highly dependent on the activities of each member.

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Therefore, it becomes vital to understand how children's development is shaped by their social contexts (Bray, Gooskens, Moses, Khan & Seekings, 2010). Bronfenbrenner (1977, 1979, and 1986) explains fully how different levels within a system in the social context interact in child development.

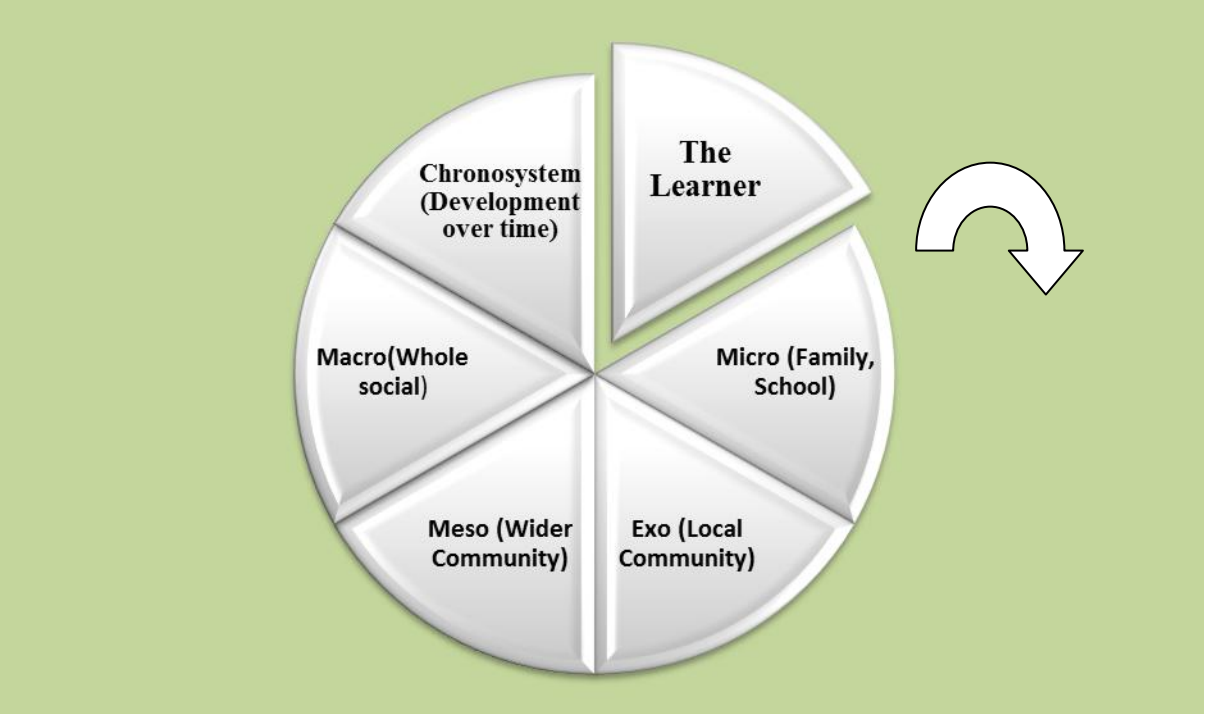

Figure 1: The Learner as part of Urie Bronfenbrenner's Ecological System

Bronfenbrenner explains fully the reciprocal influences in families, peer groups, classrooms, schools and local communities covering four nested systems, namely the microsystem, mesosystem, exosystem and macrosystem, which all interact with the chronosystem. The learner is at the centre of it all. Reciprocal interactions with peers, school administration, the home and the external community all impact on learner's cognitive achievements in a way.

3.0 Methodology

Research Design

The researcher employed a descriptive, cross-sectional survey design within a mixed method paradigm (Olsen, 2004; Levin, 2006; Creswell, 2008; Leedy and Ormrod, 2010). Though mixed, more of qualitative data was unleashed basing on the learner's phenomenological experiences within their families and homes. Because this study combines qualitative and quantitative measures, its framework is hinged on an inductive – deductive logic. This leads to the positivist's idea of triangulation in research methodology. Leedy and Ormrod (2010) imply that the use of some aspects from each of the two methodologies is advantageous in that the positive aspects of each research approach are combined in a study.

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The Population and Sample

The 110 participants were aged between 14-18 years (gender considered at 50% male). Girls were selected separately from the boys to ensure maximum representation of each sex and to avoid gender bias. Cluster Sampling was used to select eleven high schools from the 22 public high schools in an urban community in Manicaland. Stratified random sampling was used to select 110 forms 3 & 4 adolescent learners. According to Suresh, Thomas and Suresh (2011), stratified random sampling was considered to be the best way to select a sample that is unbiased. In it, every member of the population has an equal chance of being chosen to be part of the group.

The Instruments

The study made use of an open-ended questionnaire and a Focus Group Discussions (FGD). The questionnaire was meant for learners to reflect on their home environments and how a particular home environmental variable may affect one's thinking and reasoning capacity at school. The questionnaire began with demographic details of learners where questions were mainly structured and requiring either a tick or filling in responses. The questionnaire technique has been chosen as one method of instrumentation for this study because of its reliability and validity. To prevent conferences in the administration of instruments, we remained present within the time participants were responding. The idea also ensured a 100% response rate, meaning all the 110 participants returned the completed instruments.

Data Collection Procedures

A preliminary visit to each one of the schools was also necessary to try and establish the total number of schools to be visited as well as their distances apart. A letter addressing participants was used as a cover note for the questionnaire. This was one other means of trying to enhance a supportive atmosphere for the fieldwork. Appointments to schools were confirmed through telephoning.

Data Analysis Techniques Employed

Raw data from the 110 questionnaires and the FGDs were recorded on tables, graphs and narratives. Some descriptive statistics were used. Data were analysed using frequency counts in an effort to determine the opinions of the majority of the adolescents. Percentages and narratives were employed to analyse and present data (Cohen & Manion, 2010; de Vos et al, 2011). The analysis of data warranted both the qualitative and quantitative measures. Therefore, this study, reflecting a positivist's perspective on epistemological orientation, attempted to invite both the qualitative and quantitative means of presenting and analyzing data.

Ethical considerations

The researchers were aware that each and every citizen, including children, has the right to dignity of treatment and privacy. Therefore, it was prudent to explain the purpose of the study to all the participants. The adolescent learners as participants were assured of strict confidentiality, and where names were necessary only pseudo names were used. Assent forms were used

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especially for minors and consent forms were administered to older learner participants. Participation in the study was voluntary.

Findings and Discussion

Demographic Details of Participants

It was vital in this study to first assemble demographic details of the 110 participants because such details were quite necessary in the interpretation and analysis of the main research data. Of the 110 participants, 55 were females and the other half were males. The largest group of participants fell within the 16-year age group at 50%. A few i.e. 8% were 18 year olds and above.

Contributions of Home Environmental Variables on Cognition of Learners

These findings are based on results from questionnaire and FGD guide responses.

Family Size and Cognition of Learners

The variable, family size, took into consideration the number of people living together whether it was a child-led family, mother-only, father-only, grandparent led family or the usual father, mother and child type. The study presents the details in three family sizes namely large (10 or more people living together), medium (4-9 people living together) and small (3 people and below living together). From some further probing on how learners perceived the influence of family size on cognition, a few narratives are attached to the Table 1 besides frequencies of each family size.

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Table 1: Family Size and Contributions to Cognitive Performance of the Child as presented by Participants in the Questionnaire

Family Size	(f)	%	Perceptions of Participants on Family Size Contributions to Cognition
Large Family (about 10 or more people living together)	13	12%	• Older children are employed during the vacation to augment family income thus losing on time to read and study. • Older children spend time coaching the younger children on homework, which reduces their own study time. • Noisy siblings interfere with study times.
Medium Family (4 –9 people living together)	67	61%	• An advantage on sharing knowledge and experiences as family. • Noisy neighborhood affects cognition. • Too many household chores do interfere with studies. • Children are daily messengers at home. • Insufficient learning materials. • Noisy siblings interfere with schoolwork.
Small Family (3 people and below living together)	30	27%	• There is ample time to study. • Parental assistance given in homework where parent is well versed. • Extra learning materials are provided in the form of books, videotapes, cassettes, etc. • Independent work is encouraged.

From table 1 above, a larger percentage of the participants (n = 67) belonged to medium sized families. Very few (12%) came from large sized families whilst 27% came from small sized families. Amongst the small and medium sized, were child-led families. The 67%, belonging to medium sized families, indicated that the majority are from families where father, mother and children still live together. This trend is evident in most urban homes countrywide where most families could be regarded as standard with an average of 4 – 6 children per family. Families in urban areas are mostly smaller than in the rural sectors where families are usually extended.

Both large and small families do impart merits and demerits on the cognition of learners. Participants in medium sized families complained mainly about household chores interfering excessively with their cognition and studies. Noisy siblings, especially of primary school going age were also implicated as being too noisy in the homes. School leavers within the homes affected some learners' cognition through noisy radios, games, etc. Inadequate learning materials were also cited as contributory factors to children's low cognition. Participants however, praised their family size environment for sessions of sharing.

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The findings on types of family sizes and their influence on cognition support accumulating evidence from previous authorities such as Kotuluck (1996) and Caldwell and Bradley *(1989*) and more recent authorities (Banerje; 2016 and Humble, 2017), that there are a lot of intervening sub-variables within family sizes that seem to interfere with the cognition of learners. Data on family size however, provided a rather crude indicator on the intellectual environment of children due to many other sub-variables within it. These sub-variables are sort of intermingled with other findings as reflected in the later parts of this discussion. Perceptions of participants from smaller but more affluent families, matched Brofenbrenner's micro structure (made up of the family) and Dunn's (1989) research findings in Klitmøller (2015). Family world and conversations with affectionate parents provided contexts of special value for children's intellectual performance.

All the participants who were from small families (27%) on table 1, seemed to find their parents, a most affectionate micro climate. Parents in smaller family types tend to give responsive support and have high expectations for their children. They created, within their homes, an environment that is free of overt conflict between family members. Baumrind (1967) would call this a permissive parenting style.

The pie chart presentation in figure 1 below has been chosen here, because it clearly reflects which family type had more participants involved in the study. From here, perhaps one can easily get the implications to further answer the question of how family sizes may contribute to cognitive performance of learners.

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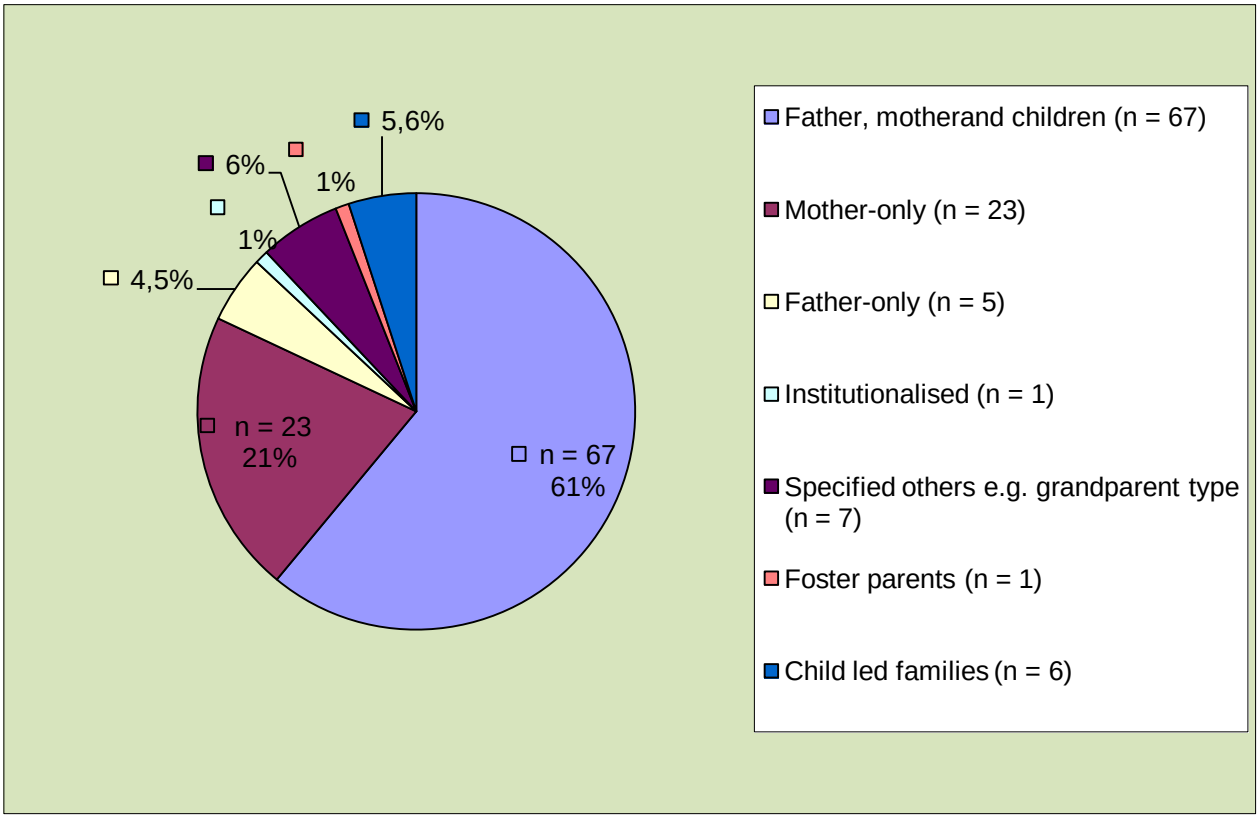

Fig. 1 Type of families identified by the questionnaire for learners

The pie chart above indicates that family types to which participants belonged were varied. Most of the participants (61%) were reared in families where father, mother and other siblings were present. Mother-only families at 21% seemed to out-number the father-only families at 4.5%. A total of six (6) child-led families were identified as well as seven (7) grandparent only family types. One participant stayed in an orphanage.

Within this study, the 21% of children reared in mother-only homes seemed to be performing just as well as those in other family types. This finding contradicts an unconfirmed finding by Levine and Harvighurst (1992) cited in Mwamwenda (2010), that one-parent families have shown a major contributory factor to low cognition amongst black Canadians. Perhaps more researches need to be carried out with the fast-growing mother-only and father-only families identified by this study.

Parental investment on study time with their children is one obstacle that played a vital role in fostering cognitive development in children. There could be a need for further analysis of children's cognitive development and parental employment especially on the single parenting style that emerged from the findings of this study.

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4.1.2 Parental Schooling and Cognition of Learners

The level of education for parents was one other home environmental variable taken up by this study. It was found quite essential to separate the parental education levels into two basic units namely father's and mother's level of education, because it is common in Zimbabwe that a father who holds a degree could be parenting a child together with a mother who only managed Grade 7. There are implications to this effect. Presented below are two bar graphs indicating mother's and father's education levels for the total of 110 participants. There were only 90 mothers and 72 fathers, whose education levels are indicated in Figs. 2(a) and 2(b) below. We chose the idea of presenting this portion using bar graphs because they clearly showed levels of education and frequencies. Readers can then compare the two graphs without many difficulties.

Mother's Education Level (n = 90)

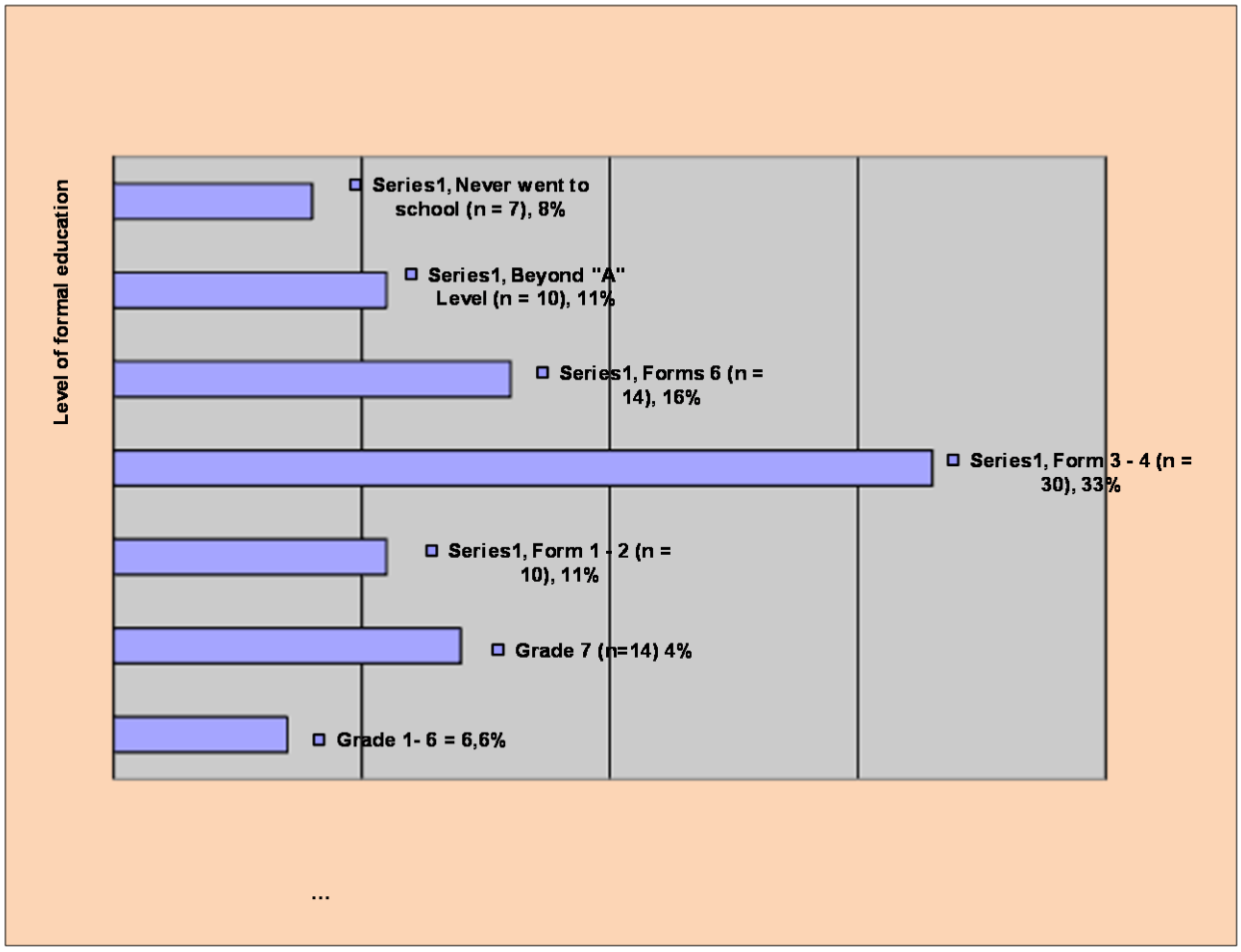

Fig. 2(a) Education levels for the 90 mothers whose children participated in the research process

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From the 110 participants, 90 learners indicated that they still lived with their mothers whether in single parent homes or with both parents. From the representations in Fig. 2(a) above, there seemed to be more concentration of mothers at 33% having done "O" Level only. Eight percent (8%) never went to school, whilst 6,6% went as far as grade 5 followed by 14,4% who only managed grade 6 – 7 levels. Only 24 mothers, out of the 90 mothers, went beyond "O" Level in formal education.

Before discussing the implications of mother's education level to the cognitive performance of their children, we found it worthwhile to present below fig. 2(b) representing levels of formal education for the 72 fathers of the participants who were involved in the study. This idea facilitates discussion of the implications of parental education level on learners' cognition as one home environmental variable.

Father's Education Level (n = 72)

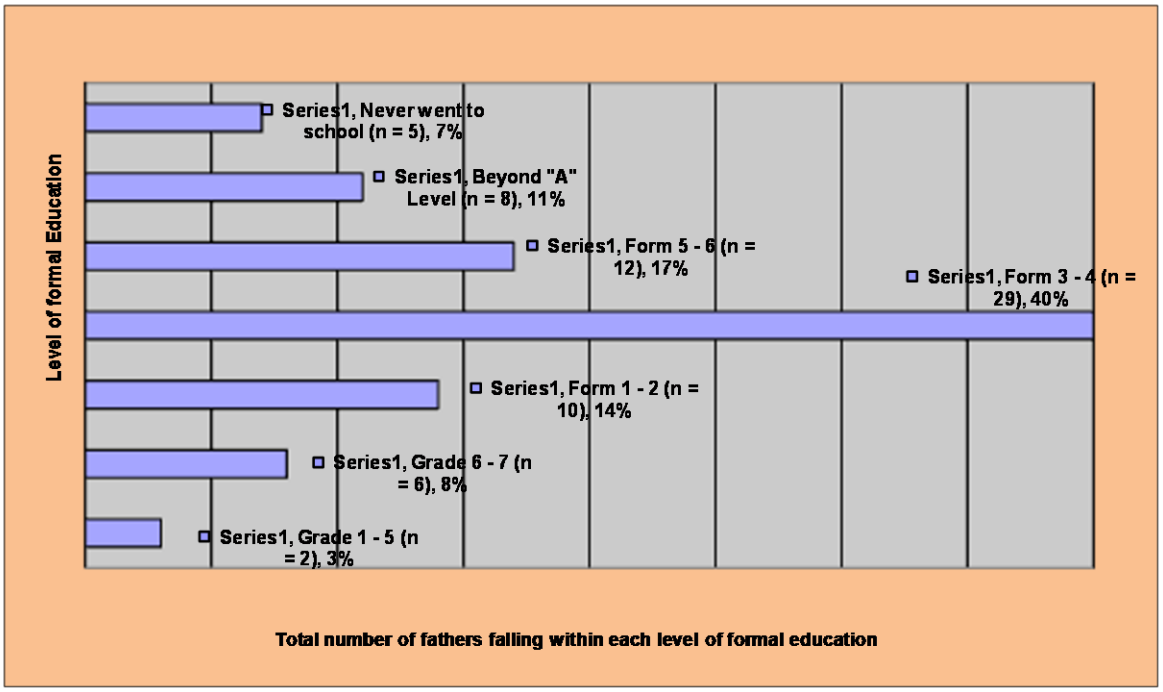

Fig. 2 (b) Education levels for 72 fathers whose children participated in the research process.

Fig 2(b), showing levels of father's formal education, seemed to be almost tallying with that of mothers at form 3 – 4 level where 40% of the 72 fathers are falling in. In the previous presentation (i.e. Fig. 2(a)), 33% of the mothers also went up to form 3 – 4 level of formal education. Seven (7%) of the fathers never went to school whilst 3% went only as far as grades 1 – 5.

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Fig 2(a) and 2(b) reflected a trend that most parents went as far as form 3 and 4 in formal education at 33% for mothers and 40% for fathers. The finding implied that people in Mutare Urban tended to take the beginning or end of "O" Level as their onset of parenthood just as is reflected in the two graphs afore. This recurring trend could be another major obstacle hindering cognitive performance of children. This finding is consistent with Bronfenbrenner's (1977) perspective that in an ecological environment, organisms affect one another both negatively and positively.

For instance, if children were bred in a family whose parents went only as far as form 3 or 4 in school, there is a possibility that quite little assistance is granted by such a parent in as far as learning tasks are concerned. This was confirmed by Pink, a form 3 learner who said:

> *Isu tinotonyanya kusvikirawo pakatosvikirawo vabereki vedu nechikora ngekuti mberi kunenge kwokonza pasina unotibetsera*
>
> (We normally reach the level of education that our parents reached because no one will support us when higher levels of education become more difficult).

It is quite obvious that at forms 3 – 4 levels, people are still adolescents and might not be able to become very supportive in their children's school work.

Accompanying the responses on the questionnaire probing, participants in this particular urban school cluster also provided a long list of narratives reflecting what they perceived to be contributions of their parent's education levels to their own cognition. Perhaps presenting these narratives first, would facilitate further discussion on parental education level on cognitive performance of learners. The following comments came up from participants coded Blue, Green, Yellow, White, Red, Gold, Grey, Brown, Silver, Black and Purple whose parents had not gone beyond "O" Level in school: Assistance is granted in homework where parents may still recall concepts they learnt during their school years; Some parents lacked expertise in some subject areas; Some parents were blamed by learners for always instructing them to seek academic assistance from their school peers if ever they were consulted; Domestic violence was implicated as interfering with children's cognition; Parents are ever away from home making consultations by their learning children impossible; Working mothers piled up their adolescent children with household chores thus reducing time for reading or study and on a more positive note, enough learning materials were supplied where sufficient resources were available.

It was pleasing to note that children really knew what influenced their cognitive performance in school. This finding was consistent with findings in Worthy etal (2011) study that there are a number of motivational factors on the cognitive outcomes of a child's learning process. Examples from the narratives such as failure to provide assistance on homework by parents with lower levels of education seemed to be prompting learners to be labelling their parents negatively. For instance, some learners labelled their parents "lazy" when it came to assisting them with homework. For example, some participants echoed Green's complaint when he exclaimed saying, '…*vamwe vanamai naanababa vane nungo dzekutibatsira pahomework*

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(…some parents are lazy to help us with our homework).The negative remarks could have implied that parents needed to take their children's learning much more seriously.

From the narratives, the study also discovered that domestic violence, parental constraints, absenteeism from home and other macro system factors were contributing to poor cognitive performance amongst school pupils. Perhaps this implied a need to start sensitizing parents on their importance in the cognitive processes of their children. The study seemed to have been indicating clues that parents form the basic home environment for their children and therefore, they should be highly concerned.

By looking at the two bar graphs in 2(a) and 2(b) the trend in parental schooling seemed to be reflecting the same style. Therefore, it sounds quite obvious that there seemed to be more negative than positive contributions of parents with low levels of education than those with higher levels of education. This finding is consistent with Moreno and Lopez (1999) findings on Latina mothers' education level and the influence on their children's cognition (Mwamwenda, 2010).

Therefore, parental support systems, as part of the environment, may enhance children's cognition in school though there could be barriers even if some parents would want to get involved within the school systems. These barriers in parental involvement could be negative attitudes, lack of skills or some practical deterrents, which are beyond the scope of this study and may require further investigative researches.

All participants confirmed that more educated parents had more familiarity with the school systems i.e. knowledge and more awareness of their role visa-vis their children's education. These characteristics gave educated parents more power and resources with which to involve themselves in their children's education if matched their less educated counterparts. Parents should, therefore, look into what may enhance or hinder cognitive processes of their children in school.

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Table 2: Juxtaposition of effects of Family size and parental schooling on Learner's Cognitive performance

Family Size	Parental Schooling
• Large family size has a higher risk factor on a learner's macro climate • Affects Socio-Economic Status of a family • Perpetuates family poverty more in low income families because it may take time for one to amend crises emanating from poverty • Culminates to pile up factors thus affecting learner cognition, hunger, diseases and stigmatization. • Children from smaller family sizes enjoyed a more balanced home environment where parental aid on school tasks was debuted.	• Parental schooling was noted to be less risky as it affected mostly the child's micro climate • Inadequate parental schooling can be overcome by scaffolding from more competent peers • Affected learners less as compared to family size because some parents are gifted financially yet academically crippled • The variable also showed less pile-up factors caused by limited parental schooling.

5.0 Conclusion

The study established that the two variables were interrelated and each adversely affected the cognitive performance of learners**.** Low levels of education or illiteracy has been noted by this research as yielding negative effects on learner's cognition. Results of this study showed that many people marry during or after "O" Level and when they become parents of children in secondary school, they are of very little assistance on sustainable learner cognitive accomplishments. Therefore, educators should emphasize in their community that parental education level is a vital catalyst in the ultimate cognitive performance of children.

Even if extra academic assistance is not granted at home, most pupils may find the teachers' efforts most stimulating and encouraging. Research has revealed that most beneficial teaching strategies stimulate the learner's cognition and may encourage active verbal engagement of learners in all tasks. Teachers and parents should therefore, be warned that exerting inappropriate levels of achievement pressures on children creates an artificial environment and is likely to be counter-productive.

This study also managed to unveil more home environmental variables that were interfering with the cognitive performance of learners at school. It is the duty of every educator or researcher to try and examine more of these variables and how they are negatively influencing the cognition of learners. For instance, it would be interesting to investigate the effect of differences in political affiliation between parent and child as a home environmental variable affecting cognition of learners today. When juxtaposed, the study noted the following issues of importance between the two variables as is reflected in table 2 above.

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Recommendations

Basing on the above conclusions, the following recommendations were made. To Policy makers, parents and teachers, there is need to provide a positive home environment that encourages children's exploration, curiosity and confidence. There is need to be responsive to children's learning patterns, interests and needs; set and follow up on high but reasonable expectations for children's behaviour and learning; take an active role in making children adjust and succeed at home, community and within the school environment; schools and their local homes or communities should look into best ways of establishing some viable academic collaboration between the child's parent and the teacher as both have been found to be playing quite big roles in enhancing cognitive performance of the child or learner. This is possible through effective School Development Associations. Parents can play a critical role as interpreters of school's objectives and giving confidence and feedback to their children.

Suggestion for Further Research

A replication of this study could be carried out in other cities and also with the rural learners in order to enable researchers to generalise further, our findings on the influence of the two home environmental variables on the cognitive performance of learners. Other related areas for further investigation may include but not limited to: Effects of parental separation, divorce or domestic violence on the cognitive performance of learners; the effects of differences in political affiliation between child and parent/guardian on the cognition of learners; Interference of siblings in the cognitive performance of a child-parent.

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