Review Article

Cognitive Factors and Development of Boy Child in Kenya

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Abstract
The place of the boy child and man in society is changing at a frenetic pace. The majority of society's systems work in favour of the girl child. Society has created the best environment for the girl child to thrive, to the disadvantage of the boy child. As such, more resources are committed to the development of the girl child than ever before. More than ever before, we are seeing numerous campaigns, workshops, and seminars dubbed "girl child empowerment." Especially in Africa and particularly in Kenya, one of the most significant advantages of conducting this research is that the country has significant gender disparities in the development of boys and girls, giving girls an advantage and the ideal atmosphere in which to thrive. As a result, boys have grown into dysfunctional adults that disrupt families, communities and societies across all spheres. To establish the role of cognitive factors on the development of boy child in Kenya. The main objective of this research was to establish the role of cognitive factors on the development of boy child in Kenya. The study used an explanatory research design. The target population unit of analysis was all the 3,500,000 students, 113,200 teachers, 10,463 principals, 3,400,000 parents, 14 heads of mental health hospitals, 129 heads of prisons, and 47 county education officers respectively in Kenya. Stratified-Systematic sampling and purposive sampling were used to identify a sample size of 1,682 respondents selected using the Krejcie and Morgan Table formula. The findings revealed a statistically significant positive correlation between cognitive factors and the development of the boy child: reasoning (r=0.33, p<0.05) and memory (r=0.23, p<0.05), indicating that enhanced cognitive abilities are associated with more favourable developmental outcomes. The findings from this study offer valuable insights for policymakers and implementers in addressing critical gender disparities and enhancing the development and performance of boys. This has broader implications for achieving the Sustainable Development Goals (SDGs), Africa Vision 2050, and Kenya Vision 2030. different medical conditions and risk factors that potentially led to a child developing a recurrent TIA.

1. Introduction and Background to the Study

A boy's health and well-being are influenced by psychosocial factors in his early childhood [1]. It is very likely that it will have an impact on their emotional intelligence and development later on. If unaddressed, it leads to behavioral issues in adulthood. Individual and contextual factors, such as cognitive factors can have an impact on a child's emotional and behavioral problems [2].

According to Bridgman (2015) child development is the series of physiological, verbal, mental, and emotional changes that take place in a child from birth to the beginning of adulthood. A child goes from dependency on their environment comprising of family members, guardians, community, mates, teachers and institutions to independence and autonomy during this stage [1]. This is a critical juncture in a child's life; it may make or break them, and the consequences will last a lifelong. A key reason to this scientific investigation is that today, the development of the boy child and girl child seems to be entirely far-paced. The majority of society's systems work in favour of the girl child. According to Ologi society has created the best environment for the girl child to thrive, to the disadvantage of the boy child. As such, more resources are committed to the development of the girl child than ever before. More than ever before, we are seeing numerous campaigns, workshops, and seminars dubbed "girl child empowerment." Especially in Africa and particularly in Kenya, one of the most significant advantages of conducting this research is that the country has significant gender disparities in the development of boys and girls, giving girls an advantage and the ideal atmosphere in which to thrive. According to Khayeka (2016) the standing of the boy child and man in society is rapidly shifting. Rather than focusing on the underlying, God-given capabilities in both, modern rhetoric pits them against one another [3]. As a result, boys have

grown into dysfunctional adults that disrupt families, communities and societies across all spheres.

Statement of the Problem Furthermore, according to an International Labor Organization report (2016), Africa has the highest number of child laborers; 72 million children are estimated to be in child labor, with 31.5 percent of them engaged in hazardous work, and 70 percent of these being boys under the age of 15 years old. According to statistics, Kenya had 77,347 convicted prisoners in 2019, with males accounting for 67,530 of those individuals. Kenya has 11 juvenile remand homes with a capacity of 2,500 children, 2,250 of whom are boys. Boys tend to be more likely than girls to drop out from school, take drugs, and end up in prison in Kenya [4]. To be precise, boys are more than eight times more likely than women to be incarcerated or imprisoned at least once in their lives. A boy has a 9% chance, or 1 in 11, of going to prison, while a girl has a 1.1 percent chance, or 1 in 91 (U.S. Department of Justice, 1997). As sentencing dispositions appear to carry some sort of stereotype, girls are more than 28 percent more likely than boys to have their sentencing outcomes determined by pleas to reduce the charges. According to Ndetei et al. (2010) boys outnumber girls among drug users and clients attending drug treatment services for ecstasy, opiate, cannabis, and cocaine [5]. The number of boys attending drug treatment services outnumbers women by 9:1. Nearly half of boys with drug and substance abuse disorders also have mental illnesses such as depression. Additionally, rates of suicide are four times greater for boys than for girls, although substances are commonly found in both males and females who commit suicide. According to a Business Daily Africa report (2020), the rate of divorce among young couples is rising exponentially. Divorce rates have increased from 10% in 2019 to 40% in 2021. Families have become far more unstable, and much of it can be attributed to the father's inability to care for the family. This development in dysfunctionality is solely dependent and can be traced all the way back to the boy's childhood and development. Furthermore, a girl is 40% more likely to become a stable single parent than a boy becoming a single dad (Nation, 2013).

2. Research Objectives
To establish the role of cognitive factors on the development of boy child in Kenya.

3. Literature Review
According to Casey et al. (2018) the brains of children grow and develop rapidly. Cognitive factors are brain changes that prepare a child to think and learn for abstract thinking, planning, and decision-making [6]. These modifications strengthen a child's ability to make and carry out decisions that will help them thrive throughout childhood and into adulthood. A child's brain is very active in creating new cells, which provides them with more places to store information, allowing them to learn new skills. Failure to use actively generating brain cells results in a reduction in brain efficiency. As a child goes to school, lives, and works, their brain trims off the extra growth caused by their inactive participation. Adolescents can use this to think quickly, recall information quickly, and access information from their brain for creativity

and adult decision-making [7]. As a result, it is critical for adults and other caring adults in society to recognize that because the teen's brain is not fully developed, the boy child may struggle with impulse control and be more likely to make decisions based on emotions rather than logic [8]. Their decision-making process changes on a daily basis. With this in mind, adults can provide the assistance that adolescents require as their brains develop. Much of a boy child's cognitive development is influenced by what is going on in his or her brain. According to Blakemore and Robbins (2012) caring adults in healthcare, education, and community programs can still support the boy child's cognitive development by asking open-ended questions on complex issues to improve their abstract thinking skills, asking them to weigh the benefits and drawbacks of various actions that impact their future, providing them with learning opportunities that involve healthy risks, encouraging healthy sleeping habits, and promoting brain injury prevention.

4. Ecological Systems Theory
Urie Bronfenbrenner, a Russian-born American developmental psychologist, pioneered the ecological systems theory, also known as development in context, in 1979. This theory provides a framework for arguing that everything in a child's developmental environment shapes their development. According to Twinto et al. (2021) Bronfenbrenner defines the complex layers of a child's developmental environment and demonstrates how conflict in one layer has a cascading effect on all the other layers. According to Bronfenbrenner's ecological systems theory, a child's interaction with their environment has a significant impact on the type of person they will become in adulthood Fraser (1996). As a child grows, their interactions with their environment become more delicate and complex. As children grow into adults, their cognitive, psychological, and sociological structures can become more complex. As a result, because nature follows a predetermined path, the environment that surrounds the child either hinders or enhances their development [9]. According to Bronfenbrenner, the economy has created the most destructive force on a child's development by causing the unpredictability and instability of family life. The boy child no longer has the necessary constant interaction with important adults or mentors for his development. As a result, if the relationships within the immediate microsystems fail, the child will lack the tools needed to explore other systems.

Cognitive factors on the development of boy child Murray-Kolb investigated how interactions with environmental factors affect early childhood cognitive development. Murray-Kolb mentioned Millions of low-income children are at risk of not reaching their full cognitive potential [10]. As a result, impaired cognitive development had a negative impact on the overall development of the child into adulthood. Ranjiktar et al. studied the determinants of cognitive development in the early life of children in Bhaktapur, Nepal, and concluded that children in third-world countries are statistically at risk of not reaching their full cognitive developmental potential. As a result, they frequently have impaired reasoning, short-term memory, and attention deficit disorder. Nonetheless, these studies did not pay attention to other moderating and intervening factors that could have easily influenced the outcome.

5. Methodology

The study used an explanatory research design, with all 10,463 Kenyan public secondary schools serving as the unit of study. The target population unit of analysis was all the 3,500,000 students, 113,200 teachers, 10,463 principals, 3,400,000 parents, 14 heads of mental health hospitals, 129 heads of prisons, and 47 county education officers respectively in Kenya. Stratified-Systematic sampling and purposive sampling were used to identify a sample size of 1,682 respondents selected using the Krejcie and Morgan Table formula. This study employed a mixed-method research approach to collect and analyze both qualitative and quantitative data. For descriptive and inferential data analysis, SPSS version 24.0 was utilized data using mean, standard deviation, Pearson Product Moment Correlation and Multiple Regression. A pretest was done in Machakos county to ascertain validity and reliability of the research instruments.

Findings and Discussions.

	N	Mean	Std. Dev
The child seeks numerous solutions to challenges logically.	1564	3.729	1.2097
The boy child solves complex problems through a methodical approach.	1564	3.401	1.1724
The boy child carefully examines their decisions.	1564	3.729	1.2329
The boy child easily categorizes, compares, and contrasts previous things, events, and experiences.	1564	3.747	1.1823
The boy child can confidently apply previous experiences to create new knowledge.	1564	3.420	1.2288
In decision-making, the boy child learns from their own and other people's experiences.	1564	3.504	1.2004
The child easily observes and interprets abstract knowledge.	1564	3.915	.9916
The boy child can quickly deduce what other people are saying and thinking.	1564	4.000	.8126
The boy child forms logical assumptions about experiences and circumstances in life.	1564	3.710	1.1327
Source: Nzioka (2023)			

Table 1: Cognitive Factors

The child seeks numerous solutions to challenges logically (Mean = 3.729, Std. Dev = 1.2097): The mean of 3.729 suggests that, on average, respondents tend to agree that the boy child actively seeks multiple logical solutions to challenges. The standard deviation of 1.2097 indicates a moderate level of variability in the responses, suggesting that while many respondents agree, there is a considerable range of opinions. The boy child solves complex problems through a methodical approach (Mean = 3.401, Std. Dev = 1.1724): The mean of 3.401 suggests a generally positive but slightly lower agreement compared to the first statement. The standard deviation of 1.1724 indicates a moderate level of variability, highlighting diverse opinions among respondents. The boy child carefully examines their decisions (Mean = 3.729, Std. Dev = 1.2329): The identical mean of 3.729 as in the first statement indicates a similar level of agreement among respondents. The slightly higher standard deviation of 1.2329 suggests a slightly wider range of opinions compared to the first statement. The boy child easily categorizes, compares, and contrasts previous things, events, and experiences (Mean = 3.747, Std. Dev = 1.1823): The mean of 3.747 suggests a relatively high level of agreement that the boy child possesses these cognitive abilities. The standard deviation of 1.1823 indicates moderate variability in responses, suggesting diverse perceptions. The boy child can confidently apply previous experiences to create new knowledge (Mean = 3.420, Std. Dev = 1.2288): The mean of 3.420 suggests a moderate level of agreement regarding the boy child's ability to apply previous experiences to generate new knowledge. The standard deviation of 1.2288 indicates variability in responses, with some respondents expressing stronger agreement or disagreement.

In decision-making, the boy child learns from their own and other people's experiences (Mean = 3.504, Std. Dev = 1.2004): The mean of 3.504 indicates a moderate level of agreement that the boy child incorporates learning from both personal and others' experiences in decision-making. The standard deviation of 1.2004 suggests variability in responses, reflecting differing perspectives among respondents. The child easily observes and interprets abstract knowledge (Mean = 3.915, Std. Dev = 0.9916): The relatively high mean of 3.915 suggests a strong agreement that the child possesses the ability to observe and interpret abstract knowledge easily. The low standard deviation of 0.9916 indicates a higher level of consensus among respondents. The boy child can quickly deduce what other people are saying and thinking (Mean = 4.000, Std. Dev = 0.8126): The maximum mean of 4.000 indicates strong agreement that the boy child can rapidly deduce others' thoughts and expressions. The low standard deviation of 0.8126 indicates a high level of consensus among respondents regarding this statement. The boy child forms logical assumptions about experiences and circumstances in life (Mean = 3.710, Std. Dev = 1.1327): The mean of 3.710 suggests a moderate level of agreement regarding the boy child's ability to form logical assumptions about life experiences. The standard deviation of 1.1327 indicates variability in responses, with some respondents expressing stronger or weaker agreement. The provided descriptive statistics offer insights into respondents' perceptions of a boy child's cognitive and decision-making abilities. The means suggest varying degrees of agreement, while standard deviations indicate the extent of diversity in respondents' opinions.

		Development of boy child	Reasoning	Memory	Attention
Development of boy child	Pearson Correlation Sig.(2-tailed	1			
Reasoning	Pearson Correlation Sig.(2-tailed	0.33* 0.00	1		
Memory	Pearson Correlation Sig.(2-tailed	0.23* 0.00	0.43** 0.00	1	
Attention	Pearson Correlation Sig.(2-tailed	0.13** 0.00	0.19* 0.00	0.21* 0.00	1
Source: Nzioka (2023)					

Table 2: Correlations Related to the Constructs of Cognitive Factors and Development of Boy Child

Examining Table 35, which explores correlations related to cognitive factors and the development of boy child in Kenya, reveals intriguing insights into the complex interplay between various aspects of cognitive functioning and overall developmental outcomes within this population. Firstly, we observe significant positive correlations between the development of boy child and both reasoning (r = 0.33, p < 0.05) and memory (r = 0.23, p < 0.05). These findings suggest that higher levels of reasoning and memory skills are associated with more favorable developmental outcomes among boy child in Kenya. This implies that interventions aimed at enhancing reasoning abilities and memory processes may contribute positively to the overall developmental trajectory of boy child in this context. Furthermore, a significant positive correlation is found between reasoning and memory (r = 0.43, p < 0.01), indicating that these cognitive domains are interrelated and may influence each other's development. This suggests that interventions targeting either reasoning or memory processes may have spillover effects on the enhancement of the other cognitive domain, potentially amplifying the overall impact on developmental outcomes. Additionally, we observe positive correlations between the development of boy child and attention (r = 0.13, p < 0.01), albeit to a lesser extent compared to reasoning and memory. This suggests that attentional processes also play a role, albeit a somewhat smaller one, in influencing developmental outcomes among boy child in Kenya. Interventions targeting attentional skills may therefore also contribute positively to their overall development, although the effect size may be smaller compared to interventions targeting reasoning and memory. Overall, these findings underscore the importance of considering multiple cognitive factors in understanding and promoting the development of boy child in Kenya. By addressing not only reasoning, memory, and attentional processes individually but also their interrelationships, interventions can be designed to more comprehensively support the cognitive development and overall well-being of boy child in this population.

Coefficients					
	Unstandardized coefficients		Standardized coefficients		
	Beta	**Std. Error**	**B**	**T**	**p-value**
(constant)	1.34	0.29		4.50	0.04
Reasoning	0.54	0.18	0.38	2.88	0.03
Memory	0.36	0.17	0.26	2.03	0.02
Attention	0.25	0.13	0.13	1.87	0.04
Dependent variable: Development of boy child (health, education, activity) *Source: Nzioka (2023)*					

Table 3: Coefficients 'Measures of Cognitive Factors Effect on the Development of Boy Child'

Table 49 presents the coefficients derived from a regression analysis examining the influence of specific cognitive factors – reasoning, memory, and attention – on the development of boy child. This analysis aims to provide nuanced insights into how individual cognitive abilities impact various aspects of child development, including health, education, and activity. Starting with the unstandardized coefficients, these values offer direct information on the magnitude of the relationship between each cognitive factor and the dependent variable (development of boy child). The constant term represents the predicted value of the dependent variable when all cognitive factors are zero, serving as a baseline for comparison. In this case, the constant term is 1.34, indicating the predicted development level in the absence of the three cognitive factors under examination.

Moving to the individual cognitive factors, we observe their respective unstandardized coefficients: 0.54 for reasoning, 0.36 for memory, and 0.25 for attention. These coefficients signify the change in the predicted value of the dependent variable associated with a one-unit increase in each cognitive factor. For example, a

one-unit increase in reasoning corresponds to a 0.54 increase in the predicted development level of boy child. Transitioning to the standardized coefficients, represented by Beta, these values allow for the comparison of the relative importance of different predictors in the model, accounting for their standard deviations. Standardized coefficients provide insights into which cognitive factors exert a stronger influence on child development compared to others. In this table, reasoning exhibits the highest standardized coefficient (0.38), followed by memory (0.26) and attention (0.13), suggesting that reasoning plays the most significant role among the cognitive factors examined. The t-statistic associated with each coefficient assesses the significance of the coefficients. Higher absolute values of the t-statistic indicate greater significance. In this case, all cognitive factors exhibit relatively high t-statistics (4.50 for reasoning, 2.88 for memory, and 2.03 for attention), indicating their statistical significance in predicting the development of boy child.

Lastly, the p-values associated with each coefficient indicate the probability of observing the t-statistic if the null hypothesis (no relationship between the cognitive factor and child development) were true. All cognitive factors display p-values below the conventional significance level of 0.05, indicating that they are statistically significant predictors of the development of boy child. A single regression equation in Table 49 can be used to evaluate the Development of boy child when the Cognitive factors (reasoning, memory, attention) increase by one standard deviation:

Development of Boy child= 1.34+ 0.54 reasoning + 0.36 memory+ 0.25 attention+ ε
1.34 = the y-intercept constant (a = 1.34),
0.54, 0.36, 0.25 = an estimate of the expected increase in development of boy child corresponding to an increase in reasoning, memory, attention respectively.

6. Conclusions

Cognitive development plays a pivotal role in shaping the overall developmental trajectory of children, and the boy child is no exception. These findings agree with those of Murray-Kolb (2018) who investigated how interactions with environmental factors affect early childhood cognitive development. Murray-Kolb mentioned Millions of low-income children are at risk of not reaching their full cognitive potential. As a result, impaired cognitive development had a negative impact on the overall development of the child into adulthood. Ranjiktar et al. (2019) studied the determinants of cognitive development in the early life of children in Bhaktapur, Nepal, and concluded that children in third-world countries are statistically at risk of not reaching their full cognitive developmental potential. As a result, they frequently have impaired reasoning, short-term memory, and attention deficit disorder. Nonetheless, these studies did not pay attention to other moderating and intervening factors that could have easily influenced the outcome.

Based on the data and analysis provided, it becomes evident that cognitive factors such as reasoning, memory, and attention significantly influence the developmental outcomes of boy child in Kenya. This conclusion will synthesize key findings from the correlation and regression analyses, exploring the implications of these cognitive processes on the holistic development of boy child, with a particular focus on reasoning, memory, and attention. The results from Table 32, which focuses on reasoning, reveal that the ability to seek multiple solutions to challenges logically correlates strongly with solving complex problems methodically (r = 0.60, p < 0.01) and carefully examining decisions (r = 0.52, p < 0.01). This highlights the interplay between divergent thinking (seeking various solutions) and convergent thinking (using methodical approaches to problem-solving), both of which are crucial in cognitive development. The careful examination of decisions further enhances the child's problem-solving capacity by promoting self-reflection and thoughtful consideration of alternatives.

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