ACADEMIA International Journal for Social Sciences
Volume 4, Issue 3, 2025 ISSN-L (Online): 3006-6638

Investigating the Correlation Between Moral Reasoning and Cognitive Development in High School Student

Naila Latif
nailalatif57@gmail.com
Lecturer, Department of Secondary Education, Lahore College for Women University, Lahore, Pakistan

Maria Haroon
mariaaleem@lgu.edu.pk
Lahore Garrison University, Lahore

Zuhaa Hassan
zuhaa54321@gmail.com
Roots IVY College of Management Sciences

Sunbel Makhdoom
makhdoomsunbel@gmail.com
University of Hull England UK, MSc Artificial Intelligence & Data Science. University of Strathclyde Glasgow Scotland UK. Student PGDE for teaching of Mathematics Secondary School level. M.Sc. Mathematics. Forman Christian College (A Chartered University) Lahore Pakistan

Khadija Rehman
khadijarehman864@gmail.com
M.Phil Education. University of the Punjab, Lahore
Corresponding Author: * Naila Latif nailalatif57@gmail.com

Received: 12-05-2025 **Revised:** 25-06-2025 **Accepted:** 10-07-2025 **Published:** 05-08-2025

ABSTRACT

Most of the researchers in the field of education only look at how well children do in school and don't look at other aspects of their lives, such as how their morals and thinking skills are developing. So, the goal of this study was to investigate the link between moral reasoning and cognitive development in high school pupils. Additionally, to explore the various elements of moral reasoning and cognitive development in high school pupils, and to examine the relationship between the two. A descriptive survey study was used to accomplish the above aims and used a questionnaire. The purpose of this study was to contribute to understanding of overall development of students and implications for teaching by looking at the relationship between moral reasoning and cognitive development. The results may contribute to help teachers and others who implement teacher policy develop a more holistic view of teaching perspectives that contribute to moral development and cognitive development and, in doing so, further enhance student wellness and social success.

Key Words: *Association, Cognitive Development, Moral Reasoning, Elementary School Students, Secondary School Students*

INTRODUCTION

It is very valuable for mentors and decision-makers to be knowledgeable about cognitive growth and moral reasoning, and the interplay of these constructs in the high school setting. The purpose of this research is to further understand the intricate pieces of cognitive growth and moral reasoning in high school students. This research considers many components of cognitive growth such as moral reasoning (i.e., making decisions about morals and value judgements) and cognitive functions such as perception,

memory, and problem solving. The goal is to understand all of their growth aspects (Fischer & Bullock, 2015). The intended purpose of this research is to explore the many components of moral reasoning and cognitive development in high school students. This research investigates many aspects of cognitive growth; moral reasoning (the ability to make moral decisions and value judgements) and other cognitive functions such as perception, memory, and problem-solving.

There are two main goals for this investigation. First, it wants to carefully look at the different aspects of cognitive growth and moral reasoning that are common in high school students. This will help us understand the complex cognitive and moral processes that happen during adolescence. Second, the study tries to figure out how cognitive growth, moral reasoning, and the social lives of high school students are all connected. This study aims to help us better understand how cognitive development and moral reasoning are connected to social interactions and relationships. It also intends to help teachers and other professionals who work with students understand how to help them grow in all areas (Joseph & Sudhanthira Dev, 2021).

Kuhn, Langer, Kohlberg, and Haan (1971) talked more about the link between cognitive and moral growth. They talked about how different degrees of cognitive development might help or hinder moral development. Because this work is about the link between these two sectors, it's important to briefly go over these consequences. One of the cognitive traits of a pre-operational child is that they are unable to distinguish between the real world and their own reasons for doing things. This cognitive weakness shows up in how the youngster solves moral problems, especially when it comes to morality. Researcher usually thinks about the tangible parts of a moral problem, including how big or small the lie was or how much damage was done.

During concrete operations, a child separates objective properties from their own activities and works through different ways that objects are related. Because of this, moral judgements are less likely to look at physical things and tend to look at moral problems with regard to how other people react or what they want. The subject can't rationally employ thinking processes to coordinate data and come up with hypotheses till the time of formal operations. Also, at this point, logical operations are based on looking at all the options. In the moral sphere, this ability to think about all the options and judge them is shown by a lack of willingness to accept the moral standard as the only or best option. This summary of Kuhn et al.'s (1971) analysis reveals that cognitive growth is very important and that changes in a person's moral judgements should happen at certain times when their cognitive development is happening.

Objectives

1. To explore the various dimensions of cognitive development and moral reasoning among elementary school students.
2. To investigate the correlation between cognitive development and moral reasoning in elementary school students.

Research Questions

RQ1: What are the different aspects of cognitive development and moral reasoning among elementary school students?

RQ2: Is there a relationship between cogntive development and moral reasoning in elementary school students?

Impact of Cognitive Development in Elementary School Students

Children in elementary schools are not very mature yet, and this is a critical period in their cognitive development. This research review looks at how experiences in early childhood affect the cognitive growth of students in elementary school.

Brain Plasticity and Sensitive Periods

Neuroplasticity, or brain plasticity, is an essential part of early life because it happens quickly and in a lot of different ways. Sensitive periods happen during this time, from birth until about age five. During these times, the brain makes and strengthens neural connections based on what it learns. These times are very important for learning a language, making friends, and other cognitive skills. (Voss et al., 2017). Good things that happen to children at these sensitive times might have long-lasting consequences on their cognitive development (Makhdum et al, 2023).. For example, they may be better at reading and writing in elementary school (Barnett, 2015). Also, good early experiences that help students learn how to get along with others and feel empathy can lead to improved social relationships and pro-social behaviours later in life Makhdum and Mian (2012). Parents, carers, and teachers need to know how important brain plasticity and sensitive periods are in early infancy. This knowledge helps kids reach their full cognitive and social potential (Koslinski et al., 2022).

Early Language Exposure and Literacy Skills

Early childhood is a very important time for a child's mental development and school achievement. Language development begins at birth and moves quickly, as youngsters are very open to language. Language needs to be exposed to a lot of different types of language, like talking to parents, carers, and peers (Woldehanna, 2011). This exposure helps people learn new words, grammar, and how to talk to each other. Students that are good at language are better able to understand and interact with written texts. This helps them improve their reading comprehension and understand difficult ideas (Burger, 2010). Being able to speak a language well is also important for talking to friends and teachers and interacting with them. In early childhood, teachers and parents are very important for helping kids learn to read and write and improve their language abilities. Reading, speaking, and writing creatively regularly, in a language-rich environment are all important for advanced language ability. These activities lead to improved reading comprehension, writing, and overall academic ability (Gámez & Levine, 2013).

Socioeconomic Status and Cognitive Development

A child's socioeconomic status (SES) is a significant factor in their cognitive development in early childhood; especially concerning grades and self-esteem (Na'amnih, et al., 2023). According to Linberg et al. (2019), children from lower SES homes may have limited access to good early-education programs, healthcare services, and healthy food, which may severly inhibit proper growth of their brains (Faisal, et. al., 2023). These differences in access to services impacts cognitive development; potentially resulting in poorer language capacity, executive functions, and memory leading to worse academic results. Further, the effects of SES are not only limited to childhood, and may adversely affect self-esteem; decreasing motivation to learn, and inhibiting engagement in school overall. Children from families with higher SES have better access to educational resources, extracurricular activities, and a dynamic home environment, all of which help them learn and improve their language abilities (Figlio et al., 2017). Giving students from low-income families tailored attention and support can help lessen the effects of early disadvantages and promote fairness in education. To make sure that all children realise their full cognitive potential and to promote educational equity, it is important to understand how SES affects cognitive development (Katz & Shah, 2017).

Parental Involvement and Cognitive Stimulation

The early years are very important for a child's cognitive growth. Cognitive stimulation and parental involvement are important for a child's growth and development (Jaiswal, 2017). According to Usher et al. (2012), youngsters' cognitive skills, critical thinking, and problem-solving skills improve when they do things like playing educational games and puzzles that require them to think. Reading aloud to parents helps kids learn new words and build their brains. Kids can express themselves freely and grow socially, emotionally, and cognitively via imaginative play, painting, and other creative activities. Positive connections between parents and their children while they are young help primary school students develop pro-social behaviours and social skills. Parents' involvement also affects how much kids want to learn and take part in school activities. These things are especially important for kids from poor homes since they might not get the help they need (Hill, 2015).

Early Childhood Education (ECE) and School Readiness

Early childhood education (ECE) is a crucial component of a child's development since it helps them grow in all areas and get ready for school. Great early childhood education (ECE) programs give kids a structured space that makes them curious and helps them learn basic maths and reading skills, think critically, and solve issues (Ryan et al., 2014). These programs also focus on kids' emotional and social abilities, which help them talk clearly, show how they feel, and get along with others. ECE programs also help kids become ready for school by improving their language skills, attention span, and pre-reading and pre-math capabilities (McCoy et al., 2017, Makhdum & Khanam, 2021). ECE programs can help youngsters from different socioeconomic situations catch up on their schooling and get ready for school. Early childhood education (ECE) programs assist youngsters learn how to control their emotions and get along with others so they can talk to instructors and other kids in primary school (Magnuson & Waldfogel, 2015).

Moral Development in Elementary School Students

Over the past twenty years, much moral development research has mostly been about on figuring out how children think about fairness, justice, and impartiality in their relationships with others and in situations that are relevant to these ideas. Children think about moral, social, and psychological aspects of things that happen in society and the rules that govern them (Smetana, 2006). In the field of ethics, concerns about the physical and mental health of their peers are dealt with. Even when they are still developing their cognitive and moral abilities, children are aware of the negative effects of breaking rules like stealing, being physically aggressive, or withholding resources. They understand that basic moral principles apply to everyone (Escueta, 2014). Despite this awareness, the ongoing prevalence of interpersonal conflict among children prompts a compelling question: why do instances of aggressiveness continue despite moral understanding? Literature highlights two important points that are relevant to this question. First, contrary to popular belief, conflicts between children are not common; instead, conflicts are more likely to happen over things than on purpose (Schweinhart, 2016). Second, the complicated nature of real-life situations, together with other factors, can make it hard for kids to follow moral rules in real-life situations (Siripornpanich et al., 2018). A central focus of this analysis lies in this study, is to explain how intergroup dynamics and the way kids can understand how other people think and feel make social interactions in the actual world more complicated (Ray et al., 2020).

Even though someone asserted, "Even if the teacher says it's okay to hit someone, it's still not okay," it's clear that children's moral judgements are somewhat independent of what adults tell them to do. Instead, kids learn to respect authoritative managers and understand the importance of following social norms (Zaman, 2010). Everyone agrees that breaking established rules, such not following proper procedure or not wearing the right attire protocols, is an inappropriate behaviour. However, these rules can be broken if

they fit with what most people in the organisation think. Raine and Yang (2016) explained that the sociocultural domain includes the complexities of group dynamics, such as group identification and social norms. Also, knowing what the current societal norms are makes it even harder to reach ethical goals.

Children demonstrate a diminished inclination to use moral concepts of fairness or equality when they regard a situation as conventional rather than moral. This propensity comes from the fact that they tend to follow what the group thinks is the right thing to do. Because of this, children perceive that laws about behaviours that hurt others, take away their resources, cause them mental pain, or violate their rights as outside the scope of authoritative jurisdiction. even when sanctioned by authoritative figures such as educators or guardians, such actions are considered intrinsically immoral. This point of view, which is one of six criteria discussed in academic writing, emphasises how youngsters see moral rules as universal, unchanging, impersonal, and different from punishments (Kaşkaya et al., 2017). On the other hand, kids see rules that regulate social norms, such as traditions, group rules, etiquette, and customs, as separate. People don't perceive that common violations are always true or can't be stopped by government. Examples like hitting someone for no reason help show how well young children understand how moral laws are different from other rules. The ability to distinguish between moral and conventional standards develops with age, indicating a more advanced capability for moral thinking (Nas et al., 2005).

METHODOLOGY

This research employed a descriptive survey research approach. A questionnaire was devised by the researcher for this aim. The specifics regarding the research tool are outlined below.

Research tool

The questionnaire was used to collect data and was divided into three parts. At first, the questionnaire included demographic questions meant to gather information on the respondents' profiles. After that, the second part looked at an evaluation of cognitive abilities, which were separated into three groups:

i. Memory and retention,
ii. Problem solving and critical thinking, and
iii. Meta cognitive skills.

On the other hand, the third component of the questionnaire was all about testing the moral reasoning skills of primary school pupils. It had three parts: i. Personal values and respect, ii. Making ethical decisions, and iii. Empathy and moral development. This organized separation of the personal elements allowed us to exhaustively investigate the different facets of the participants' cognitive and moral development.

Sample Size

To determine how many individuals should be in the sample for this study, Taro Yamane's Sample Size calculator was used. The total number of students in the elementary schools that participated was around 20,400. Using Taro Yamane's Sample Size calculator was incredibly helpful in determining the appropriate sample size for the study. The formula accounts for factors like the size of the population (N) and the level of precision or confidence desired which you normally express using a significance level like the traditional 95% confidence level. We were able to arrive at the best size sample to ensure that the results of the study will be viewed as a good representation of the entire elementary school population in the educational district of Punjab, Pakistan.

Using Taro Yamane's Sample Size calculator, we determined the best sample size that allows us to draw reasonable conclusions and assure as little bias as possible. Using Taro Yamane's Sample Size calculator, we determined the best sample size that allowed us to draw meaningful conclusions while minimizing.

n: N / K + N (e) ^ 2

n = 20400/1 + 20400 (0.05) ^ 2

n = 392.307 = **392**

In this case, the calculated sample size was 392, which made it possible to do a strong and credible analysis of the study's goals.

DATA ANALYSIS

We have had 355 full and legitimate responses in total. The researcher used SPSS software to figure out the mean, frequencies, and percentages for the analysis. We also used correlation to figure out how the variables were related.

Table 1 of descriptive statistics to attain the first objective

To look at the distinct parts of moral reasoning and cognitive development in kids in elementary school.

	Memory and Attention of Children		
Sr.	Statement	Mean	SD
1	It's easy for me to remember things.	4.08	1.190
2	I can stay focused on tasks for a long time.	4.20	.618
3	I often forget things I have to do or assignments.	4.05	.876
4	I find it easy to pay attention in class.	4.02	.766
5	I am able to apply information from previous lessons.	4.37	.633
-	***Problem Solving and Critical Thinking***		
6	I like working on hard problems that make me think critically.	4.08	1.190

7	I can look at things from numerous angles before I make a choice.	3.57	1.009
8	I can come up with innovative approaches to address problems by thinking outside the box.	3.70	.749
9	I am sure that I can solve hard challenges.	3.90	.823
10	I like to learn about fresh ideas and concepts that aren't covered in class.	3.35	.852
-	***Metacognitive skills***		
11	I know what I am good at and what I need to work on when it comes to learning.	4.08	1.190
12	I make precise goals for what I want to learn and then try to reach them.	3.57	1.009
13	I think about how far I've come in my studies and changing my plans if I need to.	3.70	.749
14	I can keep an eye on my own learning and make changes when I need to.	3.90	.823
15	To better comprehend, I ask teachers or classmates for feedback.	3.35	.852
-	***Personal values and Respect***		
16	I think it's important to be nice and respectful to other people.	4.54	.536
17	Before I make a choice, I think about what will happen as a result.	4.43	.533

18	When making decisions, I think it's crucial to think about how other people feel.	4.42	.626
15	I believe it is necessary to help others who need it, even if it means going out of my way.	4.42	.565
20	I believe it is important to follow rules and laws, even if I disagree with them.	4.24	.649
-	***Ethical Decision Making***		
	If someone cheated on an important test, I would tell someone.	2.37	.833
	I believe it is okay to lie if it keeps me out of trouble.	2.57	.807
	I can steal for a good reason.	2.56	.736
	I tell lies about people if they deserve it.	2.55	.852
	When I make decisions, I think about what is fair and just.	2.56	.807
	Aggressiveness/Antisocial Behavior		
	I talk loudly in class.	1.46	.501

I can be stubborn at times.	1.98	.742
.		
I tease other people in class.	1.90	.789
I argue with other kids in class.	1.78	.682
I tell lies to acquire what I desire.	1.88	.751
I get mad at other people for small things.	1.81	.723

Memory and Attention of Children

Sr.	Statement	Mean	SD
1	It's easy for me to remember things.	4.08	1.190
2	I can stay focused on tasks for a long time.	4.20	.618
3	I often forget things I have to do or assignments.	4.05	.876
4	I find it easy to pay attention in class.	4.02	.766
5	I am able to apply information from previous lessons.	4.37	.633
-	***Problem Solving and Critical Thinking***		
6	I like working on hard problems that make me think critically.	4.08	1.190

7	Before making decisions, I can look at things from different points of view.	3.57	1.009
8	I can think outside the box and come up with new ways to solve problems.	3.70	.749
9	I am sure that I can solve hard challenges.	3.90	.823
10	I like to learn about fresh ideas and concepts that aren't covered in class.	3.35	.852
-	***Metacognitive skills***		
11	I know what I am good at and what I need to work on when it comes to learning.	4.08	1.190
12	I make precise goals for what I want to learn and then try to reach them.	3.57	1.009
13	I think about how far I've come in my studies and changing my plans if I need to.	3.70	.749
14	I can keep an eye on my own learning and make changes when I need to.	3.90	.823
15	To better comprehend, I ask teachers or classmates for feedback.	3.35	.852
-	***Personal values and Respect***		
16	I think it's important to be nice and respectful to other people.	4.54	.536
17	Before I make a choice, I think about what will happen as a result.	4.43	.533

18	When making decisions, I think it's crucial to think about how other people feel.	4.42	.626
15	I believe it is necessary to help others who need it, even if it means going out of my way.	4.42	.565
20	I believe it is important to follow rules and laws, even if I disagree with them.	4.24	.649
-	***Ethical Decision Making***		
	If someone cheated on an important test, I would tell someone.	2.37	.833
	I believe it is okay to lie if it keeps me out of trouble.	2.57	.807
	I can steal for a good reason.	2.56	.736
	I tell lies about people if they deserve it.	2.55	.852
	When I make decisions, I think about what is fair and just.	2.56	.807
	Aggressiveness/Antisocial Behavior		
	I talk loudly in class.	1.46	.501

I can be stubborn at times.	1.98	.742
.		
I tease other people in class.	1.90	.789
I argue with other kids in class.	1.78	.682
I tell lies to acquire what I desire.	1.88	.751
I get mad at other people for small things.	1.81	.723

The above table of descriptive analysis of elementary school students' answers indicates information about their cognitive development, their moral reasoning, and their social lives. The descriptive analysis has revealed the following outlined results:

1. **Memory and Attention:** Students generally view their memory and attention positively. They believe they can identify and recall information, attend to tasks, and apply their learning from previous lessons.
2. **Problem Solving and Critical Thinking:** Students enjoy problem solving, they feel they are able to solve challenging problems, and they believe they are successful in solving complex problems. And they were fairly consistent in solving problems, recognizing other views, and thinking creatively.
3. **Metacognitive Skills:** Students believed that they have developed awareness of strengths and weaknesses about learning. They can self-reflect and set goals, however, they vary about when students monitor their learning and look for feedback.
4. **Personal Values and Respect:** Students indicated teaching other people with respect and kindness was the most important value, followed by considering consequences and valuing diversity. Students indicated they would help others, would follow rules, and they varied about their reactions when inconvenienced.
5. **Ethical Decision Making:** Students show mixed attitudes, with low inclination to report cheating, moderate acceptance of lying for self-benefit, and varied opinions on stealing. They emphasize fairness and justice to some extent.
6. **Aggressiveness/Antisocial Behavior:** Students generally exhibit positive behavior, with low tendencies for loud speaking, fights, and lying. Some moderate tendencies for stubbornness and teasing are observed.

Table 2 Correlations analysis to achieve the following objective

To find the relationship between cognitive development, moral reasoning and social life of secondary school students.

	Pearson Correlation	**1**	
	Sig. (2-tailed)		
	Pearson Correlation	**.775**	**1**
	Sig. (2-tailed)	**.003***	

The table above shows that there is a strong positive correlation of .775 between Cognitive Abilities and Moral Reasoning. The p-value for this link is.003, which is lower than the.01 (1%) level of significance. This signifies that the link we found is statistically significant at the .01 level (2-tailed). To put it another way, the connection between Cognitive Abilities and Moral Reasoning is probably not just a fluke. There is a lot of evidence indicating those with higher Cognitive Abilities also have higher Moral Reasoning.

CONCLUSION

The main goal of this study was to investigate the complicated link between moral reasoning and cognitive growth. Additionally, the study also wanted to explore the link between different degrees of cognitive development and moral reasoning skills. The study's results showed a strong relationship between cognitive growth and moral reasoning. This demonstrates that, as cognitive abilities improved, moral thinking became generally more complex and sophisticated. This important finding demonstrates how cognitive and moral development are related. It implies that improvements in cognitive abilities would typically accompany improvements in capacities for moral reasoning. Discovering these kinds of findings allow us to see how the cognitive and moral aspects of our lives potentially interfaced, and improved each other positively.

RECOMMENDATIONS

There are several recommendations and suggestions that could improve moral reasoning and cognitive development in primary schools in Pakistan.

Tailored Curriculum Development

Teachers could provide lesson plans yielding attention to multiple levels of moral reasoning and cognitive development of elementary-aged children. By tailoring lessons and resources to each child's stage of development, learning became typically more engaging and less difficult for the children to comprehend.

Implementation of Moral Education Programs

Schools should implement programs for students to learn moral thinking and make moral decisions. These activities provide students with an essential means of developing moral reasoning, empathy for others, and a sense of obligation to others that will improve their inter-personal reactions to others.

Making schools and other educational environments welcoming and supportive

Educational environments should strive to ensure that everyone feels welcomed, respected, and understood. Being intentional in our effort to emphasize a positive, courteous school environment makes all students feel like they belong, feel accepted, and helps facilitate friendships.

Educating educators in developmental psychology

Each student affects their own growth and development to some degree. Educators must be educated on cognitive development and moral reasoning in order to give appropriate support and guidance to their students. Educators should be trained in developmental psychology in order to better recognize and know the needs of each student.

Support parental engagement

Schools should be intentional and active in encouraging parents to participate in their children's educational experiences, as teachers know parents can have a significant impact on children's moral and cognitive development. By providing parents even the basic tools and support, parents may become engaged in their children's moral and cognitive development in their homes.

Using Real Moral difficulties

Including real moral difficulties and ethical situations in class discussions helps students think critically and make moral decisions. Students learn more about how to make ethical decisions and grow as people when they are involved in debates and talks about these situations.

Ongoing Assessment and Feedback

Teachers may learn a lot by giving pupils regular tests to see how their moral and intellectual growth is going. Also, giving pupils constructive comments and ideas based on these evaluations could help them keep growing and developing.

Opportunities for Collaborative Learning

Creating scenarios where students work together to solve problems and talk about moral issues increases peer engagement and makes it easier for kids to share different viewpoints. This way of working together helps people think more clearly and morally by encouraging discussion and common understanding.

REFERENCES

Barnett, W. S. (2015). Long-term effects of early childhood programs on cognitive and school outcomes. *The future of children*, 25-50.

Burger, K. (2010). How does early childhood care and education affect cognitive development? An international review of the effects of early interventions for children from different social backgrounds. *Early childhood research quarterly*, *25*(2), 140-165.

Escueta, M., Whetten, K., Ostermann, J., & O'Donnell, K. (2014). Adverse childhood experiences, psychosocial well-being and cognitive development among orphans and abandoned children in five low income countries. *BMC international health and human rights*, *14*(1), 1-13.

Faisal, A., Ahmed, S.E., Makhdum, M., & Makhdum, F.N. (2023). A Comparative Study of Predictive Supervised-Machine Learning Algorithms on Cardiovascular Diseases (CVD). *Journal of Population Therapeutics and Clinical Pharmacology,* 30(19), 1159-1177. https://doi.org/10.53555/jptcp.v30i19.3661

Figlio, D. N., Freese, J., Karbownik, K., & Roth, J. (2017). Socioeconomic status and genetic influences on cognitive development. Proceedings of the National Academy of Sciences, 114(51), 13441-13446.

Fischer , K. W., & Bullock, D. (2015). Cognitive Development In School-Age Children: Conclusions And New Directions. Nih.gov; National Academies Press (US). https://www.ncbi.nlm.nih.gov/books/NBK216774/

Gámez, P. B., & Levine, S. C. (2013). Oral language skills of Spanish-speaking English language learners: The impact of high-quality native language exposure. *Applied Psycholinguistics*, *34*(4), 673-696.

Hill, N. E. (2015). Including fathers in the picture: A meta-analysis of parental involvement and students' academic achievement. *Journal of Educational Psychology*, *107*(4), 919.

Jaiswal, S. K. (2017). Role of parental involvement and some strategies that promote parental involvement. *Journal of International Academic Research for Multidisciplinary*, *5*(2), 95-104

Joseph, F. S. M., & Sudhanthira Dev, J. (2021). A Study on Moral Reasoning and Academic Achievement of Secondary School Students in Sathyamangalam Taluk of Erode District. Turkish Journal of Computer and Mathematics Education (TURCOMAT), 12(4), 1322–1327. https://doi.org/10.17762/turcomat.v12i4.1201

Kaşkaya, A., Calp, Ş., & Kuru, O. (2017). An evaluation of factors affecting decision making among 4th grade elementary school students with low socio-economic status. *International Electronic Journal of Elementary Education*, *9*(4), 787-808.

Katz, B., & Shah, P. (2017). The role of child socioeconomic status in cognitive training outcomes. *Journal of Applied Developmental Psychology*, *53*, 139-150.

Koslinski, M. C., Gomes, R. C., Rodrigues, B. L. C., Andrade, F. M. D., & Bartholo, T. L. (2022). Home learning environment and cognitive development during early childhood education. *Educação & Sociedade*, *43*.

Kuhn, D.; Langer, J.; Kohlberg, L.; & Haan, N. S. The development of formal operations in logical and moral judgment. Unpublished paper, Columbia University, 1971

Linberg, T., Schneider, T., Waldfogel, J., & Wang, Y. (2019). Socioeconomic status gaps in child cognitive development in Germany and the United States. *Social Science Research*, *79*, 1-31.

Magnuson, K. A., & Waldfogel, J. (2015). Early childhood care and education: Effects on ethnic and racial gaps in school readiness. *The future of children*, 169-196.

Makhdum, F. N., & Khanam, A. (2021). Online classes during Covid-19 pandemic: preparedness and readiness of students and teachers in Pakistan with parents' experiences. Journal of E-Learning and Knowledge Society, 17(2), 9-20. https://doi.org/10.20368/1971-8829/1135386

Makhdum, F.N., Khanam, A. & Batool, T. (2023). Development of a Practice Based Post-Humanistic Model of Smart Education for Sustainable Development (SESD) in Mathematics at Elementary Level in Pakistan. (PhD Country Director Number: 31367) [Doctoral Thesis, Retrieved August 29, 2024, from the department of STEM Education, Lahore College for Women University Lahore Pakistan].

Makhdum. N.F., Mian. A. K. (2012). Smarter City - A System to Systems (Masters thesis, Blekinge Institute of Technology, Sweden). Retrieved from https://www.diva-portal.org/smash/get/diva2:831525/FULLTEXT01.pdf

McCoy, D. C., Zuilkowski, S. S., Yoshikawa, H., & Fink, G. (2017). Early childhood care and education and school readiness in Zambia. *Journal of Research on Educational Effectiveness*, *10*(3), 482-506.

Na'amnih, W., Akawi, A., Abu-Moch, A., Cohen, R., Dror, G., Kassem, E., ... & Ornoy, A. (2023). Associations of early-life exposures and socioeconomic status with cognitive development at preadolescence. Pediatrics & Neonatology, 64(2), 192-200.

Nas, C. N., Brugman, D., & Koops, W. (2005). Effects of the EQUIP programme on the moral judgement, cognitive distortions, and social skills of juvenile delinquents. *Psychology, Crime & Law, 11*, 421−434.

Raine, A., & Yang, Y. (2016). Neural foundations to moral reasoning and antisocial behavior. *Social Cognitive and Affective Neuroscience*, *1*, 203– 213.

Ray, D. C., Angus, E., Robinson, H., Kram, K., Tucker, S., Haas, S., & McClintock, D. (2020). Relationship between adverse childhood experiences, social-emotional competencies, and problem behaviors among elementary-aged children. *Journal of child and adolescent counseling*, *6*(1), 70-82.

Ryan, R. M., Fauth, R. C., & Brooks-Gunn, J. (2014). Childhood poverty: Implications for school readiness and early childhood education. In *Handbook of research on the education of young children* (pp. 341-364). Routledge.

Schweinhart, L. J. (2013). Long-term follow-up of a preschool experiment. *Journal of Experimental Criminology*, *9*, 389-409.

Siripornpanich, V., Sampoon, K., Chaithirayanon, S., Kotchabhakdi, N., & Chutabhakdikul, N. (2018). Enhancing brain maturation through a mindfulness-based education in elementary school children: A quantitative EEG study. *Mindfulness*, *9*, 1877-1884.

Smetana, J. G. (2006). Social-cognitive domain theory: Consistencies and variations in children's moral and social judgments. In M. Killen & J. G. Smetana (Eds.), *Hanbook of moral development*. Mahwah, NJ: Lawrence Erlbaum Associates

Usher, A., & Kober, N. (2012). 4. What Roles Do Parent Involvement, Family Background, and Culture Play in Student Motivation?. *Center on education policy*.

Voss, P., Thomas, M. E., Cisneros-Franco, J. M., & de Villers-Sidani, É. (2017). Dynamic brains and the changing rules of neuroplasticity: implications for learning and recovery. *Frontiers in psychology*, *8*, 1657.

Woldehanna, T. (2011). The effects of early childhood education attendance on cognitive cevelopment: evidence from urban Ethiopia. *Ethiopian Journal of Economics*, *20*(1).

Zaman, S. (2010). *Relationship between Cognitive Levels, Moral Reasoning And Academic Achievement of Secondary School Students* (Doctoral dissertation, Univeristy of Punjab, Lahore).