

A Study on Association Between Cognitive Development and Moral Reasoning in Students at Elementary Level

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Abstract

The purpose of this research study was to investigate the relationship between cognitive development and moral reasoning of students enrolled in elementary schools. The different aspects of cognitive development and moral reasoning of elementary school students and were also determined in this study. To achieve aforementioned objectives of the study, a sample of 355 students was selected by using the Taro Yamane's sample size calculator. The descriptive survey research design was used and a questionnaire was developed to collect the data. The findings of the study unveiled a notable correlation between cognitive development and moral reasoning, indicating that as cognitive faculties advanced, moral reasoning exhibited a trend toward heightened complexity and refinement. This significant results of the study stated that advancements in cognitive abilities have the potential to positively impact moral reasoning capabilities. Such revelations shed light on the synergistic interplay between cognitive and moral domains, accentuating the potential reciprocal influence between these two facets of human development.

Keywords: Cognitive Development, Moral Reasoning, Elementary School Students.

Introduction

Understanding the intricate interplay between cognitive development and moral reasoning among secondary school students is paramount for educators and policymakers alike. This research endeavors to delve into the multifaceted aspects of cognitive development and moral reasoning within the secondary school student population. By examining various dimensions of cognitive development, encompassing cognitive processes such as perception, memory, and problem-solving, alongside moral reasoning, which encompasses ethical decision-making and value judgments, this study aims to provide comprehensive insights into the developmental trajectory of adolescents (Fischer & Bullock, 2015; Hafeez et al., 2020).

The primary objectives of this study were two fold. Firstly, it seeks to meticulously examine the different facets of cognitive development and moral reasoning prevalent among secondary school students, shedding light on the nuanced cognitive and ethical processes at play during adolescence. Secondly, the research endeavors to ascertain the intricate relationship between cognitive development, moral reasoning, and the social lives of secondary school students. By elucidating

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how cognitive development and moral reasoning intertwine with social interactions and relationships, this study aims to contribute to a deeper understanding of adolescent development and inform educational practices and interventions aimed at fostering holistic growth among students (Joseph & Devi, 2021).

Objectives

1. To examine the different aspects of cognitive development and moral reasoning in elementary school students.
2. To find the relationship between cognitive developments, moral reasoning of elementary school students.

Research Questions

1. How many different aspects of cognitive development and moral reasoning in elementary school students?
2. Is there any relationship between cognitive development, moral reasoning of elementary school students?

Literature Review

Impact of Cognitive Development in Elementary School Students

Children of elementary level are not much mature and cognitive development at this stage is a precarious period of their life. This literature review explores the impact of early childhood experiences on the cognitive development of elementary school students.

Brain Plasticity and Sensitive Periods

Brain plasticity, or neuroplasticity, is a crucial aspect of early childhood, characterized by rapid and extensive development. This period, from infancy to around age five, is marked by sensitive periods, where the brain creates and strengthens neural connections in response to experiences. These periods are crucial for language acquisition, social skills development, and other cognitive abilities. (Voss et al., 2017). Positive experiences during these sensitive periods can have lasting effects on a child's cognitive development, such as better reading comprehension and writing abilities in elementary school (Barnett, 1995). Additionally, positive early experiences that foster social skills and empathy can contribute to healthier social relationships and pro-social behaviors in later life. Understanding the significance of brain plasticity and sensitive periods in early childhood is essential for parents, caregivers, and educators, as it helps maximize cognitive potential and social development (Koslinski et al., 2022).

Early Language Exposure and Literacy Skills

Early childhood is a critical period for a child's cognitive growth and academic success. Language development starts from birth and progresses rapidly, with children being highly receptive to language. Exposure to a rich linguistic environment, such as conversations with caregivers, parents, and peers, is essential for language (Woldehanna, 2011). This exposure leads to the development of vocabulary, grammar, and communication skills. Children with advanced language abilities are better equipped to comprehend and engage with written texts, enhancing their reading comprehension skills and enabling them to grasp complex concepts (Burger, 2010). Language proficiency is also linked to social interactions and communication with peers and teachers. Educators and parents play a critical role in fostering language development and literacy

skills in early childhood. A language-rich environment, including regular reading, discussions, and creative writing, sets the foundation for advanced language abilities, positively impacting reading comprehension, writing abilities, and overall academic performance (Gámez & Levine, 2013).

Socioeconomic Status and Cognitive Development

Socioeconomic status (SES) significantly impacts a child's cognitive development during early childhood, affecting their academic performance and self-esteem (Na'amnih et al., 2023). Linberg et al. (2019) commented that children from lower SES backgrounds may face challenges such as limited access to quality early education programs, healthcare services, and nutritious food, which can hinder optimal brain development. These disparities can lead to delays in cognitive development, affecting language skills, executive functions, and memory, potentially affecting their academic achievement. The effects of socioeconomic status extend beyond early childhood years, affecting self-esteem, motivation to learn, and overall school engagement. Children from higher SES backgrounds have access to more educational resources, extracurricular activities, and a stimulating home environment, contributing to their cognitive development and language skills (Figlio et al., 2017). Providing targeted interventions and support to children from disadvantaged backgrounds can help mitigate the effects of early disadvantages and promote educational equity. Recognizing the impact of SES on cognitive development is essential for developing targeted interventions and policies that promote educational equity and ensure all children reach their full cognitive potential (Katz & Shah, 2017).

Parental Involvement and Cognitive Stimulation

The formative years are crucial for a child's cognitive development. For a child to grow and develop, cognitive stimulation and parental participation are essential (Jaiswal 2017). Usher and Kober (2012) stated that kids' cognitive abilities, critical thinking, and problem-solving abilities are enhanced when they participate in interactive activities like educational games and puzzles. Reading aloud to parents encourages language acquisition as well as cognitive growth. Through imaginative play, painting, and other forms of creative expression, kids can freely express themselves and grow in their social, emotional, and cognitive domains. Pro-social behaviors and social competency in elementary school pupils are developed as a result of positive parent-child interactions during early life. Children's drive to learn and participate in school activities is also influenced by parental participation. For kids from underprivileged homes, these elements are especially crucial because their support might (Kim & Hill, 2015).

Early Childhood Education and School Readiness

Early childhood education (ECE) is a crucial component of children's development since it helps them grow holistically and gets them ready for formal schooling. Excellent early childhood education (ECE) programs offer a structured setting that piques kids' intellectual curiosity and fosters critical thinking, problem-solving, and the development of early literacy and numeracy skills (Ryan et al., 2014). Children's emotional and social skills are another area of emphasis in these programs, which helps them speak clearly, express their feelings, and work well with others. Additionally, ECE programs aid in enhancing children's readiness for school by fostering their language skills, attention span, and pre-reading and pre-math abilities (McCoy et al., 2017). ECE programs can improve cognitive development and school preparation while assisting in closing educational gaps between kids from diverse socioeconomic backgrounds. ECE programs help kids develop social skills and emotional control so they can engage with peers and teachers in elementary school (Magnuson & Waldfogel, 2005).

Moral Development in Elementary School Students

Over the preceding two decades, scholarly investigations concerning moral development have been predominantly oriented towards the discernment of children's ethical evaluations concerning interpersonal interactions and occurrences pertinent to the notions of justice, parity, and impartiality. Children engage in evaluative processes encompassing moral, social-conventional, and psychological dimensions vis-à-vis societal phenomena and normative regulations (Smetana et al., 2013). Within the ethical realm, apprehensions revolving around the welfare, both physical and psychological, of their peers are addressed. Even in their nascent stages of cognitive and moral maturation, children exhibit a cognizance of the negative ramifications of transgressing established norms, such as theft, physical aggression, or the withholding of resources, recognizing the universal applicability of fundamental moral tenets (Escueta, 2014). Notwithstanding this awareness, the persistence of interpersonal conflict among children raises an intriguing query: why do instances of aggression persist despite this moral awareness? The literature underscores two salient findings pertinent to this inquiry: firstly, contrary to popular perception, physical altercations among children are not commonplace, with conflicts more frequently arising from disputes over possessions rather than deliberate harm to others (Schweinhart, 2016). Secondly, the intricate nature of real-world scenarios, compounded by contextual variables, can impede children's adherence to moral precepts in practical contexts (Siripornpanich et al., 2018). A central focus of this analysis lies in elucidating the manner in which intergroup dynamics and the cognitive capacity of children to attribute psychological characteristics to others contribute to the intricacy inherent in real-world social encounters (Ray et al., 2020).

Nevertheless, notwithstanding the assertion that "even if the teacher says it's okay to hit someone, it's still not all right," it is evident that children's moral discernments exhibit a degree of autonomy from authoritative directives. Rather, children are imbued with an ethos of deference towards authority figures and acknowledge the imperative of adhering to societal conventions (Zaman, 2010). Deviations from established norms, exemplified by instances such as neglecting to follow procedural etiquette or disregarding customary attire protocols, are universally regarded as inappropriate conduct. However, exceptions to these norms may be tolerated contingent upon their alignment with the collective consensus of the social group. The intricacies of group dynamics, encompassing facets such as collective identity and normative conventions, fall within the ambit of the sociocultural domain, as elucidated by Raine and Yang (2006). Furthermore, an understanding of prevailing social norms presents an additional impediment to the realization of moral aspirations.

Children exhibit a decreased propensity to apply moral principles of justice or equality when they perceive a situation as conventional rather than moral. This inclination stems from their tendency to defer to group consensus in determining the appropriate course of action. Consequently, children perceive rules pertaining to actions affecting others, such as causing harm, depriving resources, inflicting psychological distress, or violating rights, as beyond the purview of authority jurisdiction. Thus, even if endorsed by authority figures like teachers or parents, such acts are deemed inherently wrong. This perspective, one of six criteria delineated in scholarly discourse, underscores children's perception of moral principles as universal, immutable, impersonal, and distinct from punitive measures (Kaşıkaya et al., 2017). Conversely, children perceive standards governing social norms, including customs, group regulations, etiquette, and traditions, as distinct. While conventional transgressions pose concerns, they are not perceived as universally applicable or invulnerable to authority. Illustrative examples, such as unwarranted physical aggression, elucidate young children's cognitive grasp of the distinctiveness of moral laws. The capacity to

differentiate between moral and conventional rules evolves with age, reflecting an increasingly sophisticated moral reasoning ability (Nas et al., 2005).

Research Methodology

Descriptive survey research design was used for conducting this research. For this purpose, a questionnaire was developed by the researcher. The details about research tool is mentioned below.

Research Tool

Questionnaire served as the tool for data collection, segmented into three distinct sections. Initially, the questionnaire encompassed demographic inquiries aimed at garnering information pertinent to the respondents' profiles. Subsequently, the second section delved into an assessment of cognitive capacities, further subdivided into three delineated categories:

1. Memory and retention,
2. Problem solving and critical thinking, and
3. Meta cognitive skills.

Conversely, the third section of the questionnaire centered on exploring the moral reasoning capabilities of elementary students, comprising an additional tripartite subdivision:

1. Personal values and respect,
2. Ethical decision-making, and
3. Empathy and moral development.

This systematic division facilitated a comprehensive exploration of various facets of cognitive and moral development among the participants

Sample Size

The determination of the sample size for this investigation involved the utilization of Taro Yamane's Sample Size calculator. Within the elementary schools under examination, the collective student population approximated 20,400 individuals. The application of Taro Yamane's Sample Size formula was pivotal in establishing the requisite sample size for the study. This formula integrates considerations such as the population size (N) and the desired degree of precision or confidence, typically denoted by a significance level, such as the conventional 95% confidence level. Employing this formula, we computed the optimal sample size, ensuring the study's outcomes maintain a representative reflection of the entire elementary school population within the Jhang district.

By applying Taro Yamane's Sample Size calculator, we arrived at an optimal sample size that allows for meaningful conclusions to be drawn while minimizing potential bias.

$$n = \frac{N}{1 + N(e)^2}$$

$$n = \frac{20400}{1 + 20400(0.05)^2}$$

$$n = 392.307 = 392$$

In this instance, the calculated sample size amounted to 392, thus enabling a robust and reliable analysis of the study's objectives.

Data Analysis

Total 355 complete and valid responses have been received for analysis the researcher used SPSS software and calculates mean, frequencies and percentages. Correlation was also used to find the relationship between the variables.

Results

The first objective of this study was to examine the different aspects of cognitive development and moral reasoning in elementary school students. The results of descriptive analysis regarding this objective were shown in table 1.

Table 1: Results of Descriptive Analysis of Memory and Attention of students

Memory and Attention of students			
Sr. No	Statement	Mean	SD
1	I can easily recall information.	4.08	1.190
2	I can concentrate on tasks for extended periods of time.	4.20	.618
3	I frequently forget assignments or tasks.	4.05	.876
4	I can easily recall information.	4.08	1.190
5	I can concentrate on tasks for extended periods of time.	4.20	.618

The given table focuses on students' "Memory and Attention" abilities, presenting mean scores and standard deviations (SD) for various statements related to memory recall, concentration, and forgetfulness. The findings are described as:

Recalling Information Easily (Statement 1 and 4)

The mean score was "4.08", indicating that students generally agree with the statement that they can easily recall information. The standard deviation (SD) was "1.190", showing moderate variation in responses, suggesting some students may have significantly different experiences.

Concentrating on Tasks for Extended Periods (Statement 2 and 5)

The mean score was "4.20", suggesting students strongly agree with their ability to concentrate for long periods. The SD was "0.618", indicating low variation in responses, meaning most students have a similar level of agreement.

Frequently Forgetting Assignments or Tasks (Statement 3)

The mean score was 4.05, meaning students generally agree that they frequently forget assignments or tasks. The SD was "0.876", showing moderate variation in responses, reflecting differing levels of forgetfulness among students.

In summary, the results of the table suggest that students tend to agree they can recall information and concentrate for extended periods, though there is some variation in memory recall and task forgetfulness. The repetition of statements (1 = 4 and 2 = 5) implies that these responses are consistent.

The table 2 presents the results on students' "Problem Solving and Critical Thinking skills", with the mean and standard deviation (SD) for various statements related to problem-solving enjoyment, analytical ability, creativity, confidence, and curiosity. The description of the findings was as:

Table 2: Results of Descriptive Analysis of Problem Solving and Critical Thinking

Sr. No	Statement	Mean	SD
1	I enjoy solving challenging problems that require critical thinking	4.08	1.190
2	I am able to analyze different perspectives before making decisions.	3.57	1.009
3	I can think creatively and come up with innovative solutions.	3.70	.749
4	I feel confident in my ability to solve complex problems.	3.90	.823
5	I enjoy exploring new ideas and concepts beyond what is taught in class.	3.35	.852

Enjoying Solving Challenging Problems (Statement 1)

The mean score was “4.08”, indicating that students generally agree they enjoy solving problems that require critical thinking. The standard deviation (SD) was “1.190”, showing moderate variation, suggesting that while many students enjoy this, some feel differently.

Analyzing Different Perspectives Before Decision Making (Statement 2)

The mean score was “3.57”, meaning students moderately agree they can analyze different perspectives. The SD was “1.009”, reflecting a wide variation in how well students perceive this ability.

Thinking Creatively and Developing Innovative Solutions (Statement 3)

The mean score was “3.70”, showing moderate agreement with their ability to think creatively. The SD was “0.749”, indicating relatively lower variation, meaning students have more consistent views on this skill.

Confidence in Solving Complex Problems (Statement 4)

The mean score was “3.90”, suggesting that students mostly agree they feel confident in handling complex problems. The SD was “0.823”, indicating moderate variation, reflecting that while many students feel confident, others are less sure.

Enjoying Exploring New Ideas Beyond Class Content (Statement 5)

The mean score was “3.35”, showing slight agreement that students enjoy exploring new ideas outside of what was taught. The SD was “0.852”, suggesting a moderate variation, meaning students differ in their willingness or interest in exploring new concepts.

To sum up, students show strong agreement on enjoying problem-solving and feeling confident in their critical thinking abilities. However, there is more variation in their ability to analyze different perspectives and a slightly lower interest in exploring ideas beyond the classroom content.

Table 3: Results of Descriptive Analysis of Metacognitive Skills

Sr. No	Statement	Mean	SD
1	I am aware of my own learning strengths and weaknesses.	4.08	1.190
2	I set specific goals for my learning and work towards achieving them.	3.57	1.009
3	I reflect on my learning progress and adjust my strategies if needed.	3.70	.749
4	I am able to monitor my own learning and make improvements accordingly.	3.90	.823
5	I seek feedback from teachers or peers to improve my understanding.	3.35	.852

The table focuses on students' "metacognitive skills", providing the mean scores and standard deviations (SD) for various statements related to self-awareness, goal-setting, reflection, monitoring, and seeking feedback. The findings are described as:

Awareness of Learning Strengths and Weaknesses (Statement 1)

The mean score was "4.08", indicating that students generally agree they are aware of their own learning strengths and weaknesses. The standard deviation (SD) was "1.190", showing moderate variation, suggesting that while many students are self-aware, some may be less so.

Setting Specific Learning Goals (Statement 2)

The mean score was "3.57", meaning students moderately agree that they set specific learning goals and work towards them. The SD was "1.009", reflecting wide variation, indicating that some students are more goal-oriented than others.

Reflecting on Learning Progress and Adjusting Strategies (Statement 3)

The mean score was "3.70", showing moderate agreement with reflecting on learning and adjusting strategies. The SD was 0.749, indicating relatively low variation, meaning most students share a similar view on this behavior.

Monitoring Learning and Making Improvements (Statement 4)

The mean score was "3.90", suggesting that students mostly agree they can monitor their learning and make improvements. The SD was 0.823, showing moderate variation, meaning students differ somewhat in their ability to monitor and improve their learning.

Seeking Feedback to Improve Understanding (Statement 5)

The mean score was 3.35, showing slight agreement that students seek feedback from teachers or peers. The SD was 0.852, suggesting moderate variation, indicating different levels of comfort or willingness to seek feedback among students.

Students show a strong awareness of their learning strengths and weaknesses, and most agree on the importance of reflecting and adjusting strategies to improve. However, there is more variation in goal-setting and seeking feedback, suggesting differences in how actively students engage in these metacognitive practices.

Table 4: Results of Descriptive Analysis of Personal Values and Respect

Sr. No	Statement	Mean	SD
1	I believe it is important to treat others with respect and kindness.	4.54	.536
2	I consider the consequences of my actions before making decisions.	4.43	.533
3	I believe it is important to consider the feelings of others when making decisions.	4.42	.626
4	I think it is important to help those in need, even if it inconveniences me.	4.42	.565
5	I believe it is important to follow rules and laws, even if I disagree with them.	4.24	.649

The table provides insights into students' "personal values and respect", showing the mean scores and standard deviations (SD) for various statements related to respect, decision-making, empathy, helping others, and following rules. The findings are described as:

Belief in Treating Others with Respect and Kindness (Statement 1)

The mean score was "4.54", indicating that students strongly agree with the importance of treating others with respect and kindness. The standard deviation (SD) was "0.536", showing low variation, meaning most students share a similar strong belief in this value.

Considering Consequences Before Making Decisions (Statement 2)

The mean score was "4.43", suggesting students generally agree that they consider the consequences of their actions before making decisions. The SD was "0.533", indicating low variation, which means students are largely consistent in this behavior.

Considering the Feelings of Others in Decision-Making (Statement 3)

The mean score was "4.42", indicating strong agreement that students value the feelings of others when making decisions. The SD was "0.626", showing a bit more variation, suggesting some students might consider others' feelings to different extents.

Helping Those in Need, even if It Causes Inconvenience (Statement 4)

The mean score was "4.42", indicating a strong belief in helping others, even if it causes inconvenience. The SD was "0.565", reflecting a moderate yet narrow variation, meaning most students hold this belief consistently.

Following Rules and Laws, even if in Disagreement (Statement 5)

The mean score was "4.24", showing that students generally agree on the importance of following rules and laws, even if they personally disagree with them. The SD was "0.649", showing slightly more variation, indicating differences in students' adherence to rules in situations of disagreement. Overall, students exhibit strong personal values, particularly regarding respect, kindness, and empathy. They consistently consider the consequences of their actions and are committed to helping others. Although there is a slightly higher variation in responses related to following rules, the consensus remains that it is important even when there is personal disagreement.

Table 5: Ethical Decision Making

Sr. No	Statement	Mean	SD
1	I would report someone who cheated on an important test	2.37	.833
2	I think it is acceptable to lie if it helps me avoid getting into trouble.	2.57	.807
3	It is acceptable for me to steal for a good cause.	2.56	.736
4	I spread rumors about someone if they deserve it.	2.55	.852
5	I consider fairness and justice while making decisions.	2.56	.807

The table provides insights into students' attitudes toward “Ethical Decision Making”, showing the mean scores and standard deviations (SD) for various statements related to reporting dishonesty, lying, stealing, spreading rumors, and fairness in decision-making. The findings are described as:

Reporting Someone Who Cheated on an Important Test (Statement 1)

The mean score was “2.37”, indicating that students generally disagree with the idea of reporting someone for cheating. The standard deviation (SD) was “0.833”, reflecting moderate variation in responses, meaning some students may be more likely to report cheating than others.

Acceptability of Lying to Avoid Trouble (Statement 2)

The mean score was “2.57”, suggesting that students are somewhat neutral but tend to disagree that lying is acceptable to avoid trouble. The SD was “0.807”, indicating moderate variation, meaning students have differing opinions on this issue.

Acceptability of Stealing for a Good Cause (Statement 3)

The mean score was “2.56”, showing a similar pattern of disagreement or neutrality, with students generally not supporting stealing, even for a good cause. The SD was “0.736”, showing moderate variation, suggesting that views are somewhat mixed.

Spreading Rumors if Someone Deserves It (Statement 4)

The mean score was “2.55”, indicating that students generally disagree with the idea of spreading rumors, even if they believe the person deserves it. The SD was “0.852”, showing moderate variation in views, with some students feeling more strongly against it than others.

Considering Fairness and Justice in Decision-Making (Statement 5)

The mean score was “2.56”, reflecting that students tend to be neutral or slightly disagree with considering fairness and justice while making decisions. The SD was “0.807”, showing moderate variation in opinions, suggesting different levels of importance students place on fairness and justice.

To conclude that, the data shows that students generally lean towards disagreeing with unethical behaviors such as reporting cheating, lying, stealing, and spreading rumors. However, the mean scores indicate a degree of neutrality, reflecting that ethical stances are not strongly pronounced. There's moderate variation in responses, suggesting that students have differing views on these ethical issues, particularly when it comes to fairness and justice in decision-making.

Table 6: Aggressiveness/Antisocial Behavior

Sr. No	Statement	Mean	SD
1	In class I speak loudly.	1.46	.501
2	Sometimes I act stubborn.	1.98	.742
3	In class I make fun of others	1.90	.789
4	In class I get into fights with class mates.	1.78	.682
5	I lie to get what I want.	1.88	.751
6	I get angry with others on minor matters.	1.81	.723

The table provides insights into students' self-reported levels of “Aggressiveness and Antisocial Behavior”, presenting the mean scores and standard deviations (SD) for statements related to loudness, stubbornness, teasing, fighting, lying, and anger. The findings are described as:

Speaking Loudly in Class (Statement 1)

The mean score was “1.46”, indicating that students generally disagree with the statement, suggesting that speaking loudly in class is not common behavior. The standard deviation (SD) was “0.501”, showing low variation, meaning most students share similar views on this behavior.

Acting Stubborn (Statement 2)

The mean score was “1.98”, reflecting a neutral to slight disagreement, indicating that acting stubborn occurs occasionally but is not frequent. The SD was “0.742”, indicating moderate variation, suggesting that while some students may act stubborn more often, others do so less.

Making Fun of Others in Class (Statement 3)

The mean score was “1.90”, showing that students generally disagree with the idea of teasing others in class, though some may do so occasionally. The SD was “0.789”, reflecting moderate variation, indicating differing levels of this behavior among students.

Getting into Fights with Classmates (Statement 4)

The mean score was “1.78”, indicating general disagreement with fighting in class, though some students may engage in this behavior occasionally. The SD was “0.682”, showing moderate variation, meaning while some students may get into fights, it is not a widespread behavior.

Lying to Get What They Want (Statement 5)

The mean score was “1.88”, suggesting slight disagreement with lying to achieve personal goals, though some students may engage in this behavior occasionally. The SD was “0.751”, indicating moderate variation, meaning students differ in their tendency to lie for personal gain.

Getting Angry Over Minor Matters (Statement 6)

The mean score was “1.81”, indicating that students generally disagree with getting angry over minor issues, though it happens occasionally. The SD was “0.723”, showing moderate variation, suggesting differences in how often students exhibit this behavior.

Overall, the findings showed that students tend to disagree with behaviors associated with aggressiveness and antisocial tendencies, such as speaking loudly, teasing, fighting, lying, and getting angry. However, there is some variation in responses, indicating that while these behaviors

are not widespread, certain students may engage in them more frequently than others, particularly in acting stubborn or showing anger over minor matters.

The second objective of the study was to find the relationship between cognitive development, moral reasoning and social life of secondary school students. The results of correlation analysis are shown in table 7.

Table 7: Correlation Analysis

Factors		Cognitive Abilities	Moral reasoning	Social Skills
Cognitive Abilities	Pearson Correlation	1		
	Sig. (2-tailed)			
Moral reasoning	Pearson Correlation	.775	1	
	Sig. (2-tailed)	.003*		

*. Correlation is significant at the 0.01 level (2-tailed)

The above table described there is a strong positive correlation of 0.775 between Cognitive Abilities and Moral Reasoning. The p-value associated with this correlation is 0.003, which is less than the significance level of 0.01 (1%). This indicates that the observed correlation is statistically significant at the 0.01 level (2-tailed). In other words, the relationship between Cognitive Abilities and Moral Reasoning is not likely to be due to random chance, and there is substantial evidence to suggest that higher Cognitive Abilities are associated with higher levels of Moral Reasoning.

Conclusion

The primary objective of this study was to delve into the intricate relationship between cognitive development and moral reasoning. Moreover, the research sought to scrutinize the association between various levels of cognitive development and moral reasoning proficiency. The findings of the study unveiled a notable correlation between cognitive development and moral reasoning, indicating that as cognitive faculties advanced, moral reasoning exhibited a trend toward heightened complexity and refinement. This significant discovery underscores the intertwined nature of cognitive and moral development, positing that advancements in cognitive abilities have the potential to positively impact moral reasoning capabilities. Such revelations shed light on the synergistic interplay between cognitive and moral domains, accentuating the potential reciprocal influence between these two facets of human development.

Recommendations

There are some recommendations for enhancing cognitive development and moral reasoning in elementary schools of Pakistan

Tailored Curriculum Design: Educators should develop curricula that consider the diverse cognitive development levels and moral reasoning stages of elementary students. Customizing educational materials and activities according to each child's developmental stage can enrich their learning experience and facilitate better comprehension.

Implementation of Moral Education Programs: Schools should introduce moral education initiatives focused on nurturing moral reasoning and ethical decision-making. These programs are

instrumental in fostering empathy, moral judgment, and a sense of responsibility among students, thereby positively shaping their social interactions.

Creation of Supportive and Inclusive School Environments: Institutions should endeavor to establish environments that foster inclusivity, respect, and understanding. Emphasizing a positive and respectful school culture contributes to fostering a sense of belonging and acceptance among students, which in turn promotes healthy social relationships.

Teacher Training in Developmental Psychology: Teachers and educators should undergo training in developmental psychology, encompassing theories of cognitive development and moral reasoning. Equipping educators with this knowledge enables them to better identify students' individual needs and provide tailored support and guidance accordingly.

Encouragement of Parental Involvement: Recognizing the pivotal role of parents in children's cognitive and moral development, schools should actively encourage parental involvement. Providing resources and support to parents can facilitate their engagement in supporting their child's cognitive and moral growth at home.

Integration of Real-Life Moral Dilemmas: Incorporating real-life moral dilemmas and ethical scenarios into classroom discussions encourages critical thinking and moral reasoning skills. Engaging students in debates and discussions surrounding these situations enhances their understanding of ethical decision-making processes and promotes moral development.

Continuous Assessment and Feedback: Implementing regular assessments to gauge students' cognitive and moral development levels can provide valuable insights for educators. Additionally, providing constructive feedback and guidance based on these assessments can help students in their ongoing growth and development.

Collaborative Learning Opportunities: Encouraging collaborative learning experiences where students work together to solve problems and discuss moral issues promotes peer interaction and the exchange of diverse perspectives. This collaborative approach fosters not only cognitive development but also enhances moral reasoning through dialogue and mutual understanding.

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