

IMPACT OF COGNITIVE PLAY ON THE PERCEPTUAL MOTOR LEARNING OF SCHOOL AGED CHILD

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Abstract:

School aged child's education represents a window of opportunity. For children and family, the earliest twelve years of a child's life are key to predicting ultimate success in school and in life. We must use cognitive play techniques for better learning outcomes, because cognitive play effects the child's perceptual motor learning and gives the positive outcomes. The study is related to the field of school aged child education. The design of the study was descriptive. The data was collected from the teachers of private schools located near Thokar Niaz Baig, Lahore. Target population was 70(5) = 350. By using the Yamane formula, the sample was 186. Convenient and purposive sampling techniques were used for the collection of samples for the study. The questionnaire for teachers were used for the collection of information and responses. After getting the responses the data was entered into the computer and was analyzed by SPSS (statistical Package for Social Sciences) software. The data was analyzed by Reliability, Normality, Frequencies and percentage of variables, Correlation, and regression test. The results of overall reliability test were 0.847. In normality Shapiro-wilk test the results of statistic were .926 for cognitive play and .954 for perceptual motor learning, significance results were .000 for both. Correlations of cognitive play and perceptual motor learning was .540. Total of Regression and Residual was 29.020. Play improves the child's cognitive development. Majority of the teachers agreed that perceptual motor learning is occurring among school aged child. Majority of the school aged child teachers agreed that school aged children learn through cognitive play. The present study was limited to 4 schools near Thokar Niaz Baig, Lahore. The similar kind of research should be conducted on the sample drawn from different schools which may lead to a more precise generalization.

Keywords: Cognitive Play, Perceptual Motor Learning, School Aged Child.

INTRODUCTION

The modern era has moved away from an unhealthy perception of education and embraced a more holistic approach that prioritizes the child's overall personality development. However, this shift poses a challenge for teachers in determining which methods or techniques are best suited for enhancing a child's cognitive development. Play, contrary to its perception as a trivial and time-wasting activity, holds significant implications for various aspects of a child's psychological well-being. Dismissing play, even in older children, as mere hedonism would be a mistake. Western society has predominantly emphasized the value of work, undermining the worth of activities pursued for pure pleasure. Nonetheless, psychologists recognize that anything contributing to an individual's psychological health holds importance, and in some cases, enjoyable activities may hold greater value than those associated with work.

Play offers numerous advantages to children. During play, children experience a heightened sense of authenticity, allowing them to express themselves more fully than in any other activity. Play grants them the freedom to explore ideas and act them out without fear of consequences. They exercise their own choices and decisions, taking on leadership roles and exerting control over the unfolding events. Play serves as a platform for endless experimentation, exploration, and learning opportunities. Furthermore, children possess the ability to subtly regulate their play, ensuring that it presents challenges that are neither too easy nor too difficult. Recognizing these benefits is crucial for teachers as they need to effectively communicate to parents and administrators why play is an essential component when designing learning environments for young children.

The human experience can be categorized into two distinct spheres: the realm of work and the realm of play. Traditionally, work has been associated with adulthood, while play has been reserved for childhood. Work is often seen as a necessary burden for survival, while play is considered enjoyable. In order to ensure their children's future well-being, many parents adhere to the belief that childhood should be a joyful and carefree time. Consequently, they strive to prolong their children's engagement in the world of play. These parents provide their children with various play equipment and relieve them of household duties and responsibilities. In today's society, where social adjustment is highly valued, parents actively encourage their children to engage in play with their peers. They intentionally choose homes in areas where playmates are readily available. Recognizing the educational benefits of play, schools have incorporated organized sports, drama, music, and art into their curricula.

The concept of play encompasses various ideas and definitions. One crucial aspect is that children's play is linked to learning, making it a vital process for their development. Play can be seen as a valuable tool through which children acquire knowledge. Their active engagement with materials and the prepared environment serves as the primary method for absorbing information and learning. It is important to provide children with opportunities for play that is connected to everyday activities, as it helps prepare them for adult roles and responsibilities. Through play, children also enhance their cognitive abilities by constructing knowledge about the world. This includes gaining physical knowledge about objects and their properties, understanding the environment and their place in it, developing logical-mathematical knowledge such as numeration, seriation, classification, time, space, and number. Additionally, play contributes to the acquisition of social knowledge, including vocabulary, labels, and appropriate behavior, which children learn through interactions with others.

Social interaction that takes place during play holds great importance in children's development. It is through social interactions with others that children enhance their language skills and other abilities. Cooperation and interaction during play foster cognitive development in children. Notably, the involvement of adults in children's play is just as vital as children playing with their peers. Therefore, play contributes to cognitive development while also serving as a platform for developing essential social skills. The historical belief that play serves as a way for children to expend surplus energy has been widely accepted. This notion aligns with the cathartic theory, which suggests that play acts as a means for children to alleviate frustration and express emotions. Indeed, play is an excellent method for relieving stress. For young children, play typically occupies a significant portion of their lives. Engaging in activities within their environment is essential for children to learn and develop social

and physical skills. It allows them to master life situations and practice fundamental processes necessary for growth. Children acquire knowledge through play. Without ample opportunities for play and a supportive environment, a child's learning potential becomes limited. Early childhood programs that prioritize and provide ample play opportunities play a crucial role in expanding and enriching a child's learning experiences. Play can be viewed as children's form of work, and both home and school serve as their workplaces where learning transpires through play. Children naturally engage in play and derive enjoyment from it. They do not consciously select play activities with the intention of learning, yet learning naturally unfolds as they engage in play.

The progression of play begins with solitary play in very young children, where they engage in play individually without reciprocal interaction with other children. As children reach the age of three, they transition to parallel play, where they play alongside each other and may imitate one another, but primarily function as individuals. However, it is in the stage of four to five years old that truly social play emerges, where a significant portion of the play activities relies on interaction with peers. Throughout each of these stages, adults can certainly initiate or participate in play activities. However, until the stage of social play is reached, the child's response to or imitation of the adult takes precedence over interactive play partnership with them. Play holds significant implications for various aspects of a child's psychological well-being, and it is erroneous to perceive it, even in older children, as a trivial and time-wasting activity. However, it is equally important not to overlook the fact that, from the child's perspective, the primary purpose of play is simple enjoyment. A child does not consciously engage in play with the intention of understanding how things work, experimenting with adult roles, stimulating imagination, or pursuing any specific objectives that commentators have attributed to different aspects of play throughout the years.

LITERATURE REVIEW

Play: Play offers numerous benefits to children. During play, children have the opportunity to fully express and be themselves, more so than at any other time. They are empowered to make their own choices and decisions, taking command of their play experiences. In this role, they become masters, exerting control over the unfolding events. Play also provides them with endless opportunities to try out new things, experiment, and explore their surroundings. Additionally, children possess the remarkable ability to subtly regulate their play, ensuring that it presents challenges that are just right - neither too difficult nor too easy for them to navigate. It is crucial for teachers to be aware of these benefits, as they play a vital role in explaining to parents and administrators why play is an essential component when designing learning environments for young children. The joy, freedom, and vitality that children experience through physical play are clear indications of the deep satisfaction it brings them. Understanding their own physical capabilities and having a sense of physical confidence greatly enhance their overall feelings of security and self-esteem in a unique manner (Botshekan et al., 2022). Maintaining a reasonable balance between allowing children to experiment with taking risks and practicing sensible control is crucial for teachers. A valuable guideline to follow is to intervene in any play that poses genuine danger to the child or others, while simultaneously encouraging freedom of movement. It is important to provide more protection for 2-year-olds compared to 4-year-olds, as younger children have less experience and therefore poorer judgment. While 4-year-olds are naturally inclined towards risk-taking and challenges, they can be encouraged to assess potential dangers on their own, rather than being constantly controlled by the teacher. Additionally, incorporating a range of options for outdoor play helps to support it in a positive manner. By introducing variety, such as different equipment and play environments, children's play experiences can be enhanced and their development enriched. Repetitive presence of the same trikes, swings, and climbers' day after day can lead to children feeling bored and exhibiting unruly behavior. However, by introducing variations like a bedspread tent over a climber, creating makeshift houses with lengths of fabric, or combining a ladder with a tricycle, new play possibilities can be suggested. These novel play setups not only sustain children's interest but also cultivate fresh ideas and encourage ongoing physical engagement. Furthermore, the choice of equipment provided to children greatly influences play that emphasizes physical activity. Incorporating large portable items such as boards and hollow blocks promotes

cooperative and physical play. These open-ended materials enable children to collaborate, constructing various play scenarios and fostering their creative selves. Ultimately, play serves as an individual's primary means of coping with the stresses of life (Kim et al., 2022).

Through the act of play, children are able to transform overwhelming situations into manageable ones while also finding socially acceptable outlets for stress. Just like adults, children experience stress, particularly in today's world. Therefore, it is crucial for children to engage in play, as it provides them with the necessary tools to navigate the challenges of an increasingly complex society. However, play serves another important purpose for a child's emotional well-being. It fosters a sense of pure delight and joy. There is a special satisfaction in immersing oneself in building an imaginary oven to bake sandbox cookies or successfully balancing blocks and watching a car navigate through a tunnel. The joy is amplified when playing with another child and experiencing the profound bond of friendship that emerges from the shared play experience. Certainly, play can evoke various emotions in children, including anger when someone else assumes dominance, pain when feeling excluded, and fear when engaged in activities that are too frightening. However, the beauty of play lies in its ability to allow children to explore this wide spectrum of emotions within a relatively safe environment, enabling them to gradually learn how to navigate and manage these feelings. It is immensely valuable for children to discover that sadness and anger can be coped with and that these emotions are temporary, not everlasting. Furthermore, teachers play a vital role in nurturing a child's emotional development during play by creating experiences that address underlying issues when a child seems unable to confront them independently. For instance, if a child has developed an unexplained fear of the dark, the teacher can design play scenarios that gently explore and address this fear (Railsback et al., 2019). The teacher can support the child in overcoming their fear by offering them a play area with large boxes and flashlights in a dimly lit corner of the playroom. This allows the child to have control over the situation and play through their fear at their own pace. However, if the fear seems to intensify or become extreme, the teacher should take additional measures alongside providing play opportunities. Depending on the severity of the behavior, these steps may involve having a conversation with the child, sharing stories during group time about how other children have coped with similar concerns, or arranging a parent conference. It is important for teachers to recognize the value of appropriate play experiences in clarifying feelings and promoting self-discovery. However, teachers should also be aware of their limitations in such situations. They are not professional psychologists. If a child's play consistently displays signs of anxiety or becomes highly ritualized and repetitive, these behaviors should be seen as signals for help that extend beyond the teacher's expertise. Referring the child and their family for psychological consultation is usually the most prudent course of action (Jaksic et al., 2020).

Children derive numerous benefits from engaging in different forms of play, including solitary play and parallel play. However, it is in the context of associative or cooperative play that the social self-flourishes, as these types of play offer abundant opportunities for social learning. School teachers play a crucial role in facilitating the development of children's social skills, dedicating a significant portion of their day to this aspect. Through play, children acquire valuable insights into harmonious social interactions, such as navigating group dynamics, handling feelings of exclusion, and managing dominance. They learn the art of sharing power, space, and ideas with their peers, honing their ability to compromise, negotiate, and collaborate to achieve mutual satisfaction. These experiences foster their growth as socially adept individuals, preparing them for the complexities of social relationships in the wider world. In addition to gaining insights into social interactions within their immediate peer group, children also learn about the broader social world as they engage in role-playing during playtime. Whether they assume the role of a mother, a teacher, or any other character, this act of role-taking holds immense value. Researchers suggest that through role-taking, children have the opportunity to empathetically put themselves in another person's shoes, fostering an understanding of others' emotions and nurturing their capacity for empathy. By immersing themselves in these role-playing scenarios, children embark on a journey of social and emotional development. They explore different perspectives, develop a deeper understanding of human experiences, and enhance their ability to relate to others on an emotional level. Social play, with its inherent role-taking element,

serves as an unparalleled catalyst for the growth and maturation of the social self, equipping children with invaluable skills and attitudes that extend far beyond their childhood years. A recent research review focused on investigating the potential connection between divergent thinking (the ability to generate multiple solutions to a problem) and play reveals an intriguing finding. Children who engage in free play prior to being presented with tasks that require divergent thinking tend to produce a wider range of creative answers compared to those who have experienced structured activities before encountering the problem. This discovery highlights the significance of fostering open-mindedness and acknowledging the value of creative ideas that emerge during free play, especially for teachers. By providing positive support and encouragement, teachers play a vital role in reinforcing and nurturing such behavior in children. They create an environment where children feel empowered to explore possibilities, think outside the box, and express their innovative thoughts freely. By embracing and valuing the creative ideas that emerge during play, teachers not only enhance children's divergent thinking skills but also foster their confidence in exploring alternative perspectives and solutions. This positive support sets the stage for a lifelong inclination towards imaginative thinking and problem-solving, equipping children with a valuable asset for their future endeavors (Batez et al., 2021).

H₁: There is positive relationship between cognitive play and perceptual motor learning at school aged child.

Miscellaneous Play: In miscellaneous play, there are four categories. The first is unoccupied behavior, where the child is not actively engaged in play but instead observes momentary interests, engages in self-exploration, or follows the teacher's actions, sometimes glancing around the room. The second category is onlooker behavior, where the child watches others play, engages in conversation, asks questions, and offers suggestions, but does not actively participate in the play. The third category is reading, where the child listens as the teacher reads to them. Lastly, we have rough and tumble play, where children in a group of two or more run, chase each other, or engage in mock fighting, promoting physical activity and social interaction (Kashi et al., 2021).

Cognitive play: Child's play is a reflection of their developing intellect, as it is through play that the process of assimilation and accommodation takes place. During assimilation, the child observes their external environment and incorporates the information they gather into their existing cognitive framework. However, if the child's concepts are incorrect or incomplete, accommodation comes into play, prompting the child to adjust their thinking patterns to align more closely with reality. In this context, play serves as the primary mechanism for assimilation and accommodation, as it allows the child to practice and reinforce their understanding of the environment. Through play, the child can safely explore new patterns of behavior, experiment with various physical, social, intellectual, and emotional actions, all without experiencing the same real-life consequences they might face otherwise. In real life, there is always a risk of making mistakes, feeling uncoordinated, angry, or confused. However, through play, children are provided with an opportunity to engage in role-playing and various activities. They can modify or alter the course of the activity to achieve a sense of correctness, or they can gradually develop the coordination required for a specific task. In play, they have the freedom to arrange events in a way that brings them pleasure and satisfaction from their achievements (Rechtik et al., 2022).

Dramatic Play: In dramatic or imaginative play, children use language and behavior to interact with materials or situations as if they possess qualities different from their actual attributes. The onset of dramatic impersonations typically occurs around 1 ½ to 2 years of age and reaches its peak at approximately 5 ½ years. However, as children enter school and gain a more realistic perspective on life, the appeal of this type of play diminishes. Their ability to attribute lifelike qualities to inanimate objects and imagine alternative situations decreases as their reasoning skills develop. Interestingly, very bright children often enjoy dramatic play even more than those with lower intellectual abilities. Nonetheless, their interest in this type of play tends to wane early due to their rapid cognitive development and increasing realism. Girls tend to engage in dramatic play more frequently than boys,

although it remains popular among children who prefer solitary play and those who assume diverse roles within make-believe scenarios. The presence of different roles in a pretend situation enhances the enjoyment of dramatic play for most children. Dramatic play, being a form of creativity, enables children to engage in a diverse array of activities related to family life and their cultural heritage. It can be broadly categorized into two types: sociodramatic and fantasy play. Sociodramatic play revolves around realistic everyday activities and events, while fantasy play involves imaginative scenarios inspired by fairy tales and superheroes (Mohan, et al.,2022).

Constructive Play: Constructive play is a common form of play that involves activities such as building with bricks, drawing, and playing with sand and natural materials. This perspective aligns with the constructivist viewpoint, which suggests that children "construct" knowledge through reflecting on their experiences. According to this view, children actively shape their own learning process. This stands in contrast to the behaviorist view, which portrays children as passive recipients of knowledge, acquired through imitation, practice, and reinforced through rewards and punishments. Children follow a universal and consistent sequence of development, with each stage characterized by a distinct way of organizing thoughts and activities. Both the constructivist and behaviorist perspectives highlight the significance of social context in children's learning. They also recognize play as a valuable means of fostering the capacity for symbolic and abstract thinking. Moral development, rooted in the play of young children, involves the development of empathy and an understanding of societal rules and roles.

Functional play: Functional play involves engaging in simple muscular activities and repetitive movements, either with or without objects. It focuses on the child's repetition or initiation of actions. This type of play helps infants and young toddlers exercise their muscles and develop physical coordination. Some examples of activities in functional play include playing drums, using hummers, and shaking objects like shakers (McGuine, et al., 2022).

Children willingly accept prearranged rules and adapt to them, controlling their actions and reactions within the given limits. Games and sports are structured contests played for amusement or with a competitive motive. Sports primarily involve physical challenges, while games can be either physical or mental in nature. Sports often require greater physical exertion and have more rigid rules compared to games. The term "sport" typically refers to highly organized team competitions such as baseball, football, or basketball, although it can also encompass individual outdoor activities like track, tennis, or hunting. Children's activities mostly fall under the category of games, although sports gain popularity as they approach adolescence. As children develop, they become more interested in sports and strive to acquire the necessary skills for successful performance. Initially, their play is focused on individual achievements as they aim to outperform others. This egocentric interest hinders their ability to be effective team players. However, with time and experience, they gradually learn to cooperate with teammates and derive greater enjoyment from sports. By the time they reach adolescence, a typical child has developed into a proficient team player (Adi, et al., 2022).

Eye-Hand Coordination Materials: Perceptual materials play a crucial role in children's learning process by engaging their senses—touch, sight, hearing, smell, and taste. Through these sensory experiences, children develop judgment and refine their ability to make subtle discriminations. A specific group of materials focuses on enhancing small motor coordination and providing opportunities for children to practice these skills until they become automatic and unconscious. For instance, consider the process of tying shoelaces: initially, one needed to consciously look and think about each step, but with practice, it becomes a natural and automatic action. Developing small motor coordination is particularly important for foundational skills like reading and writing, which begin to take shape in the early years. Mastering a fine motor skill typically involves four steps. First, the necessary maturation of visual and hand muscles must occur. Second, the child becomes aware of the task at hand and feels motivated to attempt it. Third, the child actively engages in practicing the task.

Finally, through persistent practice, the child achieves mastery. Children in early childhood centers may find themselves at different stages within this four-step sequence, depending on their individual development. The development of eye-hand coordination is emphasized in various school situations. Children practice this coordination when using writing and drawing tools, scissors, tearing paper, or squeezing glue bottles, among other activities. These experiences contribute to the refinement of their fine motor skills and enhance their overall dexterity. Practicing coordination skills can be found in various everyday activities, such as turning the pages of a book, operating a record player's needle, and buttoning or zipping clothing. These activities provide opportunities for children to refine their coordination abilities. Developing coordination skills is a foundational step for mastering many other motor skills. As teachers, it is important to recognize that each child progresses at their own pace, and age alone should not be the sole criterion for assessing their abilities. Some three-year-olds may excel in certain skills, while some five-year-olds may still be developing in certain areas. It's important to understand that a child's advancement in skills may vary across different domains. To support children in practicing coordination skills, it is crucial to create a non-competitive environment. When a child experiences failure in a competitive setting, they may become tense and develop avoidance behaviors towards the necessary practice. Our role as educators is to provide children with engaging materials and offer supportive guidance as they develop and practice these skills. By presenting interesting and age-appropriate materials, we can foster a positive learning environment that encourages children to explore and enhance their coordination abilities (Wang, et al., 2021).

H₂: There is a significant impact of cognitive play on perceptual motor learning at school aged child.

Puzzles: Puzzles have long been favored as construction toys, as demonstrated in the opening anecdote of this chapter. However, puzzles have a distinct characteristic that sets them apart from other construction toys. The task of assembling puzzle pieces requires the child to follow a specific and predetermined arrangement in order to recreate a complete picture. This represents a convergent task, where there is typically only one correct solution. There are various types of puzzles available, with wooden puzzles being particularly popular among children under six. More recently, colorful rubber puzzles have also emerged, providing an interesting tactile experience. Puzzles are known for their durability and can withstand years of use in classrooms, provided that care is taken to avoid losing any pieces. The range of puzzle choices is extensive, encompassing themes such as animals, vehicles, and familiar scenes from children's lives or books they are familiar with. Typically, each puzzle piece represents an object, a part, or a body, allowing children to understand the concept of replacing a head, a foot, or a wheel. This arrangement facilitates the child's comprehension of whole and part relationships. Another type of puzzle features inlays of complete objects grouped together with related objects, such as five fruits, five vegetables, or five items to wear in rainy weather. Certain puzzles incorporate knobs for easy removal of the pieces, providing the child with a grasping experience. However, knobs are not essential to puzzles and are prone to breaking off easily. To ensure proper care and protection, puzzles can be stored in specially designed racks, which are particularly useful for knob puzzles. When selecting puzzles, it is important to consider the child's developmental level and experience rather than solely relying on chronological age. Typically, three-year-olds can handle puzzles with around four to six pieces, while advanced kindergartners may be capable of solving puzzles with up to thirty pieces. Some kindergartners might even be ready for more challenging puzzles, such as a United States map puzzle (Heri et al., 2022). Some latest studies in the field of physical educations have been reported in (Bibi, Tabassum, & Mahmood-ul-Hassan, 2020); (Ahmed et al., 2021); (Ahmed, Sadeea, & ul Hassan, 2020); (Babar, Tabassum, Sattar, Hassan, & Karim, 2021); (Tahir et al., 2021); (Iqbal, Aslam, & Ashfaq, 2019); (Asghar et al., 2021); (Hassan, Ahmad, & Tabassum, 2021); (Mazhar et al., 2021); (Fatima, Tabassum, Khan, Mahmood-ul-Hassan, & Karim, 2020)

RESEARCH METHODOLOGY

The basic purpose of this study was to find the “Impact of cognitive play on the perceptual motor learning of school aged child”.

Research Design: The design of the study was descriptive and cross-sectional.

Instrumentation: The data was collected through a two-scale questionnaire, with one representing cognitive play, and the second representing perceptual motor learning. This questionnaire was adapted by Shazia, A. and Mahmooda, S. in 2005. It used a five-point Likert scale, and the total number of items was $12 + 17 = 29$. For better understanding of the respondents and consistency, this survey was conducted by using five points Likert scale from strongly disagree (1) to strongly agree (5) was adopted. Pearson moment correlation and regression analysis was applied.

Sample Selection: Convenient and purposive sampling techniques were used for the collection of samples for the study. Target population was $100(4) = 400$. We selected 50 percent of the total population as our sample, resulting in a sample size of 200. The response rate was 80% (200/250). The physical location in which data collection took place in this study and the data was collected from the teachers of private schools located near Thokar Niaz Baig, Lahore (50 from each school).

1. The Trust School Khiaban-e-Jinah Campus Lahore.
2. The Trust School Thokar Niaz Baig Campus Lahore.
3. The Trust School Green Town Campus Lahore.
4. Adabistan-e-Soophia School Lahore

Study Variables

- Independent variable is Cognitive Play
- Dependent variable is Perceptual Motor Learning

RESULTS AND DISCUSSIONS

This study set out to look at the connection between cognitive play and perceptual motor learning in school-aged children. The effect of cognitive play on perceptual motor learning was also investigated. Below is a discussion of the findings and their ramifications.

Table 1: Reliability Assessment of cognitive play and perceptual motor learning scales (n=200)

Scale	No. of Items	Cronbach's Alpha
Cognitive play	12	0.752
Perceptual motor learning	17	0.790
Overall	29	0.847

This table shows that the reliability of cognitive play and perceptual motor learning scales, the cognitive play scale has the Cronbach's alpha value 0.752 and the reliability of the perceptual-motor learning scale has the Cronbach's alpha value 0.790. The overall reliability of all the scales the Cronbach's Alpha overall value is 0.847, which is excellent shows the data reliability.

Table 2: Normality of cognitive play and perceptual motor learning scales (n=200)

Scales	Shapiro-Wilk		
	Statistic	df	Sig.
Cognitive play	0.926	200	<0.001
Perceptual motor learning	0.954	200	<0.001

The Shapiro-Wilk test was used to find the normality of cognitive play and perceptual motor learning scales. Shapiro Wilk test is significant value of cognitive play and perceptual motor learning scales are <0.001 which is less than 0.05 that shows the data is not-normal.

Table 3: Correlation of mean value of cognitive play and perceptual motor learning scales (n=200)

	Mean value of CP
Mean value PML	0.540**
Sig. (2-tailed)	<0.001

CP=Cognitive play, PML=Perceptual Motor Learning

To analyze the relationship between study variables, score variables are computed on the basis of responses against each statement and the results of the Pearson correlation coefficients are listed in table 6. The results indicate that cognitive play has significant ($p < 0.001$) and moderately positive correlation ($r = 0.540$) with perceptual motor learning.

Table 4: Model Summary of cognitive play and perceptual motor learning scales

Model	R	R Square	Adjusted Square	RStd. Error of the Estimate	Durbin-Watson
1	.540 ^a	.292	.288	.32220	1.558

In the R column, we find the correlation coefficients between the predictors and the outcome, which is 0.540. Moving on to the next column, we have the R² value, which measures the proportion of variability in the outcome that can be explained by the predictors. In this particular model, the R² value is 0.292, indicating that cognitive play accounts for 29.2% of the variation in perceptual motor learning. To assess the assumption of independent errors, we refer to the Durbin-Watson statistic. A range below 1.5 or above 2.5 would raise concerns. In this case, the data value is 1.558, falling within the acceptable range of 1.5-2.5, suggesting that the assumption of independent errors has likely been met.

Table 5: Analysis of variance of cognitive play and perceptual motor learning scales

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.465	1	8.465	81.543	.000 ^b
	Residual	20.555	198	.104		
	Total	29.020	199			

The model consists of two coefficients, one for the predictor and one for the constant term, and it has 199 degrees of freedom. To assess the significance of each term, the average sum of squares is calculated by dividing the sum of squares by the degrees of freedom. In this case, the F-ratio is 81.543. These results indicate that the model is able to predict the outcome variable.

Table 6: Coefficients of cognitive play and perceptual motor learning scales

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.880	.254		7.402	.000
	CPlay	.541	.060	.540	9.030	.000

The initial portion of the table provides us with estimates for the b-values, which represent the individual contributions of each predictor to the model. By substituting these b-values into the equation, we can define the model as follows:

$$\text{Perceptual Motor Learning} = (b_0 + b_1 \text{ cognitive play})$$

$$\text{Perceptual Motor Learning} = (1.880 + 0.541 \text{ cognitive play})$$

The b-values provide information about the relationship between cognitive play and each predictor. In this dataset, all predictors have positive b-values, indicating positive relationships. Each beta value is accompanied by a standard error, which indicates the extent to which these values may vary across

different samples. These standard errors are utilized to assess whether the b-value significantly differs from zero.

Figure 1: Histogram and normal probability plot

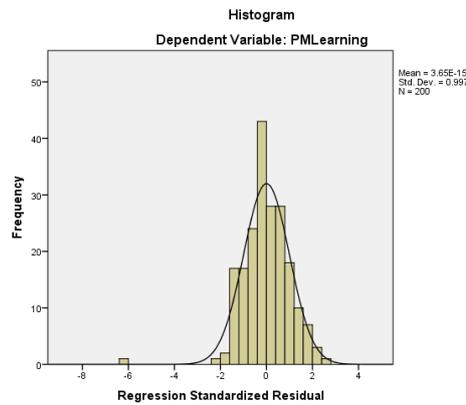


Figure 1 illustrates the histogram and normal probability plot depicting the data for the current study. The histogram is expected to exhibit a normal distribution, characterized by a bell-shaped curve. In SPSS, a curve is overlaid on the histogram to visually represent the shape of the distribution.

Figure2: Normal P-P plot of regression standardized residual

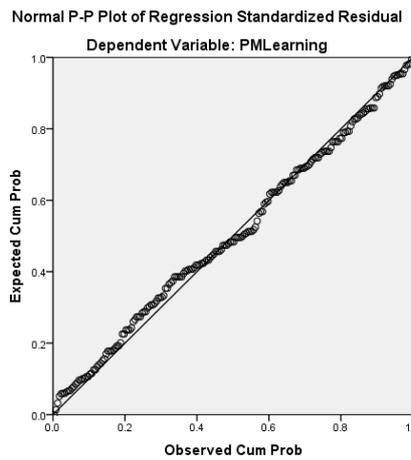
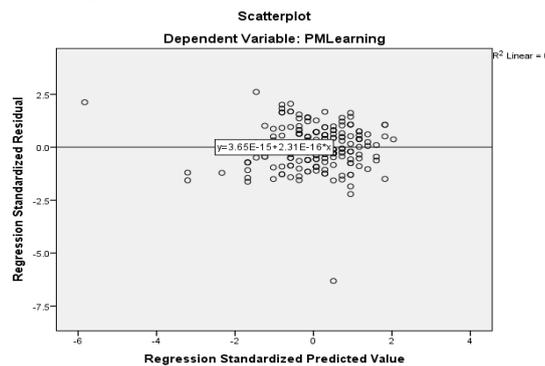


Figure 2 displays the plot of standardized residuals against standardized predicted values. It also presents the graph representing the data from our study. It is noteworthy that the points in the plot are distributed in a random and uniform manner. This pattern suggests that the assumptions of linearity and homoscedasticity have been satisfied.

Figure 3: Scatterplot of the model



In Figure 3, the plot of standardized residuals against standardized predicted values is presented. The graph represents the data from our study. It is observed that the points in the plot are randomly and uniformly scattered across the plot. This pattern suggests that the assumptions of linearity and homoscedasticity have been satisfied.

DISCUSSION

This study set out to look at the connection between cognitive play and perceptual motor learning in school-aged children. The effect of cognitive play on perceptual motor learning was also investigated. Below is a discussion of the findings and their ramifications. The perceptual motor learning and cognitive play scales both showed excellent internal consistency according to the reliability study. The cognitive play (Cronbach's alpha = .752) and perceptual motor learning (Cronbach's alpha = .790) scales. All of the study's items had an overall Cronbach's alpha of .847, which indicates good reliability.

The results of the normality tests showed that neither the variables for cognitive play nor perceptual motor learning had a normal distribution (Shapiro-Wilk test, $p = .000$). This emphasizes that care should be used while interpreting the findings and taking the underlying premises of parametric statistical tests into account.

A substantial positive association between cognitive play and perceptual motor learning was shown by correlation analysis (Pearson's $r = .540$, $p = .000$). This suggests that these two variables have a moderately good association. Cognitive play substantially predicted perceptual motor learning, according to the regression analysis ($r = .540$, $p = .000$). The model explained 29.2% of the variance in perceptual motor learning, indicating a significant contribution from cognitive play to the explanation of the variation in perceptual motor learning abilities among school-aged children.

The results of this study provide credence to the idea that cognitive play benefits the growth of perceptual motor learning abilities in school-aged children. These findings are consistent with earlier research that emphasized the value of play-based activities in improving cognitive and motor abilities. These findings have important ramifications for parents, educators, and other professionals working in the field of child development. Including cognitive play activities in classrooms and at home may help kids develop their perceptual motor learning abilities. Teachers and parents might potentially improve children's perceptual-motor skills, which are essential for their general development and academic performance, by promoting and offering chances for cognitive play.

It is critical to recognize some of this study's shortcomings. The study's focus on four schools close to Thokar Niaz Baig, Lahore, may have limited the findings' applicability to other communities. The study also used self-report measures, which could introduce response bias and affect the reliability of the findings.

To improve the generalizability of the findings, it is advised that comparable studies be carried out in the future using bigger and more diverse sample sizes. Further research should explore the longitudinal effects of cognitive play on perceptual motor learning as well as the precise elements of cognitive play that have the greatest effects on the development of the perceptual motor system.

There is a pertinent correlation between our study on the effects of cognitive play on perceptual motor learning of school-aged children and Maurya and Khan's (2022), previous study, "Effects of Cognitive Training Program in Children with Autism Spectrum Disorder" which examined the effects of a cognitive training program on children with autism spectrum disorder (ASD).

Both studies concentrate on cognitive therapies for kids with certain developmental disorders. The study by Maurya and Khan investigates the impact of a cognitive training program on the cognitive functioning of children with ASD, while our work investigates the association between cognitive play and perceptual motor learning in school-aged children.

The results of Maurya and Khan's study reveal that children with ASD who participated in the cognitive training program significantly improved in executive functioning, understanding cognitive mental states, and central coherence. These findings show that cognitive therapies can improve cognitive performance in kids with developmental problems.

It can be inferred from a comparison of the results of our study and Maurya and Khan's study that cognitive interventions like cognitive play activities may benefit both typically developing children and those with developmental conditions like ASD in terms of cognitive development and perceptual motor learning. This relationship supports the notion that include cognitive play activities in learning environments and at home improve children's perceptual-motor abilities and general cognitive functioning.

In conclusion, this study underscores the positive outcomes of cognitive play in enhancing perceptual motor learning among school-aged children. Integrating cognitive play activities in both school and home environments can have a significant impact on children's perceptual-motor abilities, promoting their overall development and academic achievements. However, further research is needed to explore the long-term effects and specific aspects of cognitive play that contribute to perceptual motor learning.

CONCLUSION, RECOMMENDATIONS AND IMPLICATIONS

Conclusion: The majority of the teachers agreed that perceptual motor learning is occurring among school aged child. Majority of the school aged child teachers agreed that school aged children learn through cognitive play. All teachers having same opinion on the average score of perceptual motor learning. All teachers having same opinion on the average score of cognitive play. Cognitive play has significant effect on the perceptual motor learning of school aged child in the opinion of teachers. Cognitive play develops the better understanding of concrete concepts. Play improves the child's cognitive development. School aged child learns through cognitive play more than formal way. School aged child gets long lasting learning by playing activities.

Recommendations: Based on the findings of the study, following recommendations are given:

1. The present study was limited to 4 schools near Thokar Niaz Baig, Lahore. The similar kind of research should be conducted on the sample drawn from different schools which may lead to a more precise generalization.
2. It is recommended that such a study should be conducted with a greater sample and the duration of the study should be at least 9 months.
3. The traditional way of teaching should change and teachers should be used motivational play techniques to improve their teaching methodology.
4. Teachers should provide the students with informative and interesting play activities.
5. Teachers and school management should try to change the atmosphere of classes to increase the better learning outcomes.
6. Both teachers and parents should accept the importance of play in school aged child.
7. Teachers should give special attention to the school aged child's learning through play.
8. Guidance center should be setup in schools regarding play activities for parents.
9. School should arrange play workshops for school aged child teachers and parents.

Policy Implications:

1. The official curriculum of schools should take cognitive play activities into consideration. This would entail giving instructors instructions and materials on how to incorporate play-based learning strategies that improve the development of perceptual-motor abilities into their classroom lessons.
2. The development of teachers' cognitive play skills should be a priority for policymakers who fund professional development initiatives. This would guarantee that instructors had the knowledge and abilities required to guide play-based learning activities that support perceptual-motor learning outcomes in school-aged children.
3. The creation of efforts to inform parents about the value of cognitive play for perceptual-motor development should be a priority for policymakers. This can entail holding workshops, seminars, or informational campaigns to spread awareness of the importance of play-based activities at home and to give parents advice on how to support and participate in them.

4. The provision of play-based resources and facilities in schools should get funding from policymakers. This includes making certain that kids of school age have access to toys, furnishings, and play areas that are suitable for their age and that encourage cognitive play and the growth of perceptual-motor abilities.

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