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Effects of Kindergarten Education on the Social and Cognitive Development of Saudi and International Students

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ABSTRACT

This study explores the influence of kindergarten care on the social and cognitive development of Saudi Arabian and international students in early childhood education in Saudi Arabia. A mixed-methods approach assessed the development of 302 children, aged between 5 years and 11 months to 7 years, and their mothers in Saudi Arabia's Eastern Province. The study utilized the Cognitive Abilities Tests (CogAt) and the Social Skills Scale (SSS), considering variables like gender, kindergarten type, family income, and maternal education. Results indicate a significant correlation between children's social and cognitive development, with cognitive abilities potentially predicting social skills. Mothers' responses suggest that while kindergarten plays a crucial role in children's development, it remains insufficient for optimal social and cognitive growth. This study highlights the growing focus on kindergartens in Saudi Arabia for their potential to boost cognitive development and academic success.

Keywords: International kindergarten, Saudi kindergarten, Cognitive abilities, Social skills, Prediction.

INTRODUCTION

Early childhood education is critical for a child's social and cognitive growth, with kindergarten playing a foundational role in their academic and overall development (Bjorklund & Causey, 2022; Kostelnik et al., 2014). Research into kindergarten care's effects on children in Saudi Arabia is key to developing effective early childhood education programs and enhancing child outcomes (Abbad, 2021; Al-Saud, 2020; Lamma, 2022). Despite the rising kindergarten enrollment rates in Saudi Arabia, there remains limited research on its specific impacts on children's social and cognitive development.

This study aimed to investigate the relationship between kindergarten care and the social and cognitive development of children in Saudi Arabia. The study's results will inform evidence-based policies and practices in early childhood education, aiming to enhance outcomes for children in Saudi Arabia. The development of children's social skills and cognitive abilities is closely interconnected and mutually influences each other during their early years (Santos et al., 2021). Abbad (2021) defines social skills as an individual's ability to effectively engage with others, while cognitive development refers to the acquisition of knowledge, skills, and abilities related to thinking, learning, and understanding the world (Al-Assaf, 2022). Multiple studies (Piske & Steinlen, 2022; Rumberger & Tran, 2006; Santos et al., 2021; Wang et al., 2021) have consistently demonstrated a positive association between children's social skills and cognitive development.

In their study, Kim et al. (2021) examined the impact of kindergarten and first grade education on children's reading, math, and executive function (EF) by employing a school cutoff design. The research indicated that kindergarteners who missed the enrollment deadline from the previous year showed greater improvement in their EF skills from autumn to spring than did their peers of the same age who attended prekindergarten. Another study investigated the influence of kindergarten entry age on the academic performance and socioemotional development of students. The study revealed that younger kindergarteners demonstrated superior academic performance in certain subjects. However, kindergarten teachers assigned lower ratings to younger students in terms of language, literacy, and mathematical thinking (Niche Early Child Care Research Network, 2007).

Strong social skills have the potential to facilitate cognitive development through various means. a) Positive social interactions facilitate language development through opportunities for conversation, vocabulary acquisition, and language proficiency practice (Al-Kathiri, 2016). b) Social experiences contribute to the development of problem-solving abilities as children engage in conflict

resolution, peer collaboration, and solution exploration (Kostelnik et al., 2014); c) social interactions facilitate emotional regulation by enabling children to recognize, articulate, and effectively handle their emotions. On the other hand, cognitive development has a positive influence on the social skills of children (Wang et al., 2021). As children develop their theory of mind, their social competence and empathy increase. The theory of mind refers to the ability to understand and interpret the thoughts, emotions, and intentions of others. Children with strong cognitive abilities possess the capacity to effectively articulate their thoughts, actively listen, and comprehend the perspectives of others (Al-Assaf, 2022; Al-Kathiri, 2016; Aleksić et al., 2019).

In addition, cognitive development facilitates the acquisition of planning and organizational skills, which play a crucial role in successful social interactions, including the coordination of playdates and the resolution of conflicts. There is a reciprocal relationship between social skills and cognitive development, wherein each domain mutually influences and promotes the other (Bjorklund & Causey, 2022). Children have the chance to develop and enhance their cognitive abilities through the acquisition of robust social skills. Mykhailytska (2016) conducted the study. As young individuals' cognitive capacities develop, a similar pattern emerges. As children's cognitive abilities develop, their social interactions improve, leading to enhanced social and emotional development (Wang et al., 2021).

STUDY PROBLEM

The utilization of childcare services, such as childcare centers and family childcare homes, has risen in Saudi Arabia due to the increased labor force participation of mothers with young children in recent decades. The increase in the number of kindergartens in Saudi Arabia, both domestic and international, has led to a greater demand for kindergarten teachers. This has resulted in various challenges, highlighting the urgent need for programmes that prepare teachers specifically for kindergarten education. These programmes are necessary to ensure that teachers maintain satisfactory levels of performance. According to Al-Assaf's (2022) study, the increased number of kindergartens in the Kingdom has led to the employment of underqualified teachers. This has had a negative impact on the quality of services and learning outcomes, as modern educational methods suitable for kindergartens have not been utilized.

Kindergarten, as an initial educational setting for children, can present challenges and potentially lead to behavioral issues such as aggression and jealousy (Al-Saud, 2020). The Kingdom of Saudi Arabia has made significant efforts to increase the number of kindergartens. However, there are concerns regarding the quality of these kindergartens, particularly the qualifications of female teachers (Al-Hamid, 2007). Harju (2023) identified inadequate teacher training and qualification as a major issue affecting the effectiveness of

kindergartens. Similarly, Abd Almotolib (2014) reported a lack of motor activity applications and appropriate educational resources among kindergarten teachers in their age group.

In a similar vein, Lamma (2022) found that kindergarten teachers commonly encounter challenges related to salaries, financial incentives, and training in educational programmes. Abbad (2021) identified obstacles that hinder kindergarten teachers' ability to foster social interaction skills among children in Riyadh. These obstacles include the heavy teaching workload for female teachers, inadequate material incentives for distinguished teachers to carry out social activities, and the limited authority granted to female teachers in organizing voluntary activities related to social interaction skills.

The inadequacy of educational programmes and teaching aids is a significant factor contributing to parental hesitation about enrolling children in kindergarten. This hesitation is often linked to the shortcomings of the educational programmes offered in kindergartens (Al-Ablani, 2019). Al-Kathiri (2016) found that the challenges in developing kindergarten curricula include reliance on traditional teaching methods and outdated reading and writing curricula, which do not align with current scientific and educational advancements. Kindergarten enrollment rates in Saudi Arabia have experienced notable growth in recent years, indicating an increasing acknowledgment of the significance of early childhood education. Research on the specific effects of kindergarten care on the social and cognitive development of Saudi Arabian and international children is limited.

LITERATURE

Do parents make prudent choices by enrolling their children in kindergarten? During the 19th century, economic and social changes led to the establishment of kindergartens in response to the demands of working parents. The kindergarten system underwent centralization in the twentieth century, particularly in socialist countries. Parents commonly believe that enrolling their children in kindergarten is an effective means of preparing them for school and enhancing their communication and social abilities, which contribute to their overall personality development. Consequently, there has been an increase in the availability of nurseries and childcare centers (Al-Saud, 2020). One may wonder if the kindergarten meets expectations. Kindergarten proponents prioritize their children's well-being and desire equal opportunities for their development. They also emphasize the importance of fostering social, cognitive, and moral growth. Some individuals argue that avoiding the adverse consequences of kindergarten is important for their children. They question how parents can place their trust in unfamiliar individuals and rely more on kindergarten carers than on themselves.

According to Bjorklund and Causey (2022), sending children to kindergarten can be seen as a means for parents to evade their child-rearing obligations. Jalongo (in Mykhailytska, 2016) suggested that parents enroll their children in kindergarten due to the expectation that professionals will provide comprehensive care and meet their children's needs. In contrast, Kostelnik et al. (2014) argue that skipping kindergarten should be considered only if parents possess the necessary competence to ensure well-rounded and inclusive development for their children. Berk suggested that if parents are unable to provide adequate care for their children due to limited competence and time, enrolling them in kindergarten is the most suitable alternative. Communication psychologists have demonstrated that kindergarten provides a favorable setting for the cultivation of social skills in children, enabling them to engage in interactions with their peers. Furthermore, researchers have shown that evaluating the social and emotional abilities of children during their kindergarten years is beneficial for identifying their preparedness to handle social challenges and emotional issues. This underscores the importance of early intervention (Berk, 2015).

The early enrollment of children in kindergarten has long been a topic of controversy. There are two distinct bodies of research that either support or challenge the impact of kindergarten. Numerous studies indicate that parents and teachers perceive nursery schools to improve their social and academic abilities prior to formal education (Mykhailytska, 2016; Vandell et al., 2010). On the other hand, some people who have a partial attachment theory influence have expressed concern about the potential drawbacks of extensive nonmaternal care, particularly when it starts early. They argue that this may disrupt attachment bonds and give rise to behaviors that could pose challenges (Berk, 2015). According to Magnuson et al. (2007), kindergarten has a positive impact on children's reading and math scores when they start school. However, it is also associated with an increase in classroom misbehavior. Prior research has indicated that the initial academic advantages observed in kindergarten diminish over time as peers gradually reach similar levels of achievement. These benefits are typically observed only during the first year or two of elementary school (Abbad, 2021; Kostelnik et al., 2014; Lamma, 2022; Mykhailytska, 2016).

Some researchers argue against the effectiveness of kindergarten education. Multiple studies have shown that the advantages of early schooling extend beyond preschool years. Singh (2007) found that participation in a "well-run" kindergarten programme decreases the probability of academic failure. However, he stressed that early education interventions alone are insufficient for preventing later school dropout or narrowing the achievement gap among different social classes. Certain types of early childhood education can enhance a child's social and intellectual development while also bringing joy to both the mother and the child. Without ongoing reinforcement in primary school or at home, kindergarten instruction alone does not have a significant long-term impact

on later academic ability (p. 4). Zigler et al. (2006) found that federal early intervention, state-funded kindergartens, and high-quality childcare have an impact on children's cognitive development.

Enrolling children in kindergarten is an efficacious method for facilitating their readiness for formal education. A study conducted in Ireland examined the effects of kindergarten on more than 700 children. The findings indicate that kindergarten positively influences academic achievement and enhances learning outcomes. Specifically, the acquisition of reading, writing, and mathematical skills in kindergarten contributes to the development of essential abilities, facilitating a smoother transition to first-grade studies and aiding in adjustment to the school environment (Gootman & Smolensky, 2003). Supporters of alternative homeschooling argue that kindergarten can have negative consequences. The prevalence of adverse transformations experienced by children in kindergarten is a matter of significant concern.

A study conducted in the U.S. National Institute of Child Health and Human Development (2023) showed that kindergarten attendance is associated with an increased likelihood of experiencing behavioral problems in children. The report suggested that children benefit from interacting with their peers, as it helps develop communication skills, interaction, and teamwork. However, it also highlights potential negative effects, such as increased stress, aggression, and restricted behavior, which may lead to health problems associated with stress. Maintaining a conducive learning environment at home for children can be challenging. However, the environment in kindergartens differs from the desired environment. Spodek and Saracho (2012) stated that increased time spent in kindergartens is associated with decreased levels of social competence in children.

METHOD

Methodology

Mothers and teachers were interviewed using semistructured interview questions in written Arabic, and their responses were subsequently recorded in Arabic. The responses were conveyed through a combination of written messages and audio recordings via the WhatsApp platform. The responses were encoded and transcribed. The data were analyzed in English, and precautions were taken to ensure the preservation of meaning during translation. The data processing and coding process involved the independent work of two coders. After completion, the categories of responses and discrepancies were thoroughly discussed. After reaching a consensus, a third coder with a general understanding of the main subject and fields of study coded some randomly chosen data. The calculated Cohen's kappa, a measure of internal reliability in qualitative research with nominal coding, indicates an acceptable level of reliability for this study (88%).

According to Cohen et al. (2002), the level of agreement exceeds the acceptable threshold of 0.70. Every participant in the study was diligently located and invited to participate in the interviews. All participants were informed about the objectives and extent of the study. Upon receiving guarantees from the researcher regarding the confidentiality of their responses and the overall dissemination of results, the remaining participants provided their consent to participate in the interview process. The researcher employed Dudovskiy's qualitative data analysis approach to scrutinize the data for recurring themes or patterns that aligned with the study's objective. The study data were analyzed using Nvivo version 12 coding. The data were collected through semistructured interviews, interviewer observations, and the documentation of notes during the interview process. In vivo coding was employed to conduct the coding procedure, leading to the development of categories and their respective codes. Classical content analysis involved analyzing and coding specific sections of collected material to examine the data. The codes were then grouped together based on similarities. The coding process ensured comprehensive code acquisition and maintained content differentiation between coders.

Population and Sampling

The number of children in the original community reached 3387 in the government sector, at a rate of 51.33% of the total number in the original community, and their number reached 2806 in the private sector, or 42.51% of the total number in the original community, while their number reached 408 or 6018 from the original community (Eastern Province Education Department, 2023). The study sample consisted of 302 children. There were 40 female teachers (n = 20 working in public kindergartens, 12 working in private kindergartens, and 8 working in international kindergartens). The study included children aged 5 years and 11 months to 7 years, distributed by type according to Table 1.

Table 1: Characteristics of the Study Sample.

Kindergarten type	Teacher numbers	Boys	Girls	Total
Public	20	60	66	142
Private	12	42	45	99
International	8	24	30	61
Mother's education level	Illiterate/primary	Intermediate/Secondary	University	master's degree+
	70	120	88	24
Family's economic status	low	middle	high	
	72	150	80	

Instruments

The Cognitive Abilities Test: The CogAt is a group test created by Robert Thorndike and Elizabeth Hagen that is grounded in the theory of fluid and crystallized abilities. CogAt conducted a K-12 assessment that utilized verbal, quantitative, and nonverbal test items to evaluate students' acquired reasoning and problem-solving skills. In contrast to the SAT, the CogAt assesses cognitive skills associated with academic success rather than measuring acquired knowledge (Thorndike & Hagen, 1997). The CogAt comprises three subtests: verbal, quantitative, and nonverbal. The verbal test, which includes 20 items, assesses verbal reasoning abilities, while the oral vocabulary test measures the same. Deductive reasoning is employed through extrapolating a rule and assessing verbal comprehension, along with abstract reasoning abilities.

On the other hand, oral vocabulary reflects a child's general vocabulary size, is unrelated to education and is derived from life experiences. The second quantitative test, comprising 20 items, assesses deductive and inductive reasoning skills related to quantitative relations. Additionally, the NRS evaluates numerical cognitive ability and numerical proficiency. The nonverbal test assesses fluid abilities related to information acquisition, organization, and retention. It consists of 15 items that measure matrices, which aid in reasoning, monitoring relationships, and analyzing problems. The cognitive abilities test is administered to children during the second semester to assess their acquisition of knowledge. To maintain effective control over the administration of the test, it is conducted in small groups consisting of 8–10 children. Each child is provided with an individual test to respond to directly (Aboud et al., 2014).

Cognitive ability test difficulty level: The test quality was assessed using coefficients specific to each subtest, which ranged from 40 to 60%. The factor analysis approach was employed to confirm the presence of three elements in the verbal, quantitative, and nonverbal tests. This approach was also used to evaluate the validity of the tests. The stability and reliability of the test were assessed using the Kuder–Richardson method and the split-half method. The stability coefficients ranged from 0.78 to 0.96, while the reliability coefficients ranged from 0.76 to 0.9.

Social Skills Scale (SSS)

Social competence is a topic that has attracted considerable attention from researchers in the field of childhood development. The growing interest in this topic is due to research findings that highlight the various personal, cognitive, and mental advantages that children gain from acquiring effective social skills. Anme (2013) developed the Social Skills Scale (SSS) to evaluate the social competence of children. The purpose of its development was to evaluate the interactions among kindergarten instructors by observing the interactions that are accessible

to children who are under the age of 8. The SSS assesses social competence through a set of 24 questions. Teachers determine the scale based on their expertise and understanding of the students under their supervision.

Therefore, it is advisable to perform the assessment during the latter half of the academic year to ensure ample opportunity for a thorough evaluation of children's social growth in collaboration with their educators. Each item is assessed using subscales, with responses recorded as 1 (yes), 0 (no), or uncertain. The cumulative total of all the items on the subscale yields the overall score. A higher score signifies an elevated degree of social proficiency. Prior research has classified social competence into three fundamental dimensions: cooperation (consisting of 8 items), self-control (consisting of 8 items), and assertion (consisting of 8 items). A higher score signifies an elevated degree of social competency.

Scale's Validity and Reliability

The maximum-likelihood rotation approach was utilized to conduct factor analysis. A principal component factor analysis was also conducted to assess the structure of the SSS factor. The data were analyzed using the SPSS-23 Statistical Analysis System programme. Table 1 displays the standardized regression coefficients for the factorial style matrix in the SSS. The Holting Varmix rotation method was employed to conduct principal component factor analysis (PCA) on a set of 24 items. The Kaiser–Meyer–Olkin (KMO) scale was used to assess the adequacy of the sample for analysis. The obtained KMO value of 0.93 was found to be statistically significant at the 0.001 level. The KMO values for all elements exceeding 0.88 were within the acceptable limit of 0.5.

A preliminary analysis was conducted to calculate the eigenvalues for each factor in the dataset. Three factors met the Kaiser criterion (1) and collectively accounted for 81.15% of the variance. Clustering of the clauses around specific factors suggested that the first factor represented "cooperation" with eight clauses, the second factor represented "restraint" with eight items, and the third factor represented "emphasis" with eight items. The three dimensions extracted align with previous research on social competence (i.e., cooperation, self-control, and assertiveness). A summary of the exploratory factor analysis of the SSS is provided in appendix 1. The Cronbach's alpha coefficients for cooperation, self-control, and assertiveness were 0.91, 0.93, and 0.93, respectively.

Procedures

In the kindergarten classrooms, students were administered the CogAt test and SSS scale during class time. The researcher announced the study's purpose. The duration of the study measures for each child was approximately 20 minutes. The response rate for the measures given in class was 98%, with only a small number

of teachers declining to participate. The study participants, who were teachers, were instructed to allocate sufficient time to complete the survey. Emails containing open-ended questions were sent to the mothers of the children. Of the total of 302 mothers who were provided with open-ended questions, only 250 responded.

RESULTS

Is there a statistically significant correlation between kindergarteners' cognitive skills and their social skills?

The Pearson correlation coefficient was computed to examine the relationship between children's scores on the cognitive abilities test and their scores on the social skills scale. The correlation coefficients are presented in Table 2.

Table 2: How Kindergarteners' Social and Cognitive Abilities Relate to One Another.

	Cooperation	Self-Control	Assertiveness	Total
Verbal test	.474**	.731**	.171**	.833**
	.000	.000	.005	.000
	.268	.268	.268	.268
Quantitative test	.497**	.715**	.561**	.832**
	.000	.000	.010	.000
	.268	.268	.268	.268
Nonverbal test	.483**	.753**	.419**	.840**
	.000	.000	.015	.000
	.268	.268	.268	.268
Total	.490**	.738**	.602**	.842**
	.000	.000	.009	.000
	.268	.268	.268	.268

This study demonstrated a strong positive correlation between the cognitive abilities of kindergarten children and their social skills. The correlation coefficient between the total scores of both tests was 0.84. Additionally, high correlation coefficients were observed between the subtests of the cognitive abilities test and the social skills scale. The correlation coefficients between the verbal cognitive test score and the total score for the social skills scale, the quantitative cognitive test, and the nonverbal subtest were all significant at a level less than 0.01. The correlation coefficients were 0.83 for the verbal cognitive test, 0.83 for the quantitative cognitive test, and 0.84 for the nonverbal subtest. This finding suggested that there was a positive correlation between high cognitive ability and the development of high social skills. In contrast, the correlation coefficients between the subtests of the cognitive abilities test and the three subscales of the social skills scale were lower than the correlations observed between the total scores of the abilities test and the total score of the social skills scale. The scores varied from good to acceptable and were statistically significant at a level of 0.05.

Can the Results of a Cognitive Ability Test Be Used to Predict A Child's Social Skills?

The study examined the relationship between social skills (cooperation, self-control, and assertiveness) as the dependent variable and cognitive abilities as the independent variable. Multiple regression coefficients were calculated using the stepwise method. Multiple regression analysis revealed that the coefficient of determination, also known as the R², was 0.545 for the first factor, namely, cooperation. This indicates that this variable accounted for 54% of the total variation in the dependent variable (cognitive abilities). The coefficient of determination for the second factor, self-control, was calculated. The given value is 0.681. This explanation accounted for 68% of the total variation in the dependent variable's degree.

In contrast, the coefficient of determination for the third factor was confirmed to be 0.735. The interpretation explained 74% of the total variation in the dependent variable, indicating that the three variables accounted for a sizable portion of the variation. Figure 1 displays regression variable plots illustrating the significant impact of cognitive ability factors (verbal, quantitative, and nonverbal) on the dependent variable and its three variables. The significance level for these impacts is less than 0.001. Table 3 presents the multiple regression coefficients, including the beta coefficient (t), the beta coefficient's value (B), their standard errors, and their statistical significance. Table 3 demonstrates that the independent variable, cognitive ability, has a statistically significant impact.

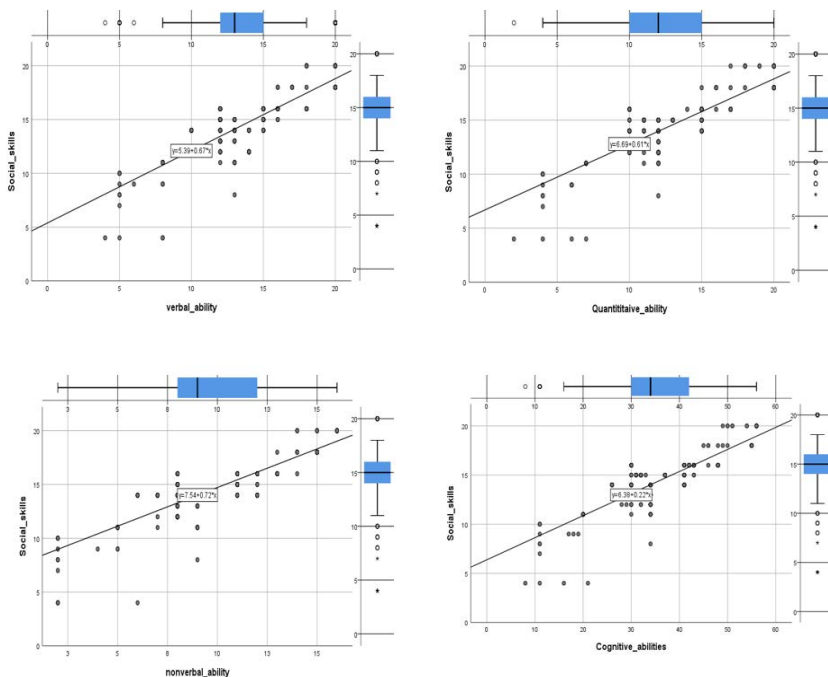


Figure 1. Regression variable plots

Table 3: Multiple regression coefficients.

	Model	Non-Standard Regression Coefficients B	Std. Error	Standard Regression Coefficients Beta	t	Sig
1	Constant	14.511	1.310		11.079	.000
	Self- control (constant)	4.880 4.198	.273 1.464	.738	17.855 2.867	.000 .004
2	Self- control (Constant)	4.458 -10.116	.233 2.364	.675 .375	19.170 -4.279	.000 .000
	Cooperation	2.237	.210		10.646	.000
3	Self-control	3.714	.235	.562	15.787	.000
	Cooperation	3.316	.242	.555	13.722	.000
	Assertiveness	2.525	.344	.304	7.343	.000

Table 3 displays the correlation coefficients for the dimensions of cooperation, self-control, and assertiveness, which are 0.74, 0.83, and 0.86, respectively. These dimensions accounted for 74%, 83%, and 86% of the differences in cognitive ability, respectively, leaving the remaining percentage of differences attributed to other factors. Additional characteristics show how well the independent variable—a child's cognitive abilities—predicts his or her social skills in kindergarten, sig> 0.000. This finding proved that children with strong cognitive abilities also have strong social skills.

Are there statistically significant differences in the cognitive abilities and social skills of kindergarten children in the Eastern Province governorate based on the variables (gender, type of kindergarten, mother's level of education, and the economic level of the family)?

A factorial design (4 × 3) was used to investigate the impact of the independent variables on the Social Skills Scale score, including three dimensions and the total score, as well as the cognitive abilities test score, which included three tests and a total score. The multivariate analysis of variance (MANOVA) method was utilized for this purpose. Table 4 presents an explanation of the effects resulting from variations between the CogAt and SSS tests, which can be attributed to independent variables such as gender, type of kindergarten, economic status, and mother's education.

Table 4: Tests of Between-Subjects Effects According to Study Variables.

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	Cooperation	72.000	1	72.000	39.461	.000
	Self-control	60.22	2	33.22	44.25	.000
	Assertiveness	.781	1	.781	.629	.428
	Total	148.781	1	148.781	61.137	.000
	Verbal test	357.781	1	357.781	87.664	.000
	Quantitative test	325.125	1	325.125	58.790	.000
	Nonverbal test	180.500	1	180.500	43.621	.000
	Total	2538.281	1	2538.281	64.165	.000
	Cooperation	58.629	2	29.314	16.066	.000
	Self-control	60.152	2	30.076	48.170	.000
Kindergarten type	Assertiveness	94.514	2	47.257	38.044	.000
	Total	89.943	2	44.971	18.480	.000
	Verbal test	133.271	2	66.636	16.327	.000
	Quantitative test	74.148	2	37.074	6.704	.001
	Nonverbal test	45.738	2	22.869	5.527	.004
	Total	701.387	2	350.693	8.865	.000
	Cooperation	196.516	2	98.258	53.852	.000
	Self-control	158.604	2	79.302	127.009	.000
	Assertiveness	20.118	2	10.059	8.098	.000
	Total	748.254	2	374.127	153.736	.000
Economic status	Verbal test	845.420	2	422.710	103.573	.000
	Quantitative test	948.569	2	474.284	85.761	.000
	Nonverbal test	701.752	2	350.876	84.795	.000
	Total	7426.910	2	3713.455	93.872	.000
	Cooperation	45.247	3	15.082	8.266	.000
	Self-control	239.570	3	79.857	127.898	.000
	Assertiveness	45.044	3	15.015	12.087	.000
	Total	497.924	3	165.975	68.202	.000
	Verbal test	467.777	3	155.926	38.205	.000
	Quantitative test	651.207	3	217.069	39.251	.000
Mother's education	Nonverbal test	493.150	3	164.383	39.726	.000
	Total	4768.619	3	1589.540	40.182	.000

Table 4 displays significant differences in the CogAt and SSS scores, which can be attributed to the independent variables (gender, type of kindergarten, economic status, and mother's education). Specifically, the sex variable had a Wilks's lambda value of 0.537, with an F statistic of 31.12 and a p value less than 0.001. Females demonstrated higher mean scores than males did for both the

cooperation and self-control dimensions, as measured by the SSS; however, no gender disparities were observed in the assertiveness subscale. On average, girls outperformed boys on the CogAt verbal test. Boys demonstrated superior performance compared to girls in both nonverbal and quantitative tests. The Wilks's lambda value for the kindergarten type was 0.464 ($F(16.94)$, $p < 0.001$).

Children attending international kindergartens demonstrated superior performance compared to their peers in private and public kindergartens across all subscales of the SSS. Compared with international and public kindergartens, private kindergartens presented greater mean differences in children's scores on quantitative and nonverbal tests. No significant disparities were found in verbal test performance between children attending public and private kindergartens. However, students enrolled in international kindergartens demonstrated superior performance compared to their peers in public kindergartens. Wilks's lambda for the economic type was 0.22, $F(4.96)$, and $p < 0.001$. The results indicate that children from middle-income families scored higher than children from low-income families did in terms of assertiveness.

Additionally, children from high-income families scored higher than children from both low- and middle-income families did in terms of cooperation and self-control. Furthermore, no disparities were observed between children hailing from affluent and disadvantaged households. Children from high-income households outperformed their peers from average- and low-income families on all subtests of the CogAt assessment. Children from families with average incomes outperformed their peers from lower-income households on the quantitative and verbal subtests. However, it should be noted that additional differences were observed between the two groups of children. Finally, Wilks's lambda for mothers' education level was 0.215 ($F=24.84$, $p < 0.001$). Maternal educational backgrounds have an impact on the social and cognitive development of children. Mothers with higher academic degrees have greater influence on social skills than mothers with lower education levels. CogAt tests produced consistent results.

Analysis of the Open-Ended Question

The study utilized the Mayring (1994) inductive category formation method to systematically analyze qualitative data obtained from open-ended questions. The method involved creating initial categories based on the research findings, which were later adjusted based on the interpretation of the preliminary data. The data in these broad categories were used to develop inductive categories. These categories were subsequently condensed and refined before being reintegrated into the original broad categories. Subsequently, the revised framework was employed to analyze the complete dataset.

Are You Satisfied with the Overall Quality of Your Child’s Kindergarten Experience?

The themes and subthemes of the mothers’ answers are displayed in Table 5.

Table 5: Themes and Sub-Themes Mothers’ Responses.

Question	Theme	Sub-Themes
Are you satisfied with the overall quality of your child’s kindergarten experience?	Satisfied 30%	<ul style="list-style-type: none"> - Prepare the child for school. - developing healthy behaviors to maintain public health. - Develop the ability to use tools properly and safely.
	Not satisfied 70%	<ul style="list-style-type: none"> - Difficulty communicating with the kindergarten administration. - Poor qualification of teachers. - There are not enough entertainment and play places for children. - There are no attractive teaching aids. - Private and international kindergarten fees are high compared to the services provided. - The child’s presence in kindergarten is short and does not serve the working mother for longer hours than the child’s presence in kindergarten. - There is no attention to the emotional aspects of the child.

Do You Think Kindergarten Supports Your Child’s Social Development?

The themes and subthemes of the mothers’ answers are displayed in Table 6.

Table 6: Themes and Sub-Themes Mothers’ Responses.

Question	Theme	Sub-Themes
Do you think kindergarten teachers support your child’s social development?	support child’s social development 33%	<ul style="list-style-type: none"> - Developing the child’s ability to self-regulate his behavior and control his emotions. - The child accustoms himself to an organized and ordered life. - Developing positive attitudes toward family members and society. - child cooperates with others in group activities. - the child follows rules and instructions. - the child shares toys or other belongings with others.
	Didn’t support child’s social development 67%	<ul style="list-style-type: none"> - There is no attention to the emotional aspects of the child. - Kindergarten increases behaviors such as selfishness and bullying. - Increase selfishness and love Self. - Increase aggression behaviours.

Do You Think Kindergarten Supports Your Child’s Cognitive Development?

The themes and subthemes of the mothers’ answers are displayed in Table 7.

Table 7: Themes and Sub-Themes Mothers’ Responses.

Question	Theme	Sub-Themes
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Do you think kindergarten teachers support your child's cognitive development?	support child's social development 33%	The child understands the spoken language. Child express themselves verbally. Child recognizes and names the letters of the alphabet. Child count numbers up to 10.
	Didn't support child's social development 67%	There is no attention to the emotional aspects of the child. The development of the cognitive as well as the skill and affective components at the same time is not desired. Using the same curricula used in the first grade of primary school in kindergarten.

DISCUSSION

The study's findings revealed a strong and positive correlation between the cognitive abilities of kindergarten children and their social skills. This finding suggests that children with advanced cognitive abilities also exhibit advanced social skills as their abilities develop (Bjorklund & Causey, 2022). Multiple studies, including those conducted by Magnuson et al. (2007) and Loeb et al. (2004), support these findings. Magnuson et al. (2007) found that prekindergarten children displayed superior reading and math abilities compared to their nonkindergarten peers when they started school. However, they also exhibited more behavioral issues. In contrast, numerous studies have presented findings that contradict this notion. A study by Santos et al. (2021) demonstrated that personal, social, and emotional development has a significant impact on language and mathematics, with social development also influencing cognitive development.

A study conducted by Aleksić et al. (2019) reached a similar conclusion, highlighting the interconnections among children's socioemotional skills, behavior, mathematical proficiency, and literacy. A study conducted by Loeb et al. (2004) analyzed different childcare settings and their impact on the cognitive and social abilities of kindergarten students. The results of this study aligned with previous research findings. However, it was noted that by the second semester of the first grade, the impact of academic skills had significantly diminished, while the behavioral effects remained. Barakat (2019) conducted a longitudinal study on early childhood data and revealed that kindergarten has a positive impact on students' reading and arithmetic scores but potentially has a negative effect on their social and behavioral skills. Lowering the starting age of kindergarten education amplifies the negative behavioral effects.

However, the impact of distress is contingent upon factors such as household income and gender. According to Abbad (2021), kindergartens often prioritize the cognitive development of children, overlooking the importance of their social and emotional growth. This imbalance can lead to deficiencies in communication and social interaction skills, which are crucial for effective learning and building positive relationships with others. The presence of others, along with the child's limited social skills, contributes to the high occurrence of aggressive behavior and a lack of self-control. These factors ultimately result in

social isolation and hinder the child's ability to express themselves and share personal information (Wang et al., 2021).

The strong correlation between the cognitive abilities test and the social skills scale allowed us to examine how well the cognitive abilities test predicts a child's social skills in kindergarten. This was done by analyzing the verbal, quantitative, and nonverbal tests of cognitive ability alongside the measures of cooperation, self-control, and assertiveness on the Social Skills Scale. It can be inferred that children who possess advanced cognitive abilities also exhibit strong social skills. If kindergarten can enhance children's cognitive abilities, it can also have a positive impact on their social skills.

The implications of this research suggest that focusing on the development of active social skills in kindergarteners can have a positive impact on various aspects of their growth. These include enhancing their cooperation skills, self-control skills, and self-affirmation, which in turn can contribute to their personal, academic, and cognitive-mental development. Considering these circumstances, it is necessary to focus on enhancing cognitive abilities to improve the skills and social competence of children. This is particularly important given the growing number of children displaying impulsive behaviors and struggling with social adaptation. Therefore, it is crucial to provide education and create suitable environments that foster positive social behaviors in these children.

On average, girls performed better on the verbal component of the CogAt than boys did. According to both the nonverbal and quantitative tests, boys outperformed girls. For the cognitive abilities test, there were differences in the quantitative and nonverbal tests, as well as in the total score of the test, which was also in favor of males. Generally, the theoretical literature confirms the similarity of the development of cognitive abilities in early childhood due to the limited environmental and family influences that differentiate between the sexes (Thorndike & Hagen, 1997). Extensive discussions have taken place regarding gender effects in the psychological and neuropsychological literature, as well as gender differences in cognitive abilities.

There are two important differences that are often observed in the cognitive abilities of males and females: (1) girls tend to exhibit greater verbal skills than boys, whereas (2) boys tend to excel in spatial skills than girls (Ansari & Winsler, 2016). Piske and Steinlen (2022) suggested that nonverbal cognitive tests, specifically the cognitive abilities test, have not yielded comparable findings. Boys and girls generally achieve comparable results. Girls outperformed boys on the SSS's cooperation and self-control dimensions, while no gender differences were observed on the assertiveness subscale. According to Semrud-Clikeman (2007), there are gender differences in social skills during the kindergarten years, with boys displaying more effective social skills than girls. They can easily engage and participate in activities together.

The study examined the influence of different types of kindergartens (public, private, and international) on children's cognitive abilities. The findings

revealed a positive correlation between the type of kindergarten and children's cognitive development. The findings in Duncan (2003) provide evidence for a positive correlation between the type of childcare and cognitive and academic abilities. The study's findings oppose those of Rumberger and Tran's (2006) study, which indicated no significant statistical effects of kindergarten type on children's cognitive or behavioral abilities. The mean differences in children's performance on quantitative and nonverbal tests were greater in private kindergartens than in international and public kindergartens.

A study conducted by Ansari and Winsler (2016) revealed varying outcomes, indicating that children enrolled in public kindergarten exhibited superior cognitive abilities in comparison to their peers attending different types of childcare centers. However, it is worth noting that children attending international kindergartens outperformed their counterparts in public kindergartens on the verbal test. Interestingly, there were no discernible differences in performance between children in public and private kindergartens on this test. The findings indicate that different types of childcare have a positive impact on the social skills of children attending international kindergartens. These children outperformed their peers in private and public settings across all subscales of the SSS.

Based on the findings, it is evident that children from high-income families outperformed their peers in both the low- and middle-income groups in terms of cooperation and self-control. Additionally, children from middle-income families scored higher than did their counterparts from low-income families on the assertiveness subtest. There were no discernible disparities observed among children from high- or low-income families. With respect to CogAt, children from higher economic backgrounds consistently achieved higher scores on all CogAt subtests than children from average and lower economic backgrounds did.

Additional distinctions were observed among children from economically advantaged backgrounds who outperformed their peers from disadvantaged families on the quantitative and verbal subtests. These findings are consistent with research by Loeb et al. (2007) showing that kindergarten attendance has a positive effect on the cognitive development and school readiness of young children from low-income families. The results of this study are consistent with the findings of Bridges et al. (2004), who showed that there are comparable differences in early learning outcomes between children from poor and affluent families.

Upon entering kindergarten, children often lag behind their middle-class peers by several months in terms of prereading and premath skills. The disparity between the poorest and richest children nearly triples in magnitude (Magnuson et al., 2007). Parents must do more than just have financial resources; they need to provide their children with access to a diverse and enriching environment, open doors for them to seize opportunities for skill development and dedicate more time to teaching children through cognitive stimulation. In addition, it is crucial that every child has access to and receives equal opportunities for care and attention

(Awan & Hassan, 2020).

The findings demonstrated the influence of a mother's educational attainment on the social and cognitive development of her children. The educational attainment of a mother has a profound and enduring influence on the development and well-being of her offspring. Families in which a woman has obtained a college degree tend to earn higher median wages and are more likely to have parents in stable employment than families with less educated parents (Drake et al., 2014). Children are more likely to achieve academic success when they are raised in a stable and financially secure environment. Research indicates that students in the eighth grade whose mothers have a college education tend to achieve higher scores in both reading and math than do their peers with parents who have lower education levels. High school education or beyond can serve as a reliable indicator of children's academic performance and learning ability (Jackson et al., 2017).

Similarly, Awan and Hassan (2020) conducted a study investigating the correlation between parents' educational attainment and children's academic success. In his book "Maximizing Intelligence," Armor (2017) observed that numerous studies have found a strong correlation between a child's IQ or academic success and his or her education. A mother's level of education has a significant correlation with IQ or achievement, surpassing other socioeconomic indicators such as income or family position. According to research by Awan and Hassan (2020), a mother's level of education influences the educational outcomes and beliefs of her children.

The findings from the qualitative analysis of the open-ended questions asked of the mothers of these children did not strongly align with the quantitative analysis. The quantitative analysis suggested a correlation between cognitive abilities and kindergarten students' reported social skills as well as the predictive value of cognitive abilities for these social skills. In response to the initial open-ended inquiry, it appears that mothers expressed a certain level of dissatisfaction with the extent to which kindergarten aided their children's social development. Comments such as "My child did not cooperate with others in group activities," "My child did not share toys or other belongings with others because he went to kindergarten," or "My child did not peacefully resolve conflicts with others" expressed their displeasure and dissatisfaction.

The mothers were surveyed about the impact of kindergarten on their children's academic skills. A significant number of respondents recognized that kindergarten had a positive effect on their children's spelling, counting, and letter-writing abilities. Several mothers observed that most kindergarten children still adhered to the same curriculum as first graders; however, this left the majority of them feeling let down. Many parents express concerns that their children may find school boring, as they have already completed the same curriculum in first grade. There is a perception among certain individuals who kindergarten may not sufficiently equip children for future academic achievements.

CONCLUSION

Kindergartens in Saudi Arabia are gaining recognition for their ability to enhance children's academic performance and cognitive growth. Although the level of care in kindergarten can be demanding, it has proven to be advantageous for children from low-income backgrounds. A study revealed a significant link between children's cognitive abilities and their social skills, suggesting that kindergarten performance can serve as an indicator of future social skills. The study utilized a representative sample of Saudi children residing in the Eastern Province Governorate. Various factors, including sex, type of care, and family income, were investigated. Mothers were dissatisfied with the impact of kindergarten on their children's development.

LIMITATIONS AND FUTURE DIRECTIONS

This study has several limitations. Given that our samples included children from the Eastern Province Governorate, it is unclear how widely the current findings can be generalized to other age groups. Further research is necessary to ensure the appropriate use of scales with different groups. The data were collected exclusively in the Eastern Region during the autumn of 2023. Moreover, the extent of the applicability of the current findings to the entire Saudi environment remains uncertain.

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