

Research

# A Study between the Routine Training and Cognition among Children: Mediator Role of Social Ability

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**Abstract:** This study seeks toward examining the relationship between routine training and cognition among children. What factors have influenced children's cognitive abilities? Academia often initiates discussions on this, and research on young children's cognitive abilities is endless. This study uses 300 Taiwanese infant families as a sample to investigate the routine training children receive at home. Conventional training includes attitude training and behavior training and uses infants' social abilities as intermediary variables to explore routine training, infants' social abilities, and cognition of the relationship between capabilities. Through a regression analysis of the three, it is found that conventional attitude training has a direct impact on children's cognitive abilities; when social abilities are added, the impact of attitude training becomes insignificant, while the impact of social abilities on cognitive abilities becomes significant; Conventional attitudes and behavioral training have a significant impact on social abilities. It can be found that when social abilities are added, conventional attitude and behavior training have an indirect impact on cognitive abilities through social abilities.

**Keywords:** Social ability, Routine training, Cognitive ability

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## Introduction

In recent years, many researchers have devoted themselves to studying what factors affect children's cognitive ability and have found many positive results. Higher maternal status, childcare enrollment and fewer T.V. viewing, non-smoking during pregnancy and breastfeeding, and maternal engagement in family life are protective factors of

infant development at 4 years of age (Mariza Kampouri et al., 2018), Grandparental participation was correlated with better cognitive and socio-emotional results in children (Antti O. Tanskanen & Mirkka Danielsbacka, 2018). But studies suggest that the effect of socioeconomic status (SES) on the heritability of cognitive ability may not be universal, as it has mostly been demonstrated in the United States, but not in other Western nations. (Marion Spengler 2018). Although there are many studies on children's cognitive abilities, there are few studies on children's family routine training and social effects on cognitive ability.

Cognitive ability is extremely important for children and is influenced by many factors such as the level of Education of parents, family economic level, and family structure. Does the routine training of the family have an impact on children's cognitive ability? What about children's social skills? Does part of the impact affect children's cognitive ability through social competence as a mediator?

Based on the above considerations, this study used 300 kindergarten Taiwanese students as samples and carried out a hierarchical regression analysis. The researchers used routine family training, including attitude training and behavioral training, family background, and social ability as mediators. These factors are used to clarify the mechanisms by which routine family training affects children's cognitive and social abilities. Hopefully, this investigation will fill in the gaps in current research on the factors affecting children's cognitive ability, so that we can better understand the relationship between family routine training, social ability, and cognitive ability.

### Research Question

1. What are the estimates on the social ability of kindergarten children on routine training?
2. What are the estimates on the cognitive ability of kindergarten children on routine training?

### Literature Review

The extant literature concerning endogenous and exogenous sources of influence on cognitive development is rich. These researches on children's cognition started from infancy, and some even extend to children at the age of fourteen or five. History Children born before full term (39-41 weeks of gestation) are at greater risk of negative developmental consequences. Poorer consequences extend into maturity (Chan, E2016). Contemporary psychological theories conceptualize human beings as information processors, and information processing starts at birth Efforts to make sense of their world and take knowledge over it in infants ( (Davis & Anderson,2001).In addition, One way to access information processing in infants is through habituation (Bornstein, 1985).

This is similar to the point that these studies will prove. Individual differences in information processing account for variation in cognition (Davis & Anderson,2001). And cognitive deficits are associated with early neglect (Hanson, Jamie2013). According to (Mandasari 2017) in executing the task of educating students, teachers have an important part and duty to ensure that the teaching and learning process is well established. Research also suggests that disruptions early in life may interfere with the development of more general cognitive skills that are the foundation of higher-order cognitive processes so an environmental deficit in early development is especially detrimental (Fox, Levitt, & Nelson2010).

However, few research efforts have incorporated multiple factors simultaneously to identify their independent and interdependent effects. At this point, the trainer, and other students (social) can interrupt and correct errors such as cogitative activities (Liu & Ding, 2009). Thus, the unique and combined contributions that each source may make to development are essentially unexplored, and the influence of different influencing factors overlapping with other influencing factors remains unknown. Chesler and Fox (1966) Students' routine is assessed based on their social and

cognitive control, their ability to understand concepts, and their participation and strategies used to communicate with others (Zaidi, Rani & Rahman, 2017).

Herein, we evaluated a systems model of hypothesized relations among factors deriving from child routine training, social ability, and cognitive ability. We assume that the regular training children receive in the family has an impact on the children's cognitive and social abilities, the children's social abilities have an impact on cognitive abilities, and the impact of regular training on children's cognitive abilities may influence.

### **Research Design of the Study**

The description of the research subject describes the form of research (experimental, survey, co - relational, semi-experimental, review) and also its subtype (experimental nature, research issue, descriptive case-study). The design of the research is a proposal for implementation of an (Amin, 2014). It is a master plan that describes the processes and techniques used to collect and analyze the knowledge that is required. (While, 1961) Suggested that research design is planning various phases and methods relevant to study effort formulation, (Burger, 1988) observed that research design is a guide to analytical intervention that eliminates time and cost during the evaluation.

The research design for this study will be a descriptive survey research method. Orodho (2005 & 2008) defines a research design as a method, outline, or plan that is used to generate answers to research problems. The research design is considered suitable for the study because according to the Kothari survey (1995) conditions occur, are identified, documented, evaluated, and published. A quantitative study with a descriptive survey method research design aims to find relationships between independent and dependent variables after an action has already occurred (Md Mirajur Rhaman Shaoan et al, 2021). In descriptive survey research, the researchers seek to define if the outcome is affected by the independent variable. In such research, a comparison can be made between two or more groups (Salkind, 2010).

The characteristics of the design are that it investigates the cause and effect does not manipulate the variable use for already existing groups, involves group comparison, and focuses on the difference of variables between groups. According to Orodho (2003), a descriptive survey is a method of gathering information by observing, interviewing, or administering a questionnaire to a sample of individuals,

### **Method**

#### **Participants**

The analysis sample of this study includes children, teachers, and parents in small, medium, and large classes, which are divided into the "Children Parent Questionnaire" and "Individual Child Questionnaire". Please ask each child's parent and class teacher to fill out the questionnaire, and get 300 valid children and parent data. Among these respondents, 57.6% were boys and 42.4% were girls. The average years of Education of fathers and mothers are 14.04 years (standard deviation = 2.46) and 14.19 years (standard deviation = 2.34), which is equivalent to a college education. The subject's family economic status was given 1-3 points according to the wealth level, with an average value of 2.67 (SD = 0.64). The proportion of normal families with two parents is 83.6%, and the proportion of single-parent families is 15.2%.

Table 1

Descriptive statistics for family SES, family background, participation in cram schooling

Variable	N	%	Mean	SD
Parental educational level				
Father	330		14.04	2.46
Mother	330		14.19	2.34
Children's Gender				
Boys	330	57.6		
Girls	330	41.8		
Family structure				
Single-parent and other households	330	15.2		
Two-parent household (reference categories)	330	83.6		
Family economic status	330		2.67	0.64

### Measures

Table 1 shows the design and scoring method for each variable in this study. All variables used in this study include two types: (1) individual characteristics of students, such as social development level, attitude, and behavior training, and (2) family background and characteristics, including parental education level, family economic conditions, and family structure.

### Analysis Strategy

Use a series of hierarchical regression analyses and different sets of predictors in the model, firstly routine training (including attitude and behavior training), then background variable control (such as parental education level, family economic status, family structure) and child's gender, and finally the analysis of children's social development. In this study, we hypothesized that children's conventional training will affect children's cognitive development and social development; social development will affect cognitive development; conventional training will affect cognitive development through social development. When the family background (family structure, family economic level, parental education level) and the child's characteristics (gender) remain unchanged, the better the child's regular training, the better the child's social and cognitive development; social development The better, the better the cognitive development. In other words, the main purpose of this study is to study the effect of routine family training on children's cognitive ability, sociality, and sociality's influence on cognition.

### Results

The mean scores show a high level of the mother (M = 14.19, SD = 2.34), and the lowest score mean Family economic status (M = 2.67, S.D. = .64). However, the high standard deviations, especially in the area of fathers mean that there is hetero gentility across the social ability. Furthermore, positive and moderate level associations emerge between social abilities (r = .938, p < .01), children's cognitive abilities (r = .420, p < .01), and children's regular attitude (r = .933, p < .01). However, we found a weak relationship between routine training and cognition among children (r = .810, p < .01). Based on Table 2 and Table 3 we concluded that children's routine training, including routine attitude training and routine behavior training, which has a more significant impact on children's social abilities than other background factors; Children's social abilities have a significant impact on children's cognitive abilities, while children's regular attitude training influences children's cognition becomes less obvious after joining children's social ability, which shows that the influence of routine training on children's cognitive ability can be transmitted through social ability.

### Multivariate Analysis

Table 2 shows the descriptive analysis results of children's routine training and the influence of the father's education level, mother's education level, children's gender, family structure, and family economic level on social ability. The results show that the education level of the father of the child has a significant impact on the development of children's social abilities (B = 0.15, S.E. = 0.33, p < .01); the development of girls' social abilities in the early childhood stage is significantly better than that of boys (B = 0.38, S.E. = 0.17, p < .01); other factors have no significant effect. It can be found from Model 2 that after the addition of regular training, the influence of the father's education level and gender on children's social abilities is reduced, while the impact of regular training is very significant. Conventional attitude training has an effect (B = 0.32, S.E. = 0.11, p < .05), while the effect of conventional behavior training is abnormally significant (B = 0.42, S.E. = 0.23, p < .01). It can be found that the impact of routine training on children's social development is higher than other background factors, especially routine behavioral training.

Table 2

Estimates of the Social Ability (T1) of kindergarten children

	Model 1		Model 2	
	B	S.E.	B	S.E.
Parental educational level				
Father	0.15**	(0.33)	0.14**	(0.31)
Mother	-0.03	(-0.07)	-0.04	(-0.08)
Children's Gender				
Girls	0.38**	(0.17)	0.40**	(0.18)
Boys(reference)				

categories)

Family structure

Single-parent and other households      -0.01                  (-0 .00)                  0.03                  (0.01)

Two-parent household (reference categories)

Family economic status                                  0.16                  (0.09)                  0.08                  (0.04)

Children attitude    0.32\*                  (0.11)

Children action    0.42\*\*                  (0.23)

N

R square    0 .09    0.18

$p < .10$  \*  $p < .05$  \*\*  $p < .01$

The research continued to take the father's education level, mother's education level, children's gender, family structure, and family economic level as background variables, and children's family routine training and social ability as a predictor variable, as shown in Table 3. Model 1 shows that the father's education level still significantly affects children's cognitive abilities (B = 0.13, S.E. = 0.3,  $p < .01$ ), but there is no significant difference in the development of children's cognitive abilities. In Model 2, children's routine training is included, including routine behavior training and attitude training. It is found that routine attitude training has an impact on children's cognition (B = 0.35, S.E. = 0.13,  $p < .05$ ).

Politeness and behavior training has no obvious relationship with cognitive development, father's education level still has an impact on children's cognition. In Model 3, the social ability was added as a predictive variable for children's cognitive ability, and a significant correlation between social ability and cognitive ability was found (B = 0.43, S.E. = 0.44,  $p < .05$ ), while conventional attitudes the impact of training is reduced.

The father's education level has always had a significant impact on children's cognitive and social abilities, but after joining the social ability, the father's education level has weakened (B = 0.08, S.E. = 0.19,  $p < .01$ ). It can be inferred from this that the influence of routine training on children's cognitive ability can be transmitted through social ability.

Table 3

Estimates of the Cognitive Ability (T2) of kindergarten children

	Model 1		Model 2		Model 3	
	B	S.E.	B	S.E.	B	S.E.

Parental educational level

Father	0.13**	(0.30)	0.13**	(0.30)	0.08**	(0.19)
Mother	-0.03	(0.07)	-0.04	(-0.08)	-0.03	(0.06)
Children's Gender						
Girls	0.11	(0.05)	0.12	(0.06)	-0.03	(0.02)
Boys(reference categories)						
Family structure						
Single-parent and other households	0.13	(0.04)	0.18	(0.06)	0.15	(0.05)
Two-parent household (reference categories)						
Family economic status	0.16	(0.10)	0.11	(0.07)	-0.07	(0.04)
Children attitude			0.35*	(0.13)	-0.25	(0.10)
Children action			0.19	(0.12)	0.01	(0.00)
Social ability(T1)					0.43**	(0.44)
N						
R square	0.06		0.10		0.27	

Note:  $p < .10$  \*  $p < .05$  \*\*  $p < .01$

**Mediators**

Figure 1 illustrates the mediation model of social ability on the relationship between routine training and cognitive ability using the SPSS PROCESS macro by Preacher and Hayes. (Orem,2008) In Table 3, Model 1 of the mediation model, the regression of routine attitude training on cognitive ability, ignoring the mediator, was significant,  $B=0.35$ ,  $SE=0.13$ ,  $p<.05$ . Table 2 showed that the regression of routine attitude training on the mediator, social ability, was also significant,  $B=0.32$ ,  $SE=0.11$ ,  $p<.05$ .

In Table 3, Model 3 showed that the regression of social ability on cognitive ability, controlling for routine training, was significant= $0.43$ ,  $SE=0.44$ ,  $p<.05$ . Lastly, Model 3 Table 3 revealed that routine training predicted cognitive ability, while controlling for social ability,  $\beta=0.43$ ,  $SE=0.10$ ,  $p<0.01$ . At the same time, When comparing the regression analysis results of routine attitude training and cognitive ability in Model 2 and Model 3, it is found that the absolute value of  $B$  in Model 2 ( $|B|=0.35$ ) was greater than the absolute value of  $B$  in model 3( $|B|=0.25$ ). It can be concluded

that social ability partly mediates the relationship between routine training and cognitive ability. In addition, cognitive ability was considered in the model and the partial mediation effect of social ability was tested.



Figure 1 Partial Mediator Effect of Social ability

### Conclusion and Discussion

Over the years, many researchers have worked hard to explore the factors that affect children's cognition, trying to discover the explicit and implicit factors that affect children's cognition. Some researchers believe that the mother's education level has a significant impact on children's cognition. Predicting 18-month cognitive development, RDC had a significant effect over and above maternal Education (Mermelshtine, Roni 2016). Some researchers also suggested that gender has a significant effect on children's cognition, A child's gender and ordinal position within a family have varied implications on his or her personality and cognitive development (Cheng, C-C. J 2013). At the same time, family economic level and family structure have a significant impact on children's cognition.

Child behavior and emotional adjustment along with cognitive development, especially in low-income and single-parent households (Saylor, Conway 2003). Concerning home resources, interpersonal resources mattered a great deal for young children's cognitive development (Workman, Joseph 2017). This study found that only the father's education level has a significant effect on children's cognition, and the mother's education level has no significant effect. Gender has an impact on the social development of children, and the correlation between girls is higher than that of boys. This is related to the girl's physiological structure and social division of labor and the resulting parenting model. Studies have shown that in two months, girls begin to have a social smile. However, there is no evidence to prove the effect of gender on cognition. Family structure has no obvious influence on children's cognitive development, which can also be proved by other studies. Substantial diversity exists in the developmental contexts among children living in the same family structure (Foster, E. Michael). The most significant correlation lies in the correlation between family routine training and children's social abilities, and the impact of social abilities on cognitive abilities.

This study found that children's social and cognitive abilities are not significantly related to mothers' educational level, which is contrary to the conclusions of many studies on the correlation between mothers and children's cognitive development. Children's gender has an impact on social abilities, girls are significantly higher than boys, but will this correlation weaken with age and gradually disappear? This is a problem to be solved by further research. There is no significant correlation between family structure and children's social and cognitive abilities, which is contrary to the conclusions of the research on children with abnormal family structure. But in fact, the author believes that this is evidence of single parents and other abnormal family children's pursuit of excellence. A higher family economic level means that it can provide more ways and a higher platform for children's cognitive and social development. This is the majority of people's cognition, and this study found that family economic level and



children's cognitive development there is no obvious correlation, which provides evidence for the development of many children from low family economic levels.

The routine attitude training that the family has done for children, including requiring children to be polite, obedient, and observant, has an impact on children's social and cognitive development, which has inspired parents to deal with children in daily life Attitude training. Behavioral training for children, including training children to help with housework, allowing children to carry their schoolbags, school utensils, and preparing their school utensils, etc., has a significant impact on the development of children's social abilities and does not affect children's cognitive abilities significantly affected. Table 2 presents children's routine training, including routine attitude training and routine behavior training, which has a significant impact on children's social abilities; Table 3 finds that children's social abilities have a significant impact on children's cognitive abilities, while children's regular attitude training influences children's cognition becomes less obvious after joining children's social ability, which shows that the influence of children's routine training on children's cognition is transmitted through social ability. It also shows that improving children's cognitive ability can be achieved by improving children's social ability.

In recent years, many parents have sent their children to various intellectual development and potential improvement centers to improve children's cognitive abilities and intelligence through various cognitive training. There are many ways to enhance children's cognitive skills. Parents can achieve them in daily life, and they can also achieve them through the improvement of children's social abilities, such as encouraging young children to participate in class activities.

#### Ethical considerations

This research was assumed to address moral concerns in the field of social science research field. Here the procedure of assembling, analyzing, as well as interpreting data has been carried out in a manner point of complements the rights of the participants. Sooner than the information is composed, a preliminary letter was ready to seek conversant permission from the participants to participate in this study.

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**Author Contributions:** This work was carried out in collaboration among all authors. Author MRS designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Authors J.K. and A.K. managed the analyses of the study. Authors TM and NTH managed the literature searches. All authors read and approved the final manuscript.

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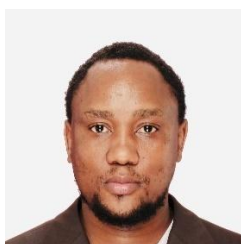
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