STUDY ON THE RELATIONSHIP BETWEEN COGNITIVE AND MOTION DEVELOPMENT AND LEARNING DISORDER IN BABIES WITH LOW BIRTH WEIGHT

ESTUDO SOBRE A RELAÇÃO ENTRE DESENVOLVIMENTO COGNITIVO E DE MOVIMENTO E TRANSTORNO DE APRENDIZAGEM EM BEBÊS COM BAIXO PESO AO NASCER

Forough Talaeizadeh 1

Abstract: *TThe purpose of this study was to investigate cognitive and motion development and learning disorder in low birth weight children. The method of this study is descriptive-correlation. The statistical population of the study consisted of all low birth weight Iran-Shiraz children. According to the unlimited and uncertainties of the statistical society, a targeted sampling method was used. So that 60 children(30 girls and 30 boys) aged 8 to 10 who were low birth weight were selected from Iran-Shiraz primary schools of 1 th, 2 nd and 3 rd educational districts. The tools used in the study were the second-generation gross motion development test, the Goodnight Cognitive Skill Test, Colorado Learning Scale. The relationship between motion and cognitive skills with learning disabilities was measured using Pearson correlation in SPSS software. The results showed that there was a meaningful and inverse relationship between social recognition and social distress with learning disabilities. Also, the relationship between learning disabilities with cognitive skills is obtained only in meaningful and positive components of reading and writing.*

Keywords: Motion Skills. Cognitive Skills. Learning Disabilities. Low Weight Children.

Resumo: *O objetivo deste estudo foi investigar o desenvolvimento cognitivo e de movimento e o distúrbio de aprendizagem em crianças com baixo peso ao nascer. O método deste estudo é a correlação descritiva. A população estatística do estudo consistiu em todas as crianças com baixo peso ao nascer em Iran-Shiraz. De acordo com as ilimitadas e incertezas da sociedade estatística, foi utilizado um método de amostragem direcionada. De modo que 60 crianças com 8 anos, 10 com baixo peso ao nascer foram selecionadas das creches de 1, 2 e 3 de Teerã As ferramentas utilizadas no estudo foram o teste de desenvolvimento de movimento grosseiro de segunda geração, o Teste de Habilidade Cognitiva Goodnight. Escala de Aprendizagem do Colorado. A relação entre movimento e habilidades cognitivas com dificuldades de aprendizagem foi medida usando correlação de Pearson no software SPSS. Os resultados mostraram que havia uma relação significativa e inversa entre reconhecimento social e sofrimento social com dificuldades de aprendizagem. Além disso, a relação entre dificuldades de aprendizagem com habilidades cognitivas é obtida apenas em componentes significativos e positivos de leitura e escrita.*
Palavras-chave: Habilidades de Movimento. Habilidades Cognitivas. Dificuldades de Aprendizagem. Crianças com Baixo Peso.

Master of Educational Psychology, Marvdasht Branch, Islamic Azad University, Marvdasht, Iran. E-mail: ftalaeezadeh@yahoo.com

Introduction

Infant mortality rate is one of the most important hygienic Indicators in every community and is affected by different Factors. Low birth weight Iran Shiraz is one of the main causes of death in infants and babies. Of course, the low weight of the baby does not always lead to death, and in many cases it may have physical side effects for the baby in the future. There are many factors associated with low birth weight, including low socioeconomic status, inappropriate nutrition of anemia, various diseases, prenatal care, medications, obstetric complications, abortion, low birth weight, low birth weight, Weight and height of mother (Ali Abadi et al., 2012).

Growth and evolution are influenced by genetic, environmental and social factors, and the most important and the very beginning is embryonic and infancy. Premature births and low birth weight are important issues that can affect the growth and development and threaten the health of the community. The prevalence of premature births and low birth weight is increasing in most countries, according to the WHO, and much of it is for developing countries (Brown et al., 2015).

The advancement of medical technology in the intensive care unit over the past few decades has increased the survival of these high-risk and needy caregivers, while it has not been able to reduce the side effects of low birth weight, such as oxygen therapy and steroid therapy, short effects There is a positive and prolonged negative effect on these babies; therefore, many low birth weight infants will have motion, cognitive and sensory problems in the future. Findings from Braun et al. (2015), Anderson & Doyle (2003), Moeins et al. (2009), confirm this issue.

Unfortunately, despite numerous studies in early infants and low birth weight infants, the growth process of these infants and their possible evolutionary problems in Iran have been very limited. One of the findings of this research is Ghasemi et al. (2017), which compared the cognitive and motion development of preschool children born with low birth weight and normal weight. Also, Aliabadi et al (2011), researches the motion performance of low birth weight infants in other researches in relation to the problems of low birth weight infants.

But the problems of these children cannot be seen solely in relation to motion skills, but other problems that these children may have is learning difficulties. Learning is one of the basic and basic skills of life that brings life to prosperity and life as well as the life that creates the need for learning (Sharafi, 2012). The term “learning disorder” refers to a single entity or disorder that is associated with a defect in the development of academic skills. This disorder has a heterogeneous nature that reflects this in homogeneity in educational patterns, the strength and weakness of information processing, and also in major classification systems as disadvantages in a particular area such as reading disorder or motility disorder.

The term learning disorder was presented in 1962 by Samuel Kirk. He used this term for children who had little progress in reading, writing, and mathematical computing, and introduced learning disruptions into the curriculum. Kirk has emphasized the definition of learning disorder on neurological aspects, psychological processes, intrapersonal differences, and outsourcing. Learning impairment means disrupting one or more psychological bases that involve comprehension or use of spoken or written language and impair the ability to listen, think, speak, read, write, spell or perform. Math calculations appear. (Ashoori, 2013)

As noted earlier, cognitive and motion developmental problems are another common problem in low birth weight infants. The present study investigates this problem. The word-cognitive-motion is referred to as the process of organizing input information with stored information that leads to performance. The problem of cognitive-motion processes can be seen in the form of problems of visual perception of auditory perception, tactile perception, motion problems that have large motion skills, fine motion skills, balance, facial recognition, orientation, awareness and body image.

In the process of development of the child, the sensory-motion steps play an important role in the skills of the ages of the school, including academic skills. Many researchers emphasize the importance of early sensory motion learning as building blocks for the complex and complex cognitive development of later years, and others from the point of view of neuropsychiatry emphasize the importance of learning the primary motion as an integral part of the organization. Cortical cells that are responsible for the brain’s excellent functions are emphasized. It should be noted that from the point of view of dynamic systems, perceptual growth and motion development

do not grow apart, but are mixed.

Therefore, people perceive to experience movement, and move to experience perception. Children with perceptual disability are struggling to interpret the meaning of the environment. The more movement and perceptual learning experiences the child has, the greater the opportunity for perceptual-motion integration and the development of a flexible response to different mobility situations (Simin et al., 2017: 8-9).

It seems that children with cognitive-motion impairment have difficulty learning when learning. And these learning disruptions may continue until adulthood and prevent the person from developing in the dimensions of his life. Therefore, it is necessary to identify the factors that cause or reinforce learning disabilities from the very beginning of life, at birth, and take steps to resolve them. In this regard, the present study focuses on the earliest period of life of infants, and studies the underweight as one of the causes that may interfere with the cognitive and motion skills of the infant, and ultimately leads to Learning disorder in them.

Research background

Ghasemi et al. 2017, conducted a study entitled "Comparison of cognitive and motion development of preschool children born with low birth weight and normal weight". The purpose of this study was to compare the cognitive and motion development of preschool children born with low birth weight and normal weight children. For this purpose, among kindergartens in the district of Tehran, 15 normal-weight children and 18 low-birth-weight children were selected purposefully. In order to evaluate the large motions, a second-degree motion mastery test, which includes: displacement and object-control subscales, was used.Also, for evaluating fine motion skills, some subscales of the Brininc-Useretsky test (upper extremity coordination, speed response, and velocity and agility of the upper extremity) were used. To measure cognitive development of participants, the Goodinap Cognitive Skills Test was used.

It seems that children born with low birth weight, in cognitive skills, as well as coarse and delicate motion skills, may experience long-term consequences of low birth weight.

Simin Qalam et al. 2016, wrote an article entitled "The Study of Perceptual-Motion Skills in Children with Specific Learning Disorders". The aim of this study was to evaluate perceptual-motion skills in children with learning disabilities.

The study was a cross-sectional and case-control study. The experimental group consisted of 38 students aged 7 to 9 years attending normal schools in Semnan city who were suffering from learning disorder, according to the Semnan Education Department. The control group included 38 non-infantile children with learning disabilities who had a child with a child in a classroom.

The results were analyzed by inferential statistics of Shapiro Wilk and independent t-test at a significant level (0.05). The findings have shown that children with normal birth weight are more likely to perform subtle skills and some cognitive and cognitive skills than those born with low birth weight.

To assess the bilateral coordination skill, a two-way coordination sub-test was used in the Bruninx-Oseretsky motion growth scale and analyzed by descriptive and inferential statistics by spss16 software and Umen-Whitney test. Statistical analysis showed that children with learning disabilities in motion skills of bilateral coordination are weaker than non-infected children.

Nourizadeh et al., 2012, in a study titled Effectiveness of Neurofeedback on learning disabilities with attention deficit hyperactivity disorder (ADHD), stated that neurofeedback was effective in learning disabilities with attention deficit / hyperactivity disorder. This study was carried out in a quasi-experimental and non-control group. The results showed that neurofeedback was not effective in learning disabilities in this group of students. But they were effective on ADHD.

In general, neurofeedback was not effective in learning disabilities with attention deficit hyperactivity disorder (Nourizadeh et al., 2012). Archana, Simon, Vina Esferdous, in 2015, reviewed the quality of life and tension of their parents among parents whose children had learning disabilities.

This article also examined the relationship between parental quality of life and tension between the quality of life and parents' tension experienced by parents whose children had learning disabilities. The results of this paper highlighted the importance of integrating and integrating parental counseling and psychological training into effective management of learning disabilities.

(Arkana Simon, Vina Esfrdos, 2015)

Biothema et al. (2012) compared the patterns of activity and the biological and family factors in children with and without developmental coordination disorder and concluded that children with DCD are significantly more inactive, with lower levels of physical fitness, lower muscle strength, and body mass index (BMI) higher than their peers, and are at high risk for serious health problems. Families seek occupational therapy and physical therapy (OT) to improve their child with DCD and their motion and functional problems throughout their lives.

Methodology

The method of this study is descriptive-correlation. The statistical population of the study consisted of all low birth weight children in Iran-Shiraz. According to the unlimited and uncertainties of the statistical society, a targeted sampling method was used. In this way, 60 children aged 8 to 10 years old with low birth weight were selected from primary schools in 1th, 2nd and 3rd educational districts randomly. The criteria for entering the study were: the birth weight of the underweight children between 1500 and 2499 grams, and the exclusion criteria of the study were the physical and acute problem of children, which led to their elimination from the sample. Also, if the parents of the neonates were seeking to leave their child for any reason and at any time, the child was removed from the sample population.

The tools used in the research were:

The Bruxelles-Useretski Motion Excellence Test (1972) is a reference norm test set and evaluates children's motion function from 4.5 to 14.5 years old. The test was prepared by Brininx in 1972 by editing Oseretsky's test. The implementation of the full set of tests will require 60-45 minutes. Four subtests of large motion skills (speed and agility, balance, bilateral coordination and power). Three subtests of fine motion skills (response speed, visual-motion control, and speed and agility of the upper limb) and a subtest of both types of motion skills (Measurement of upper limb coordination).

The mastery test set for the Ninx-Ozzer Tusk is a standard motioncycle standard. The test criteria were provided through the testing of over 700 baby boys and girls from different races, small and large communities, and different geographic areas. The validity and the test level are high and have been successfully used to distinguish children with motion disorders and normal children.

The retest reliability coefficient of this test was 78% in the long form and 86% in the short form. In the present study, a short test form was used that consists of two sub-tests of displacement and object control, each subtest of which includes six basic motion skills.

Sub-test subroutine skills include running, jogging, lily, stretched, horizontal jumping and slipping, and object control skills include: tapping a fixed ball, dribbling in place, catching (catching), knocking with the feet, throwing From the top of the shoulder and roll the ball down. Goodman's Cognitive Skills Test (1920): This test is used to measure the intelligence of children between the ages of three and 15, and is codified by a large number, the most important of which is Godinaf's research, which, in the year 1920, relates to four thousand children in The state of New Jersey has tested and validated its reliability and validity, and the test-retest reliability coefficient of this test was 87 and its validity was 84%.

In France, Dr. Fae has also studied research in this field. The main purpose of this test is to determine the degree of intelligence of the rational age and the child's intelligence. As the child grows older, the child draws more components of the image of a human being. Each component of a dummy, if given by the child, is awarded a score. These scores are matched together and do not exceed the total score of 51.

The Colorado Learning Scale Questionnaire (2011): This questionnaire is developed by Wilkot et al. (2011) and identifies learning problems that comprise the following five essential factors for reading, counting, social recognition, social anxiety, and spatial functions that cause learning problems. . This questionnaire, which consists of 20 items, is completed by parents of students. The answer to each statement in a 5-point Likert scale is from (1) to always (5).

The credibility of this questionnaire and its components was examined by the inventors of the questionnaire using internal consistency and test-retest methods, and the readings for internal consistency (0.86) and for retest (0.79) were reported.

Data analysis: In the inferential statistics, Kolmogorov and Smirnov tests were used to test the parametric statistical assumptions. After determining the normality of the data, Pearson correlation test was used for data analysis. Data analysis was done in SPSS22 software.

Results

The results of the data analysis are presented below. Following the descriptive characteristics of sample individuals and variables, the results of the normalization test are presented and then the results of the correlation test between variables were analyzed using Pearson correlation test.

Descriptive characteristics of variables

This section describes the characteristics of children, including their age and gender.

Table1, Distribution Abundance On According to Age

Age	Abundance	Frequency
8 years	12	20.00
9 years	26	43.33
10 years	22	36.67

As in Table (1) It is observed that the highest frequency is equivalent to 43.33 % of children in age group 9 Year, with the lowest abundance, equivalent to 20 % of children under the age of 8 The year goes by. Based on the results of Table 2, the number of sample individuals based on gender is 30 Girl and 30 Boys are.

Table 2, Distribution Abundance On According to Sex

Sex	Abundance	Frequency
Girl	30	50
Boy	30	50

Descriptive characteristics of variables

In Table 3, the descriptive characteristics of the research variables, including median, mean, and standard deviation for components of learning disability and the variables of motion and cognitive skills are presented.

Table 3, Descriptive Features of Learning Disability Components

Variable	Middle	Average	Standard deviation	The least	the most	number of samples
Read	4	3.90	0.087	1	5	60
calculate	3	3.15	0.080	1	5	60
Social recognition	2	1.95	0.084	1	5	60
social anxiety	4	3.92	0.079	1	5	60
Spatial functions	4	2.66	0.075	1	5	60

According to the results obtained in Table 3, the highest amount obtained was the highest mean for social anxiety and the lowest value for social cognition variable.

Table 4, Descriptive features of cognitive - motion skills variables

Variable	Middle	Average	Standard deviation	The least	the most	number of samples
Skill Place To a place	4	3.90	0.55	1	5	60
Object Control Skills	3	3.15	0.034	1	5	60
Cognitive skills	2	1.74	0.036	1	5	60

According to the results in Table 4 of the variable obtained maximum displacement and the minimum skills, cognitive skills are related to the variable.

Normality test

In this research, Kolmogorov-Smirnov test is used to check the normal distribution of the main variables. This test, in one-sample mode, compares the observed cumulative distribution function with the expected cumulative distribution function at a variable at the distance measurement level. In interpreting the test results, if the observed error level is greater than 0.05, then the observed distribution is the same with the theoretical distribution and there is no difference between the two. That is, the distribution is normal distribution.

But if the meaningful value is less than 0.05, then the observed distribution differs from the expected distribution and the distribution will not be normal. This test examines the normalization of data according to the following assumptions.

H0: Between abundance Observed and Expected Differences (Distribution normal Well).
H1: Between abundance Observed and Expected Differences (Distribution normal Is not).

Table 5, Normality test

Variable	The significance level	Error value	proving a theory	Result
Cognitive Ability	0.068	0.05	H 0	Normal
Motion ability	0.154	0.05	H 0	Normal
Learning disorders	0.068	0.05	H 0	Normal

In this table, according to the amount of Smirnov statistics - Kolmogorov It can be deduced that the expected distribution with the observed distribution for all variables Meaning difference This is assuming you H0 Confirms Be. The distribution of these variables is normal. from this You have to test the assumptions of the statistics Parametric use .

Correlation analysis

Relationship between motion skills and learning disabilities Using Pearson correlation is measured:

Table 6, Correlation results between dependent and independent variable components

Variable	Skill somewhere	Object Control Skills
Read	0.139 0.074	0.103 0.093
calculate	0.075 0.656	0.005 0.546
Social recognition	0.243 - 0.001	0.217 - 0.002

social anxiety	0.282 - 0.000	0.321 - 0.000
Spatial functions	0. 054 0.456	0.106 0.856

According to the results presented in table number (6), a meaningful level is only significant for the relationship between social cognition and social anxiety with meaningful learning disruptions. In such a way, by reducing social awareness, object control and movement control skills have also been reduced among children. Also, with increasing social anxiety, the amount of object control skills and displacement skills has decreased.

- The relationship between cognitive skills and learning disabilities Using Pearson correlation is measured:

Table 7, Correlation results between dependent and independent variable components

Variable	Cognitive skills
Read	0. 5 39 0.0 00
calculate	0. 346 0. 000
Social recognition	0.034- 0.947
social anxiety	0.024- 0.644
Spatial functions	0.054 0.456

According to the results obtained in Table (7) the relationship between learning disabilities and cognitive skills is significant only in terms of reading and writing. This means that with increasing reading and counting skills, children's cognitive skills have also increased.

Discussion and Conclusion

In this article, we investigated the relationship between cognitive and motion development and learning disorder in low birth weight children. The statistical population of the study consisted of all low birth weight children in Iran- Shiraz, 60 of who were randomly selected for this research. In the first hypothesis, the relationship between motion skills and learning disorders among children was investigated. The results of this hypothesis, according to Table (6), have a meaningful level only for the relationship between social cognition and social anxiety with meaningful learning disruptions. So, with decreasing social recognition, object control and movement control skills were also reduced among children. Also, with increasing social anxiety, the amount of object control skills and displacement skills has decreased. In the second hypothesis, we examined the relationship between cognitive skills and learning disabilities. The results of this hypothesis according to Table (7) show that the relationship between learning disabilities and cognitive skills is significant only in terms of reading and writing. This means that by increasing the reading and counting skills, the cognitive skills of children also increased.

In this regard, according to the results of the research, Braun et al. (2015), there is a significant relationship between birth weight and motion skill. In this study, a significant relationship was found between some of the components of learning disabilities with motion skills. In other words, with the increase in motion movement, children's social anxiety and social cognition are reduced; Children with lower birth weight are more likely to have fewer motion skills.

Also, findings from Brown and colleagues showed that there is a meaningful relationship between birth weight and Rayon intelligence score; In other words, children who suffer from very

low birth weight have a lower IQ than normal children. It should be noted that in this regard, the greater the distortion of the natural weight, the stronger it is.

Also, the results of this study are consistent with the results of Ghasemi et al. (2017), which showed that children with normal birth weight have a higher performance compared to low birth weight children, with subtle skills and some cognitive and cognitive skills. It seems that children born with low birth weight, in cognitive skills, as well as coarse and delicate motion skills, may experience long-term consequences of low birth weight. Therefore, birth weight seems to be a fairly good indicator of children's cognitive performance.

The results of this study showed that with the increase of cognitive skills, children's reading and reading skills have also increased. In general, according to the findings of this study, it seems that children born with low birth weight, in cognitive skills, as well as motion skills, may experience long-term consequences of low birth weight; therefore, it is suggested that careful planning be prevented from birth to pre-primary school.

On the other hand, it is advisable to provide explanations and training for the better enrichment of the environment and the growth of low birth weight children to the families and teachers of these children. Also, researchers interested in research in this area are advised to study other low-burden biomedical factors such as their mother's low birth weight, maternal disease history, and Apgar score in their studies.

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