

# Comparative Analysis of Fixed Set and Spatial Imaginations of Practically Healthy Child in Correlation with Academic Progress

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## **Abstract**

Have been studied such medical-biologic and psychosocial factors (mother's attitude towards child and family, interpersonal attitudes of child to surrounding individuals, quality of memory, developmental level of spatial imaginations, personal structure and type of fixed set) that affect the quality of study. Total of 217 practically healthy children (healthy group I and group II) aged 7 to 12 years were involved in our research. Owing to factor analysis of carried out research it is obvious, that not separate factors, independent of each other, affect the academic progress but combination of factors, in which the leading role play the fixed set and spatial imaginations. In healthy children, comparative analysis of fixed set in correlation with spatial imaginations was carried out. Has been shown, that fixed set correlates with strategy of spatial imaginations, structure-topology, metric and coordination.

**Keywords:** *fixed set, spatial imaginations*

**I**t is always difficult to express the concept of health. At first sight health represents quite firm indicator of each child reflecting main features of its life, first of all ability of active creative existence or just opposite - disability of it.

Health is often considered as an inherited property. Absence of fundamental biologic science based health concept undoubtedly complicates forming of health definition and methods of controlling. At the same time it must be mentioned, that majority of scientific publications refer to mature individuals and almost always they are of methodological nature [1].

Nowadays, the one of the major tasks of the medicine is to provide and ensure normal development and improve the quality of life along with survival and maintenance of child's life. It is of great importance to make accent upon physical and psychical development of child and early correction of risk [2,3].

According to the aforesaid, the aim of our work was to investigate the fixed set and spatial imagination of practically healthy children in correlation with academic progress.

Using the special questionnaires and on the basis of retrospectral research of clinical and polyclinic materials total of 217 practically healthy child aged 7 to 12 years have been investigated. Under the term "practically healthy" we mean the children from the healthy group I and group II. Children were classified and distributed in healthy groups according to methodic suggested by the Moscow Institute of Children and Adolescent Hygiene.

Psychological research involved: study of interpersonal attitudes between mother and child (Parental attitude research instrument - PARI method), investigation of child's memory (method of numbers and pictures), child's spatial imagination (method of Tailor) and study of personal structure (Fixed Set method of D. Uznadze).

Factor analysis of our investigations was performed. According to factor analysis it is obvious that not separate factors, independent of each other (mother's attitude towards child and family, interpersonal attitudes of child to surrounding individuals, quality of memory, developmental level of spatial imaginations, personal structure and type of fixed set) affect the academic progress but combination of factors, most of them belonging to fixed set and spatial imaginations (70%).

Coming from the above mentioned, comparative analysis of fixed set of healthy children in correlation with spatial imaginations was carried out.

Normative indicators of strategy of spatial imaginations were more expressed in children with plastic-dynamic set (48,2%), fragmental indicators - in rough-static set children (50%), and chaotic indicators - in rough-dynamic set children (60,8%)  $p < 0,005$ .

Normative indicators of structural-topologic imaginations come to face more frequently in plastic-dynamic set children (42,85%), fragmental indicators - in rough-static set children (37,5%), and chaotic indicators - in children with the plastic-static set (76,4%)  $p < 0,001$ .

Normative indicators of metric imaginations appear more drastically in children with plastic-dynamic set (44,6%), fragmental indicators - in rough-dynamic set

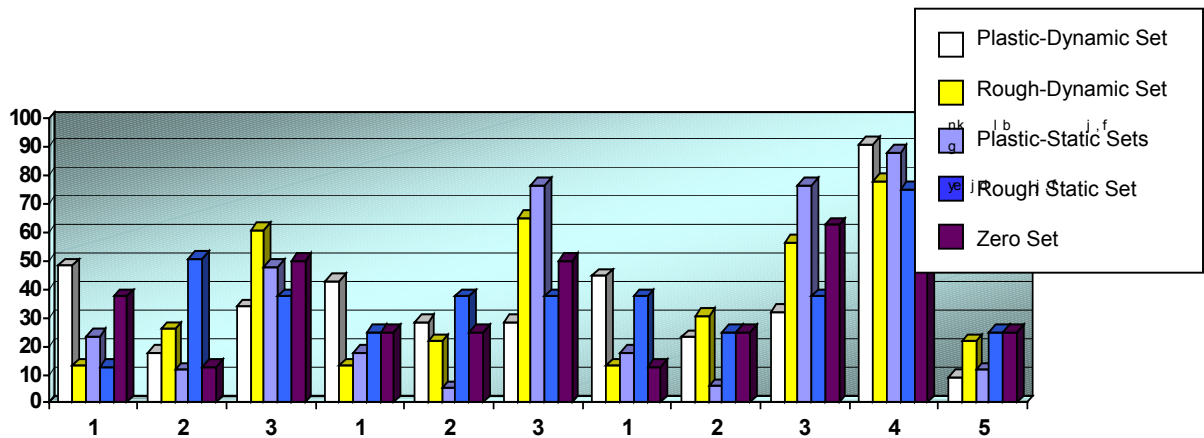
children (30,43%), and chaotic indicators - in plastic-static set children (76,4%)  $p < 0,008$ .

Satisfactory indicators of coordinative imaginations were more expressed in plastic-dynamic set children (91,07%) while, unsatisfactory indicators - in rough-static set children (25,0%) and in zero set children (25%). *Fig. 1.*

In conclusion, results of present study reveal that, indicators of strategy of spatial imagination, structure-topology, metric and normative indicators of coordination were more frequently expressed in plastic-dynamic set children. Chaotic indicators of spatial imaginations were revealed in children with rough-dynamic and plastic-static sets, while the both, normative and chaotic indicators of spatial imaginations were expressed almost at equal rate in children with rough-static and zero sets.

Comparative analysis has shown that fixed set correlates with strategy of spatial imaginations, structure-topology, metric and coordination, which is reflected on child's academic progress.

Thus, we have studied such medical-biologic and psychosocial deviations in healthy pupil that affects the quality of study and points on leading role of fixed set and spatial imaginations in academic progress of children.



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|--|------------------------------|
| I - Strategy of spatial imagination            | 1. Normative indicators      |
| II - Structure-topology of spatial imagination | 2. Fragmental indicators     |
| III - Metric of spatial imagination            | 3. Chaotic indicators        |
| IV - Coordination of spatial imagination       | 4. Unsatisfactory indicators |

**Fig.1** Comparative analysis of child's spatial imaginations and fixed set.

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## **Сравнительный анализ фиксированной установки и пространственных представлений здорового ребенка в корреляции с академической успеваемостью**

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### **Р Е З Ю М Е**

Изучены медико-биологические и психо-социальные факторы (отношения матери к ребенку и собственному семейному статусу, межличностные отношения ребенка к окружающим, качество памяти, уровень пространственных представлений, структура личности и тип фиксированной установки), которые обуславливают отставание в учебе. Обследовано 217 практически здоровых детей от 7 до 12 лет (I и II группы здоровья). Проведен факторный анализ результатов исследования. Установлено, что не отдельные, независимые друг от друга факторы действуют на уровень академической успеваемости, а совокупность факторов, в которой ведущая роль принадлежит фиксированной установке и пространственным представлениям. Исходя из этого, проведен сравнительный анализ фиксированной установки здорового ребенка с его пространственными представлениями. Сравнительный анализ показал, что фиксированная установка коррелирует со стратегией пространственных представлений, структуро-топологией, метрией и координацией.

**Ключевые слова:** *фиксированная установка, пространственные представления*