Asian Journal of Scientific Research and Innovations
ISSN: 2715-xxxx (online) | IF: 10.23 | Vol: 1, issue 1
Available: http://asiansciencejournal.org

CLASSIFICATION OF METHODS FOR DETERMINING THE DOMINANT TYPE OF MEMORY IN THE STUDY OF EXACT SCIENCES

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Annotation: This study, devoted to the classification of methods for determining the dominant type of memory in the process of studying exact sciences, presents conclusions based on the results of studying foreign and domestic methods based on sources. The aspects that should be paid attention to during the application of the methods are described in detail.

Keywords: L.V. Zankov's Pictogram, A. L. Benton, visual memory, L. V. Kulikov's “Study of individual characteristics of memory” methodology, L. M. Fridman.

Introduction

In psychodiagnostics, there are numerous methodologies designed to identify the types and characteristics of cognitive processes. These methodologies have been effectively applied in research conducted worldwide for over a century. However, in recent years, the number of such methods has significantly increased, creating the need for their systematic selection and classification. As a result, the concepts of *psychometric tests* and *quasi-measurement tests* have emerged in the field of test development. Psychometric tests are methodologically grounded instruments that have undergone multi-stage validation procedures and have demonstrated reliability and validity. In contrast, quasi-measurement tests are often developed in response to public demand to assess certain personality characteristics but lack rigorous scientific validation and empirical grounding. The proper selection of these tests requires substantial knowledge, skills, and professional competence from researchers. Therefore, classifying methodologies aimed at diagnosing cognitive processes according to their areas of application ensures their efficient and effective use.When discussing methods for assessing memory, it is important to emphasize tests developed by foreign psychologists. In particular, the book *Psychodiagnostics and Psychocorrection* presents memory assessment techniques with identified authorship and psychometric characteristics. These include tests constructed on the basis of numerical stimuli, geometric figures, and verbal material.

Literature Review

Globally, research on cognitive processes primarily focuses on developmental periods up to adolescence. This is due to the emergence of difficulties in the formation of cognitive processes during preschool years, the adaptation of cognitive functions to academic activities in primary school age, and the development-related challenges observed during adolescence and early youth. Among these developmental stages, adolescence is particularly significant, as it represents the transition from childhood to adulthood. Alongside physiological changes, psychological growth during this period is of crucial importance. If cognitive difficulties are not addressed during earlier stages, they may persist throughout life.

From this perspective, determining the effectiveness of selected methodologies requires preliminary approbation. In such cases, a pilot version of the methodology is administered to a volunteer group. Researchers must pay careful attention to factors such as the volume and

clarity of the test, testing conditions, the age of participants, and their psychological and physical state. All these factors may significantly influence the outcomes of the approbation process. If participants complete tasks inattentively, impatiently, or excessively quickly without proper understanding, the methodology should be revised or replaced. Age characteristics must also be considered. Preschool and primary school children are often characterized by hyperactivity and limited attention span; therefore, short-term and relatively simple methodologies are recommended for this age group. For adolescents and early youth, more cognitively demanding or score-based methodologies may be effective, as individuals at this stage are inclined toward competition and solving complex tasks.

Results And Discussion

It is appropriate to begin the methodological analysis with A. N. Leontiev's memory assessment methodology. His method has two versions: one designed for children aged 5–7 and another for ages 8–12. In both cases, participants are presented with 15 words and 25–30 pictures. The aim is to determine whether direct memory or mediated memory is more developed. The advantages of this methodology include its applicability to both preschool and primary school children, as well as the use of simple words and pictorial stimuli, allowing for cross-cultural adaptation. However, the relatively large number of stimuli may create difficulties for participants. Therefore, L. N. Poperechnaya developed a modified version reducing the material to 5 words and 16 pictures, which has proven to be more efficient in practice.

For assessing visual memory, L. V. Zankov's *Pictogram (Pictorial Associations) Method*, developed in 1935, is noteworthy. Participants draw images to help them remember presented words. The quality of the drawings is not evaluated; rather, the participant must recall the word based on their drawing. This method is intended for individuals aged 11–12 and older. Its strengths lie in simultaneously diagnosing imagination, associative thinking, and visual memory. It is particularly useful in studies related to thinking processes. However, participants may require considerable time to conceptualize and draw images, and individuals with limited imaginative capacity may show weaker results. Nevertheless, repeated administration may contribute to the development of logical thinking.

One widely used method for studying memory types is Meyli's "Visual and Auditory Memory" test (1961), designed for ages 7–14 and adults. It includes two series of 30 pictures for visual memory and two series of 30 words for auditory memory. The method allows identification of dominant memory modality. Although the large number of stimuli may appear demanding, it enhances the reliability of results by preventing ceiling effects.

Among specialized visual memory assessments, Wechsler's "Reproduction of Visually Presented Material" (1945) stands out. This method includes four-part figures that participants must reproduce from memory. While somewhat complex, it is engaging for preschool and primary school children due to their interest in shapes. However, scoring procedures may require additional time.

Similarly, A. L. Benton's *Visual Retention Test* (1952) consists of 24 geometric figures formed by combinations of four basic shapes. Participants reproduce the figures after brief exposure. The method not only assesses visual memory but also provides insight into intellectual development. Nevertheless, repetition of similar geometric forms may allow some participants to reproduce patterns mechanically, potentially influencing results.

To identify dominant memory types comprehensively, L. V. Kulikov's "Study of Individual Characteristics of Memory" methodology is recommended. It evaluates visual, auditory, motor, and mixed memory types using sets of 10 words per modality. Results are

calculated as percentages to determine the leading memory type. Due to its broad scope, it is widely applicable in adolescent research.

For short-term memory assessment, two prominent methods deserve attention. A. R. Luria's "10 Words" technique requires participants to recall a list of ten words across several trials. Although simple, it remains methodologically sound. In contrast, Jacobs' digit span test presents sequences of numbers (1–9) in increasing length from four to ten digits. Performance is calculated proportionally to total correct responses, providing an estimate of short-term memory capacity. This method is particularly suitable for individuals with analytical or mathematical orientation.

To examine logical versus mechanical memory, L. M. Friedman developed a paired-word methodology consisting of 15 logically related pairs and 15 mechanically paired words. Participants must rely on logical reasoning to recall associated words. Comparative results reveal the dominant memory type.

In addition to memory types, memory processes such as voluntary and involuntary memorization are also significant. P. I. Zinchenko developed a method including two sets of 16 pictures. In one set, only pictures are presented; in the other, pictures are accompanied by numbers, which serve as mnemonic aids. Comparative coefficients of voluntary and involuntary recall are calculated to determine memory process characteristics.

Conclusion

The methodologies discussed above are scientifically grounded and author-identified instruments, making them suitable for empirical research. However, numerous quasi-measurement tests also exist in psychological literature. These often lack identifiable authorship and rigorous validation. They claim to assess voluntary memory, involuntary memory, logical memory, emotional memory, imagery-based memory, and long-term memory, among others. Due to limited reliability and validity evidence, such instruments are generally not recommended for rigorous scientific investigation.

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