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The brain control in volleyball players and its relationship with self-efficacy (academic, social, and emotional) and psychological safety among middle school students.

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Abstract:

This research aims to identify brain control and its relationship with self-efficacy (academic, social, and emotional). The researcher used the descriptive method through case study and survey methods to achieve the research objectives. The main sample consisted of 400 students representing fifth-grade students in the literary and scientific branches from Al-Karkh Second Preparatory School and Al-Rusafa Third Education, with an equal distribution using stratified sampling from 8 preparatory schools, consisting of 4 boys' schools. To solve the research problem, the researcher used the brain control scale, logical analysis, exploratory application, and statistical analysis of the sample size items. The researcher relied on the self-efficacy scale in accordance with the age group of the students by using the method of reusing the psychological safety measurement and assessing its reliability. The researcher clarified that brain control is represented in mental activity, with the right hemisphere of the brain controlling creative activities, while the left hemisphere controls linguistic activities. The researcher clarified that brain control is related to professional tendencies and self-efficacy through making better decisions by students, and that the feeling of psychological security will distance students from the spread of unemployment, fear, incapacity, and despair about the future.

Keywords: brain control, self-efficacy, psychological security**.**

Introduction

Human nature is considered one of the most complex phenomena due to its influence by various factors that may be cognitive, through the acquisition of different experiences by processing and utilizing information, or psychological, through the impact of the diverse situations a student encounters in daily life. This human nature surprises us from time to time with the emergence of a set of factors that affect it and depend on refining its skills and abilities, contributing to the development and growth of that nature across various psychological, emotional, and cognitive aspects.

Therefore, studies related to cognitive and neurological variables currently resonate widely and attract significant attention among scientists and researchers due to their profound impact on the general cognitive activity of humans. Research and studies concerning the functions and processes of the nervous system occupy a prominent position. Consequently, the topic of brain control and its relationship with self-efficacy (academic, social, and emotional) has become a modern subject addressed by many scientists and researchers across various fields of neuropsychology, cognitive psychology, teaching methods, education, and sports psychology, extending to be linked with other sciences such as general and sports sociology.

The study of split brains is one of the most important experiments that revealed the executive, emotional, and cognitive functions controlled by each hemisphere separately, as well as the integration and harmony between them when performing these functions. The increase in studies related to the nervous system has led to the emergence of neuropsychology, which is known as "the science that studies behavior and the brain" or "the study of the relationship between brain functions on one hand and behavior on the other." Volleyball is distinguished from other team sports because it consists of teams that require all members to work together in complete harmony through physical and motor integration towards achieving a single goal. In this sport, the six-player team members must have clear motor and physical communication, as they are not allowed to touch the ball three times before scoring against the opposing team. Therefore, achievement and success serve as evidence of their ability to communicate and understand each other. From this, we can describe this team as having social and motor cohesion that is distinct from other team sports. Thus, the cohesion in the sports team is evident in the players' sense of belonging to the team, their commitment to its membership.

Research Problem:

Hemisphericity styles are one of the styles of learning and thinking, referring to individuals' use of information when facing problems. This usage is manifested in the functions of the left or right hemispheres, or both together, integrated in mental processes or behavior. There are three styles of learning and thinking: the right style, which refers to the use of the right hemisphere of the brain; the left style, which refers to the use of the left hemisphere of the brain; and the integrated style, which refers to the integration of the functions of both hemispheres (right and left) of the brain.

This is clarified by Solso (2004), who noted that the brain dominance of the two hemispheres links the left hemisphere to functions such as language, analysis, classification, reading, writing, and speech, thus it is called the verbal, analytical, and logical hemisphere. The right hemisphere, on the other hand, is associated with music, arts, spatial processing, and face and shape recognition, hence it is referred to as the sensory, intuitive, and emotional hemisphere. This was confirmed by Gluck et al. (2008), stating that clinical studies conducted on patients with dysfunction in the left hemisphere showed a deficiency in verbal working memory, but not in visual-spatial working memory. The concept of self-efficacy holds great importance for educators, as

working to help students perceive themselves positively and with high perceived competence contributes to awakening their abilities and readiness in all areas. Danaher and Hallinan define self-efficacy as individuals' beliefs in their abilities to perform in specific areas, achieve goals, and complete behaviors (Bent Said, 2014: 48). Furthermore, it has been observed that most educators may not give sufficient attention to the psychological and social needs of students, leading to a lack of understanding of their behaviors, motivations, and reasons, and consequently losing control over their problems. This results in a loss of control over the keys to their needs and motivations. It is often emphasized that psychological security is a necessity for mental health to overcome the ongoing obstacles they face. Additionally, the researcher notes that many players show a level much lower than what is expected of them in their approach to playing volleyball.

The current research problem lies in the lack of sufficient information regarding brain control and the level of self-efficacy (academic, social, and emotional) and psychological safety among volleyball players. This lack of information does not provide adequate opportunities for specialists and workers in the field of youth and sports, as well as those interested in this topic, to understand the dimensions of this issue. Additionally, the deficiency in information related to the level of self-efficacy and psychological safety for youth belonging to sports forums may hinder the possibility of generalizing and implementing successful experiences, thus depriving other forums that plan to understand brain control and its relationship with self-efficacy (academic, social, and emotional) and psychological safety among volleyball players.

Importance of Research:

The terminology of hemisphericity styles varies with the differing theoretical frameworks. Coleman used the term brain processes as a synonym for brain dominance, while Zenhau Sern, Repetti, and Gebhardt referred to it as learning complexity, memory, and thinking as synonyms for brain dominance. Al-Makhzoumi (2001) adds that hemisphericity styles indicate that the dominant part of the brain plays an important role in individuals' behavior for task processing, and knowing the dominant hemisphere helps in dealing with and educating individuals (Al-Makhzoumi, 2001: 41). Abdul Aziz (1996) views that "brain dominance is the fundamental and necessary concept for understanding the specific functions of each part, as both the left and right hemispheres of the brain are specialized to perform separate yet integrated functions simultaneously" (Abdul Aziz, 1996: 218). Furthermore, individuals with high self-efficacy possess certain characteristics that distinguish them from those with low self-efficacy, including high performance in task execution (quick results can be achieved), perseverance until the goal is reached, taking responsibility, and the desire stemming from optimal (independent) abilities, which allows them to manage stress and anxiety, viewing the task as an interesting challenge.

Therefore, meeting the numerous and diverse human needs requires individuals with sound and effective selves. Low self-efficacy affects human behavior negatively, and some individuals set themselves high-value goals but find themselves lacking the necessary self-efficacy to achieve those goals compared to their peers, leading to negative psychological and social outcomes that result in frustration. Kafafi (2005) pointed out that a student's sense of security is one of the characteristics that distinguishes healthy behavior. "The healthy student generally feels secure and reassured. This does not mean that a healthy person does not experience anxiety, fear, or conflict; rather, they feel anxious when faced with something that provokes anxiety, fear when their security is threatened, and experience conflict when confronted with critical choices or conflicting emotions. However, in all these cases, they behave in a way that directly addresses the problem or works to eliminate the sources of threat, making appropriate decisions within their capabilities" (Kafafi, 2005: 24). Thus, psychological security involves the feeling of love, acceptance, emotional reassurance in relationships and interactions with the environment, and responding to needs and desires for care, protection, and support to face the changes and crises of life (Shaqir, 2013: 69–103) (Abd al-Aal, 2011: 289–302) (Abdullah and Sharbat, 2006: 77–177) (Kearns et al., 2001: 457). The importance of selecting the variables of brain control, self-efficacy, and psychological security lies in their fundamental role in the processes of learning and teaching, which should be heavily emphasized as a basis for overcoming many of the difficulties faced in education.

Research Objectives:

The current research aims to identify:

1. Brain dominance among volleyball players who are students.
2. Self-efficacy (academic, social, and emotional) among the players.
3. Psychological safety among the players.
4. The relationship between brain dominance in volleyball players and self-efficacy among middle school students.
5. The relationship between brain dominance in volleyball players and psychological safety among middle school students.

Research Hypotheses:

1. Volleyball players do not possess brain dominance among middle school students.
2. Volleyball players do not possess self-efficacy.
3. Volleyball players do not possess psychological safety among students.
4. There is no statistically significant relationship between brain dominance in volleyball players and self-efficacy.
5. There is no statistically significant relationship between brain dominance in volleyball players and psychological safety.

Research Limits:

1. Human domain: The study was limited to volleyball players represented by fifth-grade middle school students (scientific and literary) in morning study schools.
2. Temporal domain: The second semester of the academic year 2021-2022.
3. Objective limitations: The study was limited to the application of study tools, which are the brain dominance scale, self-efficacy level, and psychological safety among volleyball players.

Research Methodology

First: Research Community:

The current research community consists of fifth-grade preparatory students from both scientific and literary branches distributed across six directorates.

Second: Research Sample:

1. After accurately defining the current research community, the researcher followed the steps below to select a representative sample of fifth-grade students in the preparatory stage:
2. The researcher randomly selected the second Karkh Education Directorate and the third Rusafa Education Directorate using a stratified random sampling method with equal distribution from the preparatory schools, totaling (8) schools, consisting of (4) boys' schools, to represent the preparatory schools in the scientific and literary branches.
3. The researcher selected (400) male students representing fifth-grade students in the literary and scientific branches from these preparatory schools.

Third: Tools of Research:

Brain Control Scale:

- **Description of the Scale:**

After starting and reviewing the literature and studies related to the Brain Control Scale, the researcher found Al-Ma'ar's scale (2006) suitable for the research community and easy to use, which led the researcher to adopt this scale. It consists of (36) items divided into four sections, with (9) items for each section. The alternatives used are (Yes) and (No), with weights of (1) and (2) respectively.

- **Validity of the Items (Logical Analysis):**

The apparent validity was extracted by presenting the scale in its initial form to ten judges who are university professors specialized in psychology, special education, and educational psychology to express their opinions on the appropriateness of the scale items and content for measuring brain control style and the suitability of its formulation for the characteristics of the sample. Some items were rephrased based on the judges' comments and suggestions to make them more understandable for the students, while no items were deleted or added.

- **Pilot Application:**

The researcher applied the scale to a pilot sample consisting of (40) students randomly selected from one of the intermediate schools, to determine the clarity of the scale's instructions and the time taken to respond. It was found that all items and their alternatives were clear and understandable in terms of meaning and formulation, and the average response time for the scale items was (20) minutes.

- **Statistical Analysis of Items:**

(Anastasia) believes that the sample size for discrimination should not be less than (400) individuals to obtain accurate results (Anastasi, 1976: 209), and the sample was selected using a proportional random method from (8) schools.

- **Reliability Indexes:**

- Reliability was confirmed using the test-retest method by applying the scale in its initial form to a pilot sample of (50) students, and then reapplying the test to the same pilot sample with a time interval of two weeks. The reliability coefficient for the retest was (0.74), which is considered acceptable for application purposes and statistically significant at the significance level of (0.05).

1. **Self-Efficacy Scale:**

To achieve the research objectives, the researcher relied on the self-efficacy scale prepared by (Al-Jubouri, 2013) after rephrasing some items to be suitable for the age group of the students, without making any changes to the content or number of items. The scale consisted of (50) items, with a response format of five alternatives, and for scoring, weights of (1-2-3-4-5) were assigned to positive items and the reverse for negative items.

- **The apparent validity of the scale:**

The researcher relied on the apparent validity of the scale by presenting the items and instructions to a group of experts and judges totaling (9) judges, who approved the items and modified some of them. Thus, the scale consists of (50) items, and the total score for each form reached a maximum of (250), while the minimum score on the scale was (50).

- **Reliability of the scale:**

Using the retest method to find the reliability of the selection, the scale was applied to a random sample of (20) students, with a time interval of (15) days for the retest. Using Pearson correlation coefficient to find the relationship between the scores of the first and second applications, it was found that the reliability coefficient equals (0.87), which is considered acceptable compared to the significance values of the correlation coefficient. Thus, the scale became ready for application to the research sample.

- **Psychological Security Scale:**

the researcher used the psychological security scale prepared by (Dorothy F. Harrison and Pete L. Harrison), which was translated by (Osama Kamel Rateb, 1991). The researcher presented the scale to the esteemed experts and specialists, and all items were approved, consisting of (30) items, with five alternatives for the responses to these items.

- **Stability of the Scale**

The stability of psychological security in the current research was calculated using the test-retest method: when applying the scale to a sample for stability, the researcher recorded an indicator for each answer sheet to recognize it in the second application for the sample individuals, and then the scale was reapplied to the sample after (15) days. The relationship between the scores of the two applications was found using Pearson correlation coefficient, resulting in a stability value of (0.87), which is a good indicator of the consistency of individuals' responses on the current scale.

Results and Discussion

- **Results of the First Objective:** Identifying Brain Control in Volleyball Players among Intermediate Stage Students.
- To verify this objective, the researcher applied the brain control scale to (400) students from the intermediate stage, and calculated the arithmetic mean and standard deviation. A one-sample t-test was used to find the significance of the differences in brain control among volleyball players, and the results were as follows, as shown in Table (1):

Table 1. Show the t-test for the significance of the difference between the hypothetical mean and the arithmetic mean of intermediate students on the brain control scale

Sample number	Arithmetic mean	Standard deviation	Hypothetical average	T-value		Significance level
				Calculated	Tabular	
400	565.43	418.6	40	109.11	96.1	05.0

The results showed that intermediate stage students possess brain control and exhibit a high level towards it.

The results indicated that the calculated mean value from the responses of the sample members is greater than the hypothetical mean value of the scale in self-efficacy, which means that the research sample members have a good degree of self-efficacy, and Table (2) illustrates this.

Table (2). Show the t-test for the significance of the difference between the hypothetical mean and the arithmetic mean for intermediate stage students on the self-efficacy scale

Sample number	Arithmetic mean	Standard deviation	Hypothetical average	T-value		Significance level
				Calculated	Tabular	
400	997.41	894.5	40	778.6	96.1	05.0

The results of the second objective showed that middle school students possess self-efficacy and exhibit a high level in (academic, social, and emotional) aspects.

The research results indicated that the calculated t-value reached (172.19), which is statistically significant at the (0.05) level, as shown in Table (3).

Table 3. Show the t-test for the significance of the difference between the hypothesized mean and the arithmetic mean of middle school students on the psychological security scale

Sample number	Arithmetic mean	Standard deviation	Hypothetical average	T-value		Significance level
				Calculated	Tabular	
400	155.85	594.10	75	172.19	96.1	05.0

The results indicated that middle school students enjoy psychological safety.

We identified the nature of the relationship between brain control in volleyball players and self-efficacy (academic, social, and emotional) among middle school students, as shown in Table (4).

Table 4. Show the value of the correlation coefficient between brain control and self-efficacy

variable	Sample	Degree of freedom	Correlation coefficient value	T-value		Significance level
				Calculated	Tabular	
brain control	400	398	0,43	9.50	1,96	There is a significant relationship.

Self-efficacy						

The table indicates a positive correlation between brain control and self-efficacy.

We identified the nature of the relationship between brain control in volleyball players and psychological safety among middle school students, as shown in Table (5).

Table 5. Show the value of the correlation coefficient between brain control and psychological safety

variable	Sample	Degree of freedom	Correlation coefficient value	T-value		Significance level
				Calculated	Tabular	
Brain control	400	398	0,43	5.89	1,96	There is a significant relationship.
Psychological security						

The data in the mentioned table indicates a positive correlation between brain control and psychological safety.

Conclusions

1. Brain control provides greater opportunities for comprehensive and flexible engagement with academic, social, and emotional self-efficacy and psychological safety for middle school students, allowing for the expression of opinions and the use of intuition and probabilities; this may help in developing activities among students.

2. The learning process stimulates brain growth, and brain density increases when interacting with the surrounding environment, due to the stimulation of neurons to increase connections. Additionally, a rich environment with sensory data, which activates all sensory organs, can increase brain growth by 20%. Studies have shown that an environment poor in sensory data may lead to the degeneration of neural connections that are not used and activated within a short period, not exceeding a few days. Since students possess self-efficacy and psychological safety, this indicates a relationship between brain control in volleyball players and self-efficacy and psychological safety.

Recommendations

1. It is essential for the teacher to understand the dominant brain control styles, self-efficacy, and psychological safety among their students as a first step in planning the teaching process.
2. Strengthening the dominant left brain style and activating the non-dominant right brain style for middle school students by incorporating structured and methodological activities, tasks, training, and enrichment materials in educational curricula that support and stimulate the dominant brain style while activating the non-dominant style.
3. The Ministry of Education should prioritize adopting topics related to brain-based learning, self-efficacy, and psychological safety in the planning, design, and development of curricula, considering it a central theme embraced by modern educational trends worldwide.

Suggestions

1. Conduct subsequent studies on the relationship between brain control styles and levels of ambition and intrinsic motivation.
2. Measure the levels of brain control, self-efficacy, and psychological security among students at all stages of general education (primary, intermediate, and preparatory).
3. Conduct further studies on brain control and its relationship to academic self-efficacy and psychological safety using samples and measurement tools beyond the scope of the current study.

References:

1. Ibrahim, Khaled (2016) Brain Control and its Relationship with Metacognitive Thinking Level among University Students, Scientific Journal of the Faculty of Education - Assiut University (532)
2. Osama Kamel Rateb, Sports Psychology, 1st ed., Cairo, Arab Thought House, 1997
3. Rajeh Ahmed Ezzat (1995) Foundations of Psychology, Dar Al-Ma'arif, Cairo: Egypt.
4. Shafeer, Zainab and Abdel Aal, Tahia (2013) Contributions of Unemployment to Achieving Psychological Security and Tolerance among Graduate Students, Arabic Studies in Education and Psychology, Issue (43), Part (1).
5. Al-Suna'i, Saleh (1995) Studies in the Islamic Foundation of Psychology, Riyadh, Dar Alam Al-Kutub.
6. Abdel Aal, Mohamed (2011) Psychological Security: Influences and Indicators, Journal of Education, Al-Azhar University, Issue (145), Part One.
7. Abdel Aziz Ibrahim (1996) Neurolinguistics: Journal of Imam Muhammad bin Saud Islamic University, No. (18) February.
8. Al-Qawi, Sami (2001) Neuropsychology: Foundations and Assessment Methods, United Arab Emirates University.

9. Abdullah, Ahlam and Sherbat, Ashraf (2006) Psychological Security: Its Dimensions and Determinants from Childhood to Adulthood, Contemporary Education Journal in Egypt, Issue 73, p. 23.
10. Atiyah Nawal (2001) Psychology and Psychological and Social Adaptation, Faculty of Education - Ain Shams University, 1st ed. - Cairo.
11. Eid, Mohamed (1997): Loss of Security and its Relation to Ego Strength, Psychological Crises of Youth: Cairo.
12. Mohamed Youssef Abdel Fattah (1995) Basic Dimensions of Personality and Thinking and Learning Styles among a Sample of Both Genders, Journal of Social Sciences, Kuwait University, Vol. 23.
13. Al-Mohamadi, Afaf (2017) Brain Control and its Relationship with Learning Methods, Major Selection, and Academic Level among Female University Students, International Journal of Educational Research - UAE University (1) 41.
14. Al-Makhzoumi, Amal (1996) A Glimpse at the Human Brain and Its Functions: (Arab Journal, No. (286) February 15
15. Noufal, Muhammad Bakr (2007) Multiple Intelligences in the Classroom - Theory and Practice, 1st ed., Al-Masira Publishing and Distribution House, Amman, Jordan
16. Al-Hamlan, Amal (2013) Brain Dominance and Its Relationship to Career Preference Among Different Student Groups in Kuwaiti Society, Unpublished Doctoral Thesis, Cairo University, Arab Republic of Egypt.
17. Hebi, Lafi (2012) Perceived Self-Efficacy and Its Relationship to Professional Adjustment Among Psychological Counselors, Master's in Psychological and Educational Counseling, Arab Open University.Anastasi, A. (1976): Psychological Testing. New York. Macmillan.
18. Bandura, A (2000). Exercise of Human Agency Thourgh Collective Efficacy. Current Directions in Psychological Science, 9. USA.
19. Chselli, E.E. (1981): theory of psychological measurement, M. Grawhill book CO., New York
20. Churchill, J. (2020). Teaching nutrition to the left and right brain. Journal Emotional and Behavioral Difficulties, 23(1), 47-63.
21. Esterly, E., And M.A., (2003). A Multi-Method Exploration of The Mathematics Teaching Efficacy and Epistemological Beliefs of Elementary Preservice and Novoice Teachers. Dissertation, Ohio State University.
22. Frohlich, J., (2009), An Individual's Choice and Success In There profession may be Effected By The Individual's Dominant Brain Hemisphere and there Learning Style, journal of Accounting and Finance Research, 4, 1, 119-133.
23. Goldberg, E. (2020). Executive Brain. Oxford University Press
24. Kearns, K.; Klepac, L and Coie, A. "Peer relationships and preadolescents perceptions of security in the child mother relationship". Developmental Psychology. 32.3 (1996) 457-
25. Maslow. A. H. (1970). Motivation and personality. Harper and Row Publishers, Inc, N. Y.

26. McCarthy, B. (1996). The 4mat system research: Reviews of the literature on the differences and hemispheric specialization and their influence on learning. Barrington, IL: Excel Inc.
27. Schwarzer (ed), self- efficacy, thought control of action (3-38) Washington DC. Hemispheres.
28. Singh, M., & Gera, M. (2018). Effect Of Duval's Semiotic Approach on Higher Order Thinking Skill in Relation to Brain Dominance. Ijrar-International Journal of Research and Analytical Review, 5(3), 869-873.