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Comparison Of Behavioral Compatibility Among Students With Different Brain Dominance Patterns (Right, Left)

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Abstract

The research aimed to identify differences in behavioral compatibility among students with different brain dominance patterns (right-brain and left-brain dominance). The researcher hypothesized existence of statistically significant differences in behavioral compatibility among students with different brain dominance patterns (right-brain and left-brain dominance). The researcher used a descriptive comparative approach, deemed suitable for nature of research. Research population consisted of 44 fourth-year students at College of Physical Education and Sports Sciences, University of Kirkuk. Main sample comprised 32 students after excluding 12 students for following reasons: 2 students did not participate in responding to one of two scales, 5 students participated in pilot study, and 5 students with an integrated brain dominance pattern were excluded. The researcher used two scales: behavioral compatibility and brain dominance. Statistical formulas were employed, including percentage, mean, standard deviation, simple correlation coefficient, and independent samples t-test, which were processed using SPSS statistical package. results showed superiority of research group. Specifically, students with a right-brain dominance pattern outperformed their peers from a group of students with a left-brain dominance pattern on the behavioral compatibility scale. The researcher recommends need to know different brain dominance patterns in teaching and training in order to achieve principle of working according to individual differences between individuals. Conducting similar research involving comparisons in other psychological and motor variables according to difference in brain dominance.

Keywords: Comparison, Behavioral Compatibility, Brain Dominance.

Introduction

Aspect is related to the individual's behavior as a result of several forces that reflect the image of his mental activity cognitive as well ,abilities and achievement ,his aptitudes ,represented in general mental ability or intelligence his emotional activity asaffective values and personal traits ,attitudes ,represented in his tendencies, which collectively affect his adaptive behavior.

Behavioral compatibility is one of the important and fundamental concepts related to an individual's personality. And his mental health and his adaptive relationship with the environmental and social environment, as individuals differ in their physical and mental abilities and personal capabilities according to the principle of individual differences in various fields. According to this difference among athletes, we find some who become upset when any unexpected change occurs in the course of events or when they do not obtain what they desire. They want to, and it can lead to, distress or breakdown simply because of frustrations. On the contrary , there are some individuals who can face pressures and difficult life events with strength and a high degree of resilience and psychological adjustment, so they can face various frustrating situations with balance and calmness without any haste. In both cases, the individual's ability to face those changing situations or not affects his ability to control behavior.

Naeem Al-Rifai, 1987 defined behavioral compatibility as a set of reactions by which an individual modifies his psychological or behavioral structure to respond to specific surrounding conditions or a new experience (Naeem Al-Rifai, 1987, 33).

All behavioral and psychological processes are directly related to the working environment of the nervous system, which contains the brain. Mental processes, psychological and emotional influence, and the behavioral manifestations of the individual are affected by the workings of the mind. The human brain is characterized by containing two hemispheres (right and left), and each hemisphere has its own work and functions that distinguish it from its counterpart. One of them may dominate the other in mental work, and this is called brain dominance. These are the vital topics that are related to methods of thinking, controlling psychological emotions, and motor work as well, and they have received the attention of researchers in the sports field.

Its main idea revolves around the use of one hemisphere of the brain (left or right) more than the other, and therefore it is called the dominant hemisphere or the leading hemisphere because it directs the behavior of individuals, or the use of both of them, and the pattern is the integrative or dominant pattern (Abdul Nasser Al-Qaddoumi, 2010, 260).

Importance of research emerges through the researcher's attempt to identify differences in behavioral compatibility according to the difference in brain control among the research sample, which consists of students of the College of Physical Education and Sports Sciences at Kirkuk University.

The research problem can be summarized by answering the following question: Are there differences in behavioral compatibility according to different brain dominance patterns (right and left) among students of the College of Physical Education and Sports Sciences at Kirkuk University?

Research objective to identifying differences in behavioral compatibility between students with different brain dominance patterns (right, left). Research hypothesis there are statistically significant differences in behavioral compatibility between students with different brain dominance patterns (right, left).

Definition of terms

Behavioral compatibility: Muhammad Al-Tahhan (2002) defined it as "the extent of an individual's harmony with his surrounding world" (Muhammad Al-Tahhan, 2002, p. 196).

Cerebral Dominance: Cerebral dominance means that "the neural centers located in one hemisphere of the brain are more active and influential in the other hemisphere" (Youssef Abdel Fattah Mohamed, 1995, p. 57).

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Materials and Methods

Descriptive approach was used in a comparative style. Research population consisted of (44) fourth-year students at the College of Physical Education and Sports Sciences, Kirkuk University, for the academic year (2025-2026). The research sample consisted of (32) students after excluding (5) students for participating in the pilot study, two students who did not respond to the two scales used, and (5) students with the integrated pattern. Thus, the sample percentage from the total population was (72.727%), and Table (1) shows this:

Table 1. Research community and sample

Community	Excluded			Main sample
44	Exploratory experiment	They did not answer	Integrated pattern	32
100%	5	2	5	72.727%

Study scales

First: Behavioral Compatibility Scale: Behavioral compatibility scale used by (Salman Akab Sarhan, 2019) was adopted, consisting of (36) items with four alternatives: (always, often, sometimes, rarely) and weights of (4-3-2-1). (Salman Akab Sarhan, 2019, 421)

Second: Brain Dominance Scale: Diane scale for brain dominance, translated by (Wissam Salah, 2015), Appendix (2), consisting of (21) questions, each question has two alternatives, where the examinee gets (0 or 1) points for each alternative. If the total of what the examinee gets is (0-8) points, this indicates the dominance of the left hemisphere of the brain. If he collects (9-13) points, this indicates the dominance of the right hemisphere of the brain. If he collects (14-21) points, this indicates the (integrated) brain pattern. Players with the (integrated) pattern were excluded from the study data (Wissam Salah, 2015, 41).

Scales scientific coefficients

Behavioral Compatibility and Brain Dominance scales were applied in several studies in Iraqi environment, and to ensure that two scales acquired scientific validity, following was verified:

Reliability: Test-retest method was used to confirm the reliability coefficient. Behavioral Compatibility and Brain Dominance scales were distributed to a sample from research population outside main research sample on Sunday, December 14, 2025. The two scales were then retested on Tuesday, December 23, 2025. Correlation coefficient between first and second tests for each scale was found to be (0.91) for Behavioral Compatibility scale, while correlation coefficient was (0.94) for Brain Dominance scale, which is a high value indicating that two scales have a high degree of reliability.

Validity of two scales: Self-validity of two scales was found by calculating square root of test reliability coefficient. Value of self-validity coefficient for behavioral compatibility scale was (0.953), and its value for brain dominance scale was (0.969), indicating that the two scales had acquired self-validity.

Objectivity of two scales: The two scales used in the current research are highly objective in terms of the sample's ability to answer the items and their understanding of them.

Exploratory Experiment

Pilot test was conducted on Saturday, January 20, 2026 to confirm the following: Sample's ability to answer the electronic scale. Ensuring that accurate answers are obtained for the research sample.

Main Experiment: Main experiment for Brain Dominance Scale was conducted on Sunday, January 29, 2026, on fourth-year students in the College of Physical Education and Sports Sciences in the college's classrooms. Everyone was asked to answer the scale except for the pilot study sample. After obtaining the results, they were divided into two groups: Right Brain Dominance Pattern Group and Left Brain Dominance Pattern Group. Integrated Brain Dominance Pattern Group was excluded from the study. The previous steps were taken in the Behavioral Compatibility Scale on Monday, March 10, 2026, to obtain students' answers on this scale.

Statistical methods

Data were processed using Statistical Package for the Social Sciences SPSS and based on following mathematical formulas: Percentage. Mean. Standard deviation. Law (T) for independent samples. Simple correlation coefficient.

Results

Presentation and Analysis Results of Brain dominance patterns (right) (left)

Table 2. Brain dominance patterns (right) (left)

No.	Brain Dominance Pattern	Students Number
1	Right	18
2	Left	14

Table (2) shows that the number of students with a brain dominance pattern of the (right) part of the brain reached (18) students, while the number of students with a brain dominance pattern of the left part of the brain reached (14) students.

Table 3. Results of differences in the adaptive behavior scale according to brain dominance patterns (right) (left)

Right-brain dominance pattern		Left-brain dominance pattern		Measurement unit	Calculated (t) value	Sig. level	Sig. type
Behavioral compatibility		Behavioral compatibility					
Mean	St.d	Mean	St.d				
117,722	12.451	81.928	8.109	Degree	9.312	0.036	Sig.

Sig. value is < (0.05).

Table (3) shows that the arithmetic mean value in the adaptive behavior scale for the right-brain dominant pattern reached (117.722) with a standard deviation of (12.451), while the arithmetic mean reached (81.928) for students with left-brain dominance and a standard deviation of (8.109). The value of the (t) test reached (9.312), and the significance level reached (0.036), which is less than the error rate of (0.05), which indicates that there are differences between the two research samples in the behavioral adaptation scale according to the difference in brain dominance.

Discussion

Table (3) shows that the group of students with right-brain hemisphere dominance outperformed their peers with right-brain hemisphere dominance in the behavioral compatibility scale. The researcher attributes this to the fact that the role of the right hemisphere of the brain is to process emotional and social aspects, which are among the basic pillars in achieving behavioral adjustment, as well as the functional characteristics of the right hemisphere of the brain, which are closely related to verbal processes such as interpreting social signals, understanding emotions, and the ability to adapt to changing situations. Cognitive neuroscience literature indicates that the right hemisphere plays a pivotal role in responding to environmental stimuli and processing complex macro information, which contributes to enhancing the individual's ability to interact positively with their social environment and adapt to environmental requirements. This result can also be explained in light of what is indicated by theories of psychological adjustment, which confirm that individuals who are able to manage their emotions flexibly and deal with psychological pressures effectively are more behaviorally adjusted. It appears that students with right-brain dominance possess a higher level of emotional competence, which enables them to respond to different situations in a more balanced and flexible way.

The low level of behavioral compatibility among students with left-brain dominance can be explained by the nature of the cognitive processes associated with this pattern, which focus on analytical, logical, and sequential thinking. This reduces the flexibility of response to complex or changing social situations, as these individuals tend to deal with problems in a linear and specific way, which may limit their ability to adapt quickly to environmental pressures.

This is what was confirmed by (Faten Ali Kaki, 2011) that "individuals who are characterized by right-brain dominance have the ability to express their feelings and emotions frankly and prefer to deal with a number of problems and different types of variables at once, unlike individuals with left-brain dominance who prefer to deal with a situation away from the changes that they may face." (Faten Ali Al-Kaki, 2011, p. 54)

On the other hand, these results can be linked to the nature of sports activities, which require rapid social interaction and an immediate response to changing situations on the field, as well as the need for psychological and emotional compatibility during sports performance. Therefore, students with right-brain dominance may be more able to achieve this type of compatibility as a result of their cognitive and emotional flexibility.

Based on the above, the results confirm the importance of considering individual differences in brain dominance patterns when designing educational and training programs in the sports field, in order to contribute to developing behavioral compatibility among students and achieving the best levels of performance.

Conclusions

The researcher concluded the following: Research group of students with a right-brain dominance pattern outperformed their peers from the group of students with a left-brain dominance pattern in the psychological compatibility scale.

Recommendations

The researcher recommends the following: Need to know the different brain dominance patterns in teaching and training in order to achieve the principle of working according to individual differences between individuals. Conducting similar research involving comparisons in other psychological and motor variables according to the difference in brain dominance.

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