

The Influence of the Practice of Infiltrating Moral Education in Physical Education Teaching on Students' Psychological Health

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Abstract

The aim of this study was to investigate the effect of integrating moral education into physical education curricula on students' mental health. To achieve this, a combination of teaching experiments, psychological assessments, surveys, and statistical analyses were employed to examine how moral education integration in physical education could enhance the mental health of 60 college students enrolled in four public physical education classes at a university in 2020. Following a 12-week instructional intervention, the experimental group's mental health scores across various indicators decreased compared to their pre-experiment levels. Post-experiment comparisons between the experimental and control groups revealed significant differences in mental health indicators, with the experimental group exhibiting a greater reduction in scores across all measures. These findings suggest that the incorporation of moral education into physical education effectively fosters positive mental health development among college students.

Keywords: Infiltrating Moral Education, College Students, Mental Health.

Introduction

Moral education, which integrates scientific principles and philosophical concepts, is vital for the future development of children. Its connection with various disciplines is profound, though often difficult to articulate fully. Physical education, a key component of the school curriculum, stands to benefit significantly from the integration of moral education. This integration not only supports the holistic development of students but also enhances the quality of physical education instruction (Yang & Liu, 2021). With the advent of new curriculum reforms, the role of physical education is evolving beyond mere physical fitness. Educators are now tasked with emphasizing the educational goals of physical education, focusing on the cultivation of students' moral character alongside their physical development. Despite longstanding advocacy for a balance between capability and morality, the prevailing "Teaching to the Test" mentality persists. Many parents and educators prioritize academic performance over other developmental aspects, often undervaluing the importance of moral education. This perspective leads to the belief that moral understanding will naturally develop over time and that it is less critical compared to academic achievements (Kikuchi et al., 2021).

In practice, moral education is frequently neglected. While some parents and teachers recognize its importance, they often fail to actively implement it in their educational practices. Moral education is sometimes viewed as secondary to academic success, with the prevailing notion

that exceptional academic performance alone constitutes an ideal student. Additionally, there is a misconception among some educators that moral education is solely the responsibility of ideological and moral instruction specialists, leaving other subjects to focus exclusively on knowledge delivery (Rogerson, Prescott, & Howard, 2022; Zhao, 2021). This perspective is narrow, as students' moral education should be integrated across all aspects of teaching and across various subjects. Furthermore, subtle and continuous moral instruction is more effective than isolated moral exhortations. Therefore, it is crucial to adopt a comprehensive approach to moral education, ensuring it is not confined to specialized moral education classes but is embedded throughout the entire educational experience and daily life.

Research Design and Data Collection

Research Subjects

The experimental subjects comprised four classes of students from the 2020 cohort in public physical education at a specific university, naturally organized into groups by the institution. Classes 1 and 2 served as the control group, consisting of 30 male students, while Class 4 was designated as the experimental group, also comprising 30 male students. As a volleyball instructor, the researcher selected volleyball as the focus of the teaching experiment. Both the experimental and control groups received volleyball instruction directly from the researcher (Gao et al., 2021).

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Research Methods

Psychological Measurement Method

The effectiveness of the experiment was assessed using the Symptom Checklist 90 (SCL-90), a widely used mental health evaluation tool in China. The SCL-90, which has undergone revisions by relevant Chinese authorities, is recognized for its extensive coverage of symptoms and its capacity to accurately reflect self-reported psychological issues. With validity coefficients ranging from 0.77 to 0.99, the scale demonstrates high reliability and validity, making it well-suited for individuals with moderate or higher education levels, particularly college students. Its simplicity and practical application have made it a common choice in mental health measurement and counselling. The SCL-90 consists of 90 items and assesses ten dimensions: Somatization, Obsessive-Compulsive Behaviour, Interpersonal Sensitivity, Anxiety, Depression, Hostility, Phobic Anxiety, Paranoid Ideation, Psychoticism, and an additional ten factors. These dimensions comprehensively address major aspects of mental health. The factor scores derived from the SCL-90 are used as primary indicators of participants' psychological well-being. Each factor score is categorized into five levels, with higher values indicating more severe issues. A score exceeding 3 on any factor suggests the presence of moderate or severe psychological problems, characterized by noticeable symptoms such as insomnia, anxiety, worry, self-blame, and loneliness. This scale was selected as the measurement tool for the experiment (Krasodomska & Godawska, 2021).

Questionnaire Survey Method

Recognizing that students' perceptions of teaching effectiveness are inherently subjective, the introspection method was employed as an auxiliary evaluation tool for the experiment. As a fundamental technique in early psychological research, introspection remains a widely accepted method within the psychological community. It involves observers reflecting on their internal processes or states, examining their own consciousness, thoughts, emotions, and experiences, and articulating these reflections through language and writing. For this study, a survey questionnaire was developed to assess students' natural conditions and shifts in their attitudes toward sports and psychological experiences before and after the teaching interventions. Upon completion of the teaching experiment, the questionnaires were administered to the experimental group students through on-site distribution, face-to-face administration, and immediate collection. Out of 58 distributed questionnaires, all were returned, resulting in a 100% return rate. Of these, 56 were deemed

valid, yielding an effective response rate of 96.55% (Dolynniy, 2021).

Teaching Experiment Method

Experimental Purpose

Integrating moral education strategies into physical education curricula can address psychological issues among students with psychological abnormalities and enhance the overall mental health of college students.

Experimental Assumptions

Incorporating moral education strategies into physical education teaching can significantly enhance the mental health of college students.

Experimental Design

Given the constraints of volleyball practice teaching for public physical education students, and the restriction against random selection and assignment of students, the experimental design was structured according to existing class arrangements. Initially, four teaching classes were randomly selected, with two classes designated as the experimental group and the other two as the control group. Pre-experimental assessments were conducted for both groups. The experimental group then received the intervention, incorporating moral education strategies into their volleyball instruction, while the control group continued with the standard teaching methods. Post-experiment evaluations were performed for both groups to compare changes in mental health indicators and assess the effectiveness of the teaching intervention.

Experimental Steps

Step 1: Experimental Preparation (August 27th to September 1st, 2020): At the onset of the academic year, experimental subjects were selected, and observations of volleyball instruction across four classes were conducted over the course of one week. This observation aimed to gather foundational information regarding the public sports volleyball practice teaching and the characteristics of the students. Additionally, a measurement questionnaire was prepared (Elizawarda, Hastuti, & Desfaufa, 2022).

Step 2: Pre-Experimental Testing (September 3, 2020): Mental health assessments were administered to the research subjects. The testing was conducted personally by the experimental designer, following standardized guidelines and requirements. The completed questionnaires were collected on-site.

Step 3: Implementation (September 4, 2020, to April 18, 2021): During this period, moral education strategies were integrated into the volleyball instruction for the experimental group. These strategies were designed to effectively align students' learning orientation, enhance

their enthusiasm for learning, and foster a sense of self-directed engagement in physical exercise. The implementation of moral education strategies adhered to two fundamental principles: First, experimental teachers tailored the selection of moral education strategies to the specific characteristics of volleyball instruction. Second, teachers employed a variety of approaches, including form-matching strategies in content delivery, role-switching strategies in organizational methods, subjective evaluation strategies in assessment, and competitive mutual assistance strategies within the teaching environment, applied consistently throughout each lesson.

Experimental Variable Control

To enhance the effectiveness of the experiment, rigorous control over extraneous variables is essential. This involves conducting pre-experiment assessments of both groups to confirm no significant differences between them. The experimenter personally conducted sessions for both groups to minimize teacher subjectivity. Consistency in volleyball teaching content was maintained across both groups. A single-blind experimental design was employed to prevent students from being aware of the experimental objectives, thereby mitigating the "Hawthorne effect." Additionally, during psychological testing, uniformity was

ensured in the guidance provided, testing duration, and testing environment for all participants (Mocanu, Murariu, & Munteanu, 2021).

Mathematical Statistics

Two-sample population t-tests were employed to compare the two groups before and after the experiment. Additionally, paired t-tests were utilized to analyse changes within the experimental and control groups before and after the intervention. All data analyses were conducted using SPSS statistical software.

Empirical Analysis

Test Results of the Mental Health Status of College Students

Overall Test Results of Mental Health Indicators for College Students

The results from testing 60 college students' mental health indicators (see Table 1) reveal that the average scores of the participants are higher than the national norm but slightly lower compared to those of typical college students. The psychological health indicators for the national norm are notably lower than the corresponding indicators for ordinary university students.

Table 1

Comparison of the Mental Health Indicators with Domestic and College Students

Factor Project	Subject Investigated $\bar{x} \pm SD$ (N=60)	National Norm $\bar{x} \pm SD$ (N=1,388)	Ordinary College Students $\bar{x} \pm SD$ (N=2,685)
Somatization	1.57±0.47	1.371±0.48	1.574±0.55
Force	1.88±0.60	1.621±0.58	2.031±0.66
Interpersonal Sensitivity	1.67±0.51	1.651±0.61	1.921±0.65
Depressed	1.66±0.56	1.501±0.59	1.914±0.64
Anxious	1.51±0.52	1.391±0.43	1.681±0.58
Hostility	1.59±0.51	1.461±0.55	1.734±0.69
Terror	1.29±0.37	1.234±0.41	1.541±0.56
Paranoia	1.65±0.49	1.431±0.57	1.841±0.63
Psychiatric	1.46±0.49	1.291±0.42	1.611±0.58
Additional	1.58±0.56	1.441±0.52	

Table 2

Statistical Results of the Mental Health Scores of the Study Subjects

Student	Factor Score ≥ 2		Factor Score ≥ 2.5		Factor Score ≥ 3	
	n	%	n	%	n	%
Experimental Group (30)	20	67%	4	13%	6	20%
Control Group (30)	20	67%	5	17%	5	17%
Total (60)	40	67%	9	15%	11	18%

The statistical analysis of students with psychological issues (see Table 2) indicates that 6 students in the experimental group had a factor score of ≥ 3, representing

20% of the group, while 5 students in the control group had a factor score of ≥ 3, accounting for 17% of the group. There was no significant difference in the proportion of

students exhibiting abnormal mental health between the experimental and control groups. Overall, 40 students had a factor score of ≥ 2 , constituting 67% of the sample; 9 students had a factor score of ≥ 2.5 , making up 15% of the sample; and 11 students had a factor score of ≥ 3 , representing 18% of the sample. These findings suggest a high prevalence of moderate mental health issues (factor score ≥ 3) among the students, highlighting serious mental health concerns within the college population (Wu, 2022).

Mental Health Index Test Results of College Students with Psychological Abnormalities

Table 3

Detection Rate of Patients with Abnormal Mental Health Indicators of the Study Subjects

Project	Check Out the Number	Relevance Ratio
Somatization	3	4.2
Force	6	10.92
Interpersonal Sensitivity	2	2.52
Depressed	2	3.36
Anxious	1	0.84
Hostility	2	3.36
Terror	1	0.84
Paranoia	0	0
Psychiatric	0	0
Additional	17	15.96

Table 4

Comparison of Mental Health Indicators Between the Two Groups Before the Experiment

Content	Experimental Subjects	N	\bar{X}	SD	T	P
Somatization	Before the Experimental Group	30	1.57	0.44	-0.22	0.82
	Before the control group	30	1.59	0.51		
Force	Before the Experimental Group	30	1.88	0.60	-0.25	0.79
	Before the Control Group	30	1.91	0.61		
Interpersonal Relationship	Before the Experimental Group	30	1.69	0.52	0.22	0.82
	Before the Control Group	30	1.68	0.51		
Depressed	Before the Experimental Group	30	1.66	0.55	-0.16	0.86
	Before the Control Group	30	1.68	0.58		
Anxious	Before the Experimental Group	30	1.52	0.52	0.09	0.92
	Before the Control Group	30	1.51	0.53		
Hostility	Before the Experimental Group	30	1.61	0.52	0.10	0.91
	Before the Control Group	30	1.60	0.52		
Terror	Before the Experimental Group	30	1.30	1.31	0.06	0.94
	Before the Control Group	30	1.29	1.41		
Delusional Disorder	Before the Experimental Group	30	1.67	0.49	0.19	0.84
	Before the Control Group	30	1.65	0.49		
Psychiatric	Before the Experimental Group	30	1.48	0.51	0.13	0.89
	Before the Control Group	30	1.47	0.48		
Additional	Before the Experimental Group	30	1.58	0.59	-0.35	0.72
	Before the Control Group	30	1.61	0.55		
Total Score	Before the Experimental Group	30	144.66	37.32	-0.06	0.94
	Before the Control Group	30	145.03	39.94		
Total Average Score	Before the Experimental Group	30	1.60	0.41	-0.07	0.94
	Before the Control Group	30	1.61	0.44		

The analysis of psychological health indicators for 17 college students exhibiting psychological abnormalities (see Table 3) revealed that obsessive-compulsive behaviour was the most prevalent factor, followed by somatization, depression, hostility, interpersonal sensitivity, anxiety, and terror. No abnormalities were observed in the areas of delusions and psychosis. This finding diverges somewhat from the results of broader surveys, which often emphasize factors such as compulsion, anxiety, interpersonal sensitivity, paranoia, and depression. This study's focus on compulsion, somatization, depression, hostility, and interpersonal sensitivity contrasts with the broader research emphasis on other mental health dimensions in college students.

Research Results on the Impact of Moral Education Strategies on the Psychological Health of College Students

Research Results on Various Indicators of Mental Health of College Students Before Teaching Experiments

Prior to initiating the teaching experiments, comparisons were made between the experimental group and the control group regarding various mental health indicators. The results (see Table 4) revealed no significant differences in psychological health indicators between the two groups before the experiment ($P > 0.05$), suggesting that the mental health levels of both groups of college students were comparable.

Research Results of Various Psychological Health Indicators Before and After Teaching Experiments

This experiment employed a "moral education strategy" to enhance the effectiveness of classroom teaching by addressing the monotony and dullness of traditional practice, thereby actively engaging students and fostering positive emotional experiences within an emotionally integrated environment. Over a 12-week period, the psychological health indicators of students in the experimental group demonstrated a reduction (see Figure 1), reflecting a significant improvement in their psychological state. Comparative analysis of the students' mental health before and after the experiment showed that the experimental group experienced decreases in mental health

scores across various scales (see Table 5). Significant differences were observed in nine out of ten factors, including total scores, mean scores, obsessive-compulsive disorder, depression, anxiety, hostility, and additional factors ($P < 0.05$), with notable differences in total scores and mean scores ($P < 0.01$). In contrast, the control group showed minimal changes in mental health scores (see Table 6), with no significant differences ($P > 0.05$). These findings suggest that incorporating moral education strategies into physical education can effectively advance the mental health of college students. Furthermore, they indicate that many mental health issues among college students are developmental in nature and that leveraging positive subjective and objective factors can gradually improve students' mental health (Mocanu & Dobrescu, 2021).

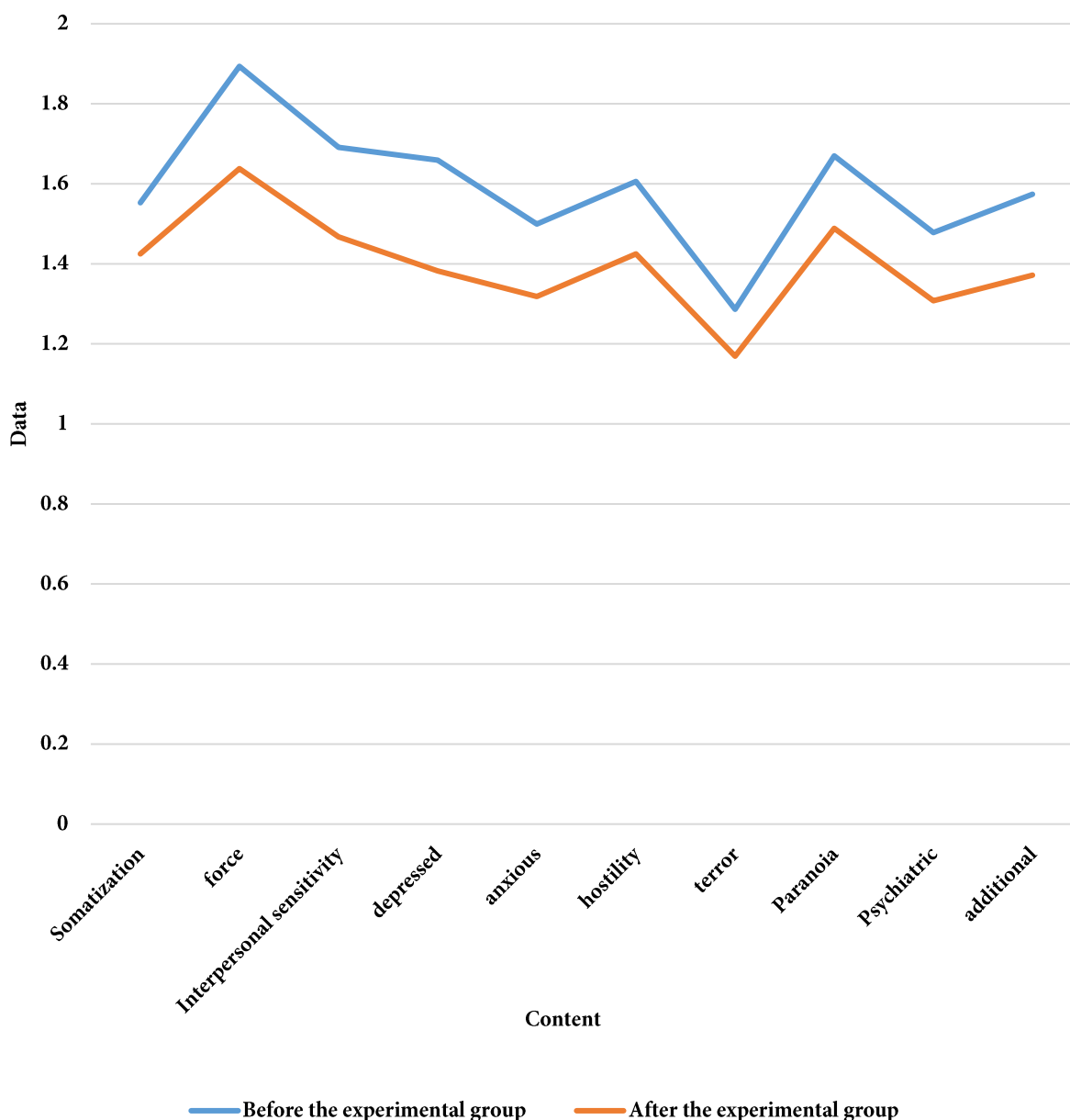


Figure 1: Example Plot of the Post-Experiment Comparison Test in the Experimental Groups.

Table 5*Comparison List of the Mental Health Indicators Before and After the Experimental Group*

Content	Experimental Subjects	N	\bar{X}	SD	T	P
Somatization	Before the Experimental Group	30	1.57	0.45	2.043	0.046
	After the Experimental Group	30	1.43	0.35		
Force	Before the Experimental Group	30	1.89	0.60	2.752	0.008
	After the Experimental Group	30	1.64	0.41		
Interpersonal Relationship	Before the Experimental Group	30	1.70	0.52	2.328	0.023
	After the Experimental Group	30	1.49	0.43		
Depressed	Before the Experimental Group	30	1.67	0.56	3.093	0.003
	After the Experimental Group	30	1.40	0.34		
Anxious	Before the Experimental Group	30	1.52	0.52	2.710	0.009
	After the Experimental Group	30	1.31	0.41		
Hostility	Before the Experimental Group	30	1.61	0.52	3.010	0.004
	After the Experimental Group	30	1.41	0.44		
Terror	Before the Experimental Group	30	1.30	0.36	1.997	0.051
	After the Experimental Group	30	1.18	0.28		
Delusional Disorder	Before the Experimental Group	30	1.67	0.49	2.052	0.045
	After the Experimental Group	30	1.50	0.43		
Psychiatric	Before the Experimental Group	30	1.48	0.52	2.053	0.046
	After the Experimental Group	30	1.31	0.33		
Additional	Before the Experimental Group	30	1.58	0.60	2.881	0.006
	After the Experimental Group	30	1.38	0.33		
Total score	Before the Experimental Group	30	144.66	37.32	4.120	0.001
	After the Experimental Group	30	123.41	26.17		
Total average score	Before the Experimental Group	30	1.61	0.41	4.175	0.001
	After the Experimental Group	30	1.37	0.27		

Table 6*List of Mental Health Indicators Before and After the Control Group*

Content	Experimental Subjects	N	\bar{X}	SD	t	P
Somatization	Before the Control Group	30	1.57	0.50	0.021	0.983
	After the Control Group	30	1.57	0.45		
Force	Before the Control Group	30	1.89	0.53	0.343	0.732
	After the Control Group	30	1.85	0.51		
Interpersonal Relationship	Before the Control Group	30	1.66	0.51	-0.201	0.841
	After the Control Group	30	1.68	0.50		
Depressed	Before the Control Group	30	1.67	0.57	-0.227	0.821
	After the Control Group	30	1.69	0.62		
Anxious	Before the Control Group	30	1.51	0.53	-0.245	0.807
	After the Control Group	30	1.49	0.45		
Hostility	Before the Control Group	30	1.58	0.52	-0.050	0.960
	After the Control Group	30	1.59	0.45		
Terror	Before the Control Group	30	1.29	0.40	-0.078	0.938
	After the Control Group	30	1.29	0.31		
Delusional Disorder	Before the Control Group	30	1.64	0.49	-0.675	0.502
	After the Control Group	30	1.71	0.52		
Psychiatric	Before the Control Group	30	1.46	0.48	-0.816	0.418
	After the Control Group	30	1.53	0.55		
Additional	Before the Control Group	30	1.60	0.54	-0.324	0.747
	After the Control Group	30	1.63	0.62		
Total Score	Before the Control Group	30	143.70	39.47	-0.276	0.784
	After the Control Group	30	145.73	40.61		
Total Average Score	Before the Control Group	30	1.60	0.44	-0.277	0.783
	After the Control Group	30	1.61	0.45		

Research Results of Various Psychological Health Indicators After Teaching Experiments

To further evaluate the effectiveness of the teaching experiment, psychological health indicators were compared between the experimental and control groups following the intervention. The results revealed a significant reduction in psychological health indicators for the experimental group, whereas the control group showed no notable changes (see Figure 2). Specifically, the experimental group exhibited a greater decrease in mental health scores across various indicators compared to the control group (see Table 7). Significant differences were observed between the two

groups in all factors except for the fear factor ($P < 0.05$). These findings suggest that, aside from natural developmental changes, the experimental intervention substantially influenced students' mental health, significantly enhancing their psychological well-being. The minimal decrease in fear tendencies may be attributed to the specific psychological characteristics of the participants regarding sports, with fear scores being lower than those typically observed among ordinary college students. This demonstrates that integrating moral education strategies into physical education is more effective in promoting students' mental health compared to conventional physical education methods (Panjaitan et al., 2021).

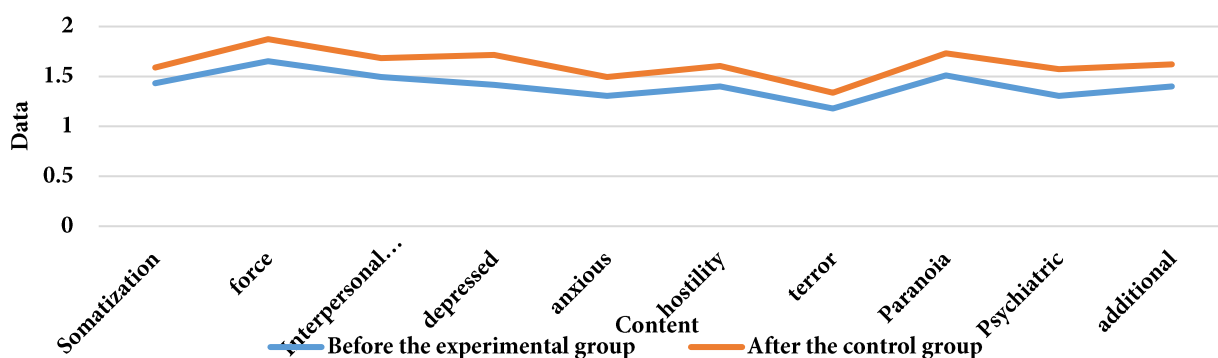


Figure 2: Example Plots for Comparing the Two Groups after the Experiment.

Table 7

List of Mental Health Indicators Between the Two Groups after the Experiment

Content	Experimental Subjects	N	\bar{X}	SD	T	P
Somatization	After the Experimental Group	30	1.43	0.35	-2.025	0.048
	After the Control Group	30	1.58	0.45		
Force	After the Experimental Group	30	1.64	0.41	-2.585	0.012
	After the Control Group	30	1.86	0.53		
Interpersonal Relationship	After the Experimental Group	30	1.49	0.43	-2.148	0.036
	After the Control Group	30	1.68	0.51		
Depressed	After the Experimental Group	30	1.40	0.34	-2.913	0.005
	After the Control Group	30	1.68	0.62		
Anxious	After the Experimental Group	30	1.31	0.41	-2.090	0.041
	After the Control Group	30	1.49	0.46		
Hostility	After the Experimental Group	30	1.41	0.44	-2.034	0.047
	After the Control Group	30	1.59	0.46		
Terror	After the Experimental Group	30	1.18	0.28	-1.952	0.056
	After the Control Group	30	1.29	0.32		
Delusional Disorder	After the Experimental Group	30	1.50	0.43	-2.291	0.026
	After the Control Group	30	1.71	0.53		
Psychiatric	After the Experimental Group	30	1.31	0.33	-2.757	0.008
	After the Control Group	30	1.54	0.56		
Additional	After the Experimental Group	30	1.38	0.33	-2.979	0.004
	After the Control Group	30	1.63	0.62		
Total Score	After the Experimental Group	30	123.41	26.17	-3.573	0.001
	After the Control Group	30	146.21	41.13		
Total Average Score	After the Experimental Group	30	1.37	0.28	-3.638	0.001
	After the Control Group	30	1.61	0.46		

Suggestions

The evaluation of college students' mental health and a comparative analysis of relevant data prior to the teaching experiments revealed that the average scores for various mental health indicators among the surveyed students were higher than the national norm but slightly lower than those of the general university student population. This highlights the concerning nature of psychological health issues among college students. Recent surveys have shown that the prevalence of moderate or severe psychological problems among college students is 16.51%. In comparison, the detection rate of such issues among the study subjects before the experiment was 15.96%, indicating a close approximation. The significantly higher psychological health indicators compared to the national norm suggest a troubling trend of deteriorating mental health among college students in recent years. The slightly lower indicators compared to the general college student norm may be attributed to specific psychological characteristics related to students' attitudes toward sports. Furthermore, the mental health issues observed among college students in this study reflect a pattern consistent with existing research. The SCL-90 Symptom Checklist, a widely used tool for assessing mental health, consistently identifies problems such as compulsion, anxiety, interpersonal sensitivity, paranoia, and depression. Similarly, this study found that the primary psychological issues among students were compulsion, somatization, depression, hostility, and interpersonal sensitivity. This

indicates both commonalities and specific aspects of mental health problems unique to the study subjects. Therefore, addressing mental health in college students requires a balanced approach, integrating both general strategies and targeted interventions based on individual needs and specific psychological issues.

Conclusion

The mental health of college students is a significant concern, with issues predominantly observed in areas such as compulsion, somatization, depression, hostility, interpersonal sensitivity, and anxiety. Several factors contribute to the mental health challenges faced by college students, including the social environment, the unique stressors associated with university life, and inherent psychological characteristics. Moral education strategies have proven effective in enhancing the mental health of college students. These strategies manifest in several keyways: they alleviate negative emotional expressions; promote better interpersonal communication; improve self-awareness; and cultivate strong willpower. By positively influencing the psychological benefits of exercise, moral education strategies contribute to improved mental health outcomes. Their impact on various mental health indicators is ranked as follows: depression, psychoticism, compulsion, delusion, interpersonal relationships, anxiety, hostility, and somatization. However, the strategies have a negligible effect on tendencies related to terrorism.

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