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Original Article

Influences of Comprehensive Psychological Intervention on the Psychological Behavior Problems and Learning Adaptability of Students at Age of 6-12 Years Old

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Abstract

Background: The age of 6-12 yr show different degrees of learning adaptability problems. We aimed to explore the influence of comprehensive psychological intervention on the psychological behavior problems and learning adaptability of students at age of 6-12 yr old.

Method: In March 2022, 768 students were selected from two primary schools in Harbin of China, and divided into control and observation groups. The changes in the scores of Achenbach Child Behavior Checklist (CBCL) for parent use and Mental Health Rate Scale for Pupil (MHRSP), and self-cognitive ability and learning adaptability level before and after the intervention were compared between the two groups.

Results: After the intervention, the discipline violation, hostility, compulsion, immaturity, evil communication, schizoid personality, and physical symptom scores in the observation group (boys) were reduced compared with those before the intervention. In comparison with the situation before the intervention, the cruelty, aggression, immaturity, depression and withdrawal, physical symptom, anxiety, and compulsion scores in the observation group (girls) were reduced, and the CBCL scores were improved better than those in the control group ($P<0.05$). In comparison with the situation before the intervention, the scores of MHRSP, self-cognitive ability, and learning adaptability score and level in the observation group were elevated after the intervention, and the above scores were improved obviously to a greater extent than those in the control group ($P<0.05$).

Conclusion: Comprehensive psychological intervention can effectively improve the psychological behavior problems of children at the age of 6-12 yr, and enhance their self-cognitive ability and learning adaptability.

Keywords: Psychology; Students; Behavior; Learning adaptability

Introduction

According to statistics, approximately 16.55 million patients in China, among whom children and adolescents account for approximately 1/3, and this proportion has been rising in recent years. However, most studies focus on the psychological health problems of college students (1). The psychological problems of students mainly originate in childhood, occur in the period of primary school, and then develop during the period of middle school (2). The phase of primary school is rightly the physiological and psychological development phase, featured by the imbalance and

maladaptation of physical and mental development. Consequently, considering the shortage in preparations, students experience confusion and conflicts, accompanied by all kinds of psychological problems. Without timely and effective intervention, these problems will affect their socialization process and growth and development and lead to various mental diseases and maladaptation. Accordingly, close attention has been focused on the circles of medicine, psychology, and education.

The psychological behavior problems include deviations in behavior, emotion, and cognition, being an external manifestation of unhealthy psychological quality (3). The behavior problems faced by children and adolescents mainly include mental diseases, interpersonal relationship problems, learning disorders, emotional problems, and behavior problems, where the last two account for approximately 20%. Parental training intervention is conducive to the emotional development of pupils and can avoid unhealthy emotions and improve adaptive behaviors (4). 3D psychological health education can effectively improve pupils' mental health status, such as impulsive tendency, panic tendency, physical symptoms, allergic tendency, and self-accusation tendency (5). Psychological intervention, if provided to pupils, can enhance their self-cognitive ability and improve their mental health status sideways (6). Razuvaeva et al. (7) reflected that the intervention measures specific to middle school students can effectively improve their PBQ, SCL-90, FES, and FACE II-CV scores, and thus promote their mental health development. The early pertinent intervention can effectively elevate the scores of junior grade 1 student in Achenbach Child Behavior Checklist (CBCL) and Inventory for Measurement of Parental Rearing Pattern (8).

Learning adaptability indicates the ability of students to overcome difficulties and achieve good learning effects. With the diversified development of the current social values and beliefs, the healthy growth of pupils is influenced, more or less, by family instability and aggravated social competition. Some pupils already fail to adapt to school environment and social environment (9-10). Psychological counseling and intervention provided to poverty-stricken students can effectively improve their independence, willpower, learning attitude, and learning adaptability (11). When junior school freshmen are intervened in the form of group guidance, their learning motivation, skill, and efficiency can be enhanced (12). The comprehensive psychological intervention pattern that integrates teachers, students, and parents can effectively improve pupils' temperament type, social influence, family stress, peer relation, social motivation, and learning adaptability (13). In general, the low learning adaptability level is clinically treated with pharmacological intervention and psychotherapy, which, however, are slightly boring. Although certain curative effects have been obtained, psychological expectations have not been reached. Hence, a feasible and effective intervention method suitable for the mental health of students at the age of 6-12 yr should be developed.

Psychological intervention can effectively improve the psychological behavior problems of pupils (14). In comparison with traditional exchange-type psychological counseling, the combination of comprehensive psychological intervention with collective teaching and game can be more easily accepted by child patients.

In this study, students at the age of 6-12 yr were intervened through comprehensive psychological intervention. By designing control tests, their influences on the psychological behavior problems and learning adaptability of the students were analyzed to provide a certain reference for promoting their mental health development.

Materials and Methods

Study objects

In March 2022, 386 students were placed in the observation group by using the class cluster random sampling method from one class of Grade 1-5 students at Gardens Primary School in Harbin of China. Another 381 students were selected as the control group from one class of Grade 1-5 students at Jihong Primary School, having similar levels and teaching resources in Harbin.

This study has obtained the written informed consent of all the parents or guardians of the subjects, and has passed the ethical review of Harbin University (Ethical Approval No. 20220403).

The control group includes 179 males and 202 females aged 6-12 yr (average age, 8.85±1.26). The observation group includes 181 males and 204 females aged 6-12 yr (average age, 8.92±1.21). The differences between the two groups in age, gender, and main life contents were not statistically significant, indicating the comparability.

Procedure

The implementers of specific operations should have the qualification of above level II national psychological counselor or above the professional title of attending psychiatrist. Collective intervention was implemented in the form of collective teaching once per month. Specifically, pertinent mental health education was provided to the students for them to learn and understand the contents related to mental health and cope with relevant problems in society, family, and school. In addition, the game-aided therapeutic method was adopted alternatively in the collective teaching to enhance the student's understanding of related content.

Evaluation indexes

1) Children's behavior problem

Children's behavior problems were evaluated using CBCL (15), which included 113 items. The scale was filled truthfully by parents according to students' situation in recent half year. Each item was scored by three levels: often (2 scores), occasionally (1 score), and no such behavior (0 score). The scores of all items were added to acquire the total score, which was higher in case of more behavior problems. The Cronbach's α coefficient and construct validity KMO of this scale were 0.89 and 0.91, respectively.

2) Psychological health problem

Psychological health problems were evaluated using Mental Health Rate Scale for Pupil (MHRSP) (16), which contained eight dimensions, such as impulsive tendency, panic tendency, physical symptom, allergic tendency, self-accusation tendency, loneliness and anxiety, anxiety about others, and learning anxiety. The psychological health problems were evaluated through Likert five-point scoring method with the following scale: met very much (5 scores), met mostly (4 scores), difficult to confirm (3 scores), mostly not met (2 scores), and not met at all (1 score). The higher the score, the higher the psychological health level. The Cronbach's α coefficient and construct validity KMO of this scale were 0.92 and 0.87, respectively.

3) Evaluation of self-cognitive ability

Self-cognitive ability was evaluated using Self-Cognitive Ability Questionnaire for Pupil, which includes four dimensions, such as attitude towards the school, acquaintance relationship status with friends, interpersonal relationship status in family, and general condition of self-cognition evaluation (52 questions in total). Self-cognitive ability was evaluated through the 5-point scoring method with the following scale: completely met (5 scores), met in some cases (4 scores), uncertain (3 scores), not met in some cases (2 scores), and completely not met (1 score). The higher the score, the stronger the self-cognitive ability. The Cronbach's α coefficient and construct validity KMO of this scale were 0.86 and 0.95, respectively.

4) Learning adaptability

The learning adaptability of pupils was evaluated by choosing the ATT test part of Academic Adaptation Test (17), including five contents, such as independence and willpower (questions 41-50), school environment (questions 31-40), family environment (questions 21-30), class taking method (questions 11-20), and learning attitude (questions 1-10). In the scale, questions 51-55 were not filled or evaluated but constituted the integrity of this scale as an "answer consistency" item. The two-point scoring method was adopted, where the to-be-improved behavior was scored with 0, the to-be-advocated behavior was

scored with 1, and the total score ranged from 0 to 50. The sum of scores of all items was the original total score, which was converted through a norm table to acquire the standard score, followed by the grading difference until reaching 1. The below-average grade was 2, the medium grade was 3, above-average grade was 4, and high grade was 5. Next, based on the ATT Instruction Manual, grades 4 and 5 indicate good adaptability, grade 3 denotes medium adaptability, and grades 1 and 2 represent maladaptation. The Cronbach' α coefficient and construct validity KMO of this scale were 0.85 and 0.88, respectively.

Statistical analysis

Data analysis was conducted using SPSS 22.0 (IBM Corp., Armonk, NY, USA). The measurement data following normal distribution were expressed as $\bar{x} \pm s$, and the comparisons were made by paired-sample *t*-test (intragroup comparison) or independent-sample *t*-test (intergroup comparison). The enumeration data were compared via x^2 test. $P<0.05$ meant that the difference was statistically significant.

Results

Comparison of CBCL scores in the two groups before and after the intervention

In the control group, the difference between the CBCL scores before and after the intervention had no statistical significance. In comparison with the situation before the intervention, the discipline violation, hostility, compulsion, immaturity, evil communication, schizoid personality, and physical symptoms scores in the observation group (males) were all reduced after the intervention, and the CBCL scores were improved better than those in the control group ($P<0.05$), as shown in Table 1. In comparison with the situation before the intervention, the cruelty, aggression, immaturity, depression and withdrawal, schizoid personality, physical symptom and anxiety, and compulsion scores in the observation group (females) were reduced after the intervention, and the CBCL scores were improved better than those in the control group ($P<0.05$), as shown in Table 1.

Table 1: Comparison of CBCL Scores in the Two Groups (males) before and After the Intervention (scores, $\bar{x} \pm s$)

Variable	*Control group (n=381)*		*Observation group (n=381)*	
	Before intervention	*After intervention*	*Before intervention*	*After intervention*
Hyperactivity	3.53±0.36	3.49±0.33[c]	3.59±0.31	3.38±0.26[c]
Aggression	4.78±0.41	4.73±0.35[c]	4.81±0.39	4.52±0.31[c]
Discipline violation	1.98±0.26	1.88±0.25[c]	2.02±0.25	1.52±0.23[ab]
Hostility	2.75±0.26	2.62±0.23[c]	2.76±0.23	2.35±0.18[ab]
Compulsion	1.08±0.06	0.98±0.05[c]	1.11±0.08	0.85±0.04[ab]
Immaturity	1.35±0.22	1.36±0.18[c]	1.38±0.21	1.15±0.16[ab]
Evil communication	2.76±0.31	2.61±0.26[c]	2.79±0.28	2.21±0.23[ab]
Schizoid personality	1.38±0.21	1.33±0.15[c]	1.40±0.19	1.15±0.12[ab]
Physical symptom	1.53±0.16	1.49±0.12[c]	1.55±0.14	1.28±0.09[ab]

Notes: Compared with the situation before the treatment, [a]$P<0.05$, Compared with the situation before the treatment, [b]$P<0.05$, Compared with the situation before the treatment, [c]$P>0.05$

Comparison of MHRSP scores in the two groups before and after the intervention

In the control group, the difference between the MHRSP scores before and after the intervention was not statistically significant ($P>0.05$). In comparison with the situation before the intervention, the MHRSP scores in the observation group regarding impulsive tendency, panic tendency,

physical symptoms, allergic tendency, self-accusation tendency, loneliness and anxiety, anxiety about others, and learning anxiety were all elevated after the intervention, and the MHRSP scores were improved better than those in the control group (<0.05), as shown in Table 3.

Table 2: Comparison of CBCL Scores in the Two Groups (females) Before and After the Intervention (scores, $\bar{x}\pm s$)

Variable	*Control group (n=381)*		*Observation group (n=381)*	
	Before intervention	*After intervention*	*Before intervention*	*After intervention*
Cruelty	0.42±0.06	0.36±0.04 ^{c}	0.45±0.05	0.26±0.03 ^{ab}
Aggression	3.69±0.26	3.59±0.21 ^{c}	3.72±0.28	2.58±0.15 ^{ab}
Discipline violation	2.89±0.28	2.85±0.24 ^{c}	2.91±0.25	2.93±0.26 ^{c}
Immaturity	2.35±0.23	2.31±0.18 ^{c}	2.31±0.25	1.33±0.15 ^{ab}
Depression and withdrawal	2.91±0.38	2.85±0.35 ^{c}	2.93±0.35	2.28±0.26 ^{ab}
Schizoid personality	0.69±0.09	0.65±0.06 ^{c}	0.72±0.08	0.51±0.04 ^{ab}
Physical symptom	1.49±0.08	1.46±0.06 ^{c}	1.53±0.09	1.27±0.05 ^{ab}
Anxiety and compulsion	2.54±0.28	2.51±0.25 ^{c}	2.58±0.31	1.46±0.21 ^{ab}

Notes: Compared with the situation before the treatment, $^{a}P<0.05$, Compared with the situation before the treatment, $^{b}P<0.05$, Compared with the situation before the treatment, $^{c}P>0.05$

Table 3: Comparison of MHRSP Scores in the Two Groups Before and After the Intervention (scores, $\bar{x}\pm s$)

Variable	*Control group (n=381)*		*Observation group (n=381)*	
	Before intervention	*After intervention*	*Before intervention*	*After intervention*
Impulsive tendency	70.25±5.47	71.98±7.82 ^{c}	70.36±4.39	85.39±8.06 ^{ab}
Panic tendency	36.31±4.69	36.66±5.02 ^{c}	36.27±4.73	54.39±5.11 ^{ab}
Physical symptoms	45.87±5.06	46.84±5.61 ^{c}	45.38±5.12	56.25±5.58 ^{ab}
Allergic tendency	32.55±2.89	32.85±3.05 ^{c}	32.61±2.93	39.67±2.89 ^{ab}
Self-accusation tendency	37.26±3.56	37.09±3.29 ^{c}	37.21±3.61	45.08±3.55 ^{ab}
Loneliness and anxiety	35.87±4.06	35.95±4.16 ^{c}	35.75±4.10	45.08±4.33 ^{ab}
Anxiety about others	33.20±4.16	33.79±4.59 ^{c}	33.15±4.08	43.29±4.80 ^{ab}
Learning anxiety	45.23±4.26	46.08±4.51 ^{c}	45.10±4.31	54.69±4.66 ^{ab}

Notes: Compared with the situation before the treatment, $^{a}P<0.05$, Compared with the situation before the treatment, $^{b}P<0.05$, Compared with the situation before the treatment, $^{c}P>0.05$

Comparison of self-cognitive ability scores in the two groups before and after the intervention

In the control group, the difference between the self-cognitive ability scores before and after the intervention was not statistically significant ($P<0.05$). In comparison with the situation before the intervention, the self-cognitive ability scores in the observation group regarding the attitude towards the school, acquaintance relationship status with friends, interpersonal relationship status in the family, and general condition of self-cognition evaluation were elevated after the intervention, and the self-cognitive ability scores were improved better than those in the control group ($p<0.05$) (Table 4).

Table 4: Comparison of Self-Cognitive Ability Scores in the Two Groups Before and After the Intervention (scores, $\bar{x}\pm s$)

Variable	*Control group (n=381)*		*Observation group (n=381)*	
	Before intervention	*After intervention*	*Before intervention*	*After intervention*
Attitude towards the school	25.79±3.41	26.84±3.76 [c]	25.91±3.55	29.01±3.97 [ab]
Acquaintance relationship status with friends	15.87±3.06	16.54±3.25 [c]	15.81±3.12	23.16±3.51 [ab]
Interpersonal relationship status in family	13.20±2.19	14.39±2.29 [c]	13.14±2.14	21.08±2.46 [ab]
General condition of self-cognition evaluation	112.41±10.29	113.68±11.31 [c]	112.32±10.33	126.58±12.76 [ab]

Notes: Compared with the situation before the treatment, [a]$P<0.05$, Compared with the situation before the treatment, [b]$P<0.05$, Compared with the situation before the treatment, [c]$P>0.05$

Comparison of learning adaptability scores in the two groups before and after the intervention

In the control group, the difference between the learning adaptability scores before and after the intervention was not statistically significant. In comparison with the situation before the intervention, the independence and willpower, school environment, family environment, lesson-taking method, learning attitude, total score of scale, standard score, and grade point scores in the observation group were all elevated after the intervention, and the learning adaptability scores were improved better than those in the control group ($P<0.05$) (Table 5).

Table 5: Comparison of Learning Adaptability Scores in the Two Groups Before and After the Intervention (scores, $\bar{x}\pm s$)

Variable	*Control group (n=381)*		*Observation group (n=381)*	
	Before intervention	*After intervention*	*Before intervention*	*After intervention*
Independence and willpower	6.24±1.35	6.29±1.41 [c]	6.21±1.26	7.25±1.53 [ab]
School environment	6.24±1.26	6.31±1.33 [c]	6.18±1.27	7.28±1.58 [ab]
Family environment	6.59±1.19	6.65±1.29 [c]	6.62±1.18	7.33±1.61 [ab]
Lesson taking method	6.39±1.28	6.47±1.39 [c]	6.31±1.21	7.21±1.32 [ab]
Learning attitude	6.58±1.43	6.65±1.48 [c]	6.54±1.37	7.24±1.91 [ab]
Total score of scale	33.45±4.59	34.58±4.97 [c]	33.51±4.65	38.69±5.49 [ab]
Standard score	50.32±9.87	52.44±9.85 [c]	50.29±9.79	55.64±10.32 [ab]
Grade point	3.15±0.97	3.19±0.89 [c]	3.12±0.92	3.65±0.94 [ab]

Notes: Compared with the situation before the treatment, [a]$P<0.05$, Compared with the situation before the treatment, [b]$P<0.05$, Compared with the situation before the treatment, [c]$P>0.05$

Comparison of learning adaptability levels in the two groups before and after the intervention

In the control group, the difference between the learning adaptability levels before and after the intervention was not statistically significant ($P>0.05$). In comparison with the situation before the intervention, the learning adaptability level in the observation group was improved after the intervention, and the learning adaptability level was improved better than that in the control group ($P<0.05$, Table 6).

Table 6: Comparison of Learning Adaptability Level in the Two Groups Before and After the Intervention (*n* (%))

Variable	*Control group (n=381)*		*Observation group (n=381)*	
	Before intervention	*After intervention*	*Before intervention*	*After intervention*
Bad	60 (15.75)	65 (17.06)[c]	68 (17.62)	63 (16.32)[ab]
Medium	152 (39.60)	145 (38.06)[c]	156 (40.41)	146 (37.82) [ab]
Good	169 (44.36)	173 (45.41)[c]	162 (41.97)	173 (44.82) [ab]

Notes: Compared with the situation before the treatment, [a]$P<0.05$, Compared with the situation before the treatment, [b]$P<0.05$, Compared with the situation before the treatment, [c]$P>0.05$

Discussion

As shown in Tables 1 and 2, after the intervention, the discipline violation, hostility, compulsion, immaturity, evil communication, schizoid personality, and physical symptoms scores of boys in the observation group were lower than those in the control group, whereas those of girls in the observation group regarding cruelty, aggression, immaturity, depression and withdrawal, schizoid personality, physical symptoms and anxiety, and compulsion were lower than those in the control group. Therefore, comprehensive psychological intervention can effectively improve the behavior problems of students at the age of 6-12 yr, which is consistent with the report of Lopez-Gomez et al. (18). Considering that mental health is an extremely complicated and relatively independent dynamic process, and mental illness, psychological disorder and psychological bias can be caused by various factors (19-20). In this study, professional psychological behavior research workers were assigned to perform personalized psychological and behavior treatment of students at age of 6-12 yr based on the basic principles of psychiatry and psychology. Students' unhealthy psychological problems could be improved through propaganda and education on psychological knowledge and game participation, thus further improving their behaviors. Therefore, comprehensive psychological behavior intervention can improve the psychological behavior problems of students at age of 6-12 yr.

From the results in Table 3, after the intervention, the MHRSP scores in the observation group regarding impulsive tendency, panic tendency, physical symptoms, allergic tendency, self-accusation tendency, loneliness and anxiety, anxiety about others, and learning anxiety were all higher than those in the control group, indicating that the comprehensive psychological intervention can effectively promote the mental health of students at the age of 6-12 yr, consistent another study (21). Primary school is an important period of personality development and mental health, in which children show relatively high plasticity in behaviors and cognition. Therefore, active and effective psychological health intervention should be performed during this period. In this study, considering the multi-aspect psychological problems of students, professional research workers adopted the mental health education method that integrates individual counseling, general psychological problem education, and game and collective teaching, thus avoiding the boring and poorly pertinent disadvantages of single teaching method (22). Students at the age of 6-12 yr could also experience pleasure and confidence and feel accepted and trusted during this intervention process, which could help them release their negative emotions such as intrapsychic conflict and anxiety to improve their mental state. Therefore, comprehensive psychological behavior intervention can effectively correct the psychological behavior problems of students at the age of 6-12 yr as a feasible and effective means of promoting children's psychological health behaviors.

Based on the results in Table 4, after the intervention, the self-cognitive ability scores in the observation group regarding the attitude towards the school, acquaintance relationship status with friends, interpersonal relationship status in family, and general condition of self-cognition evaluation were all higher than those in the control group, reflecting that comprehensive psychological intervention can effectively improve the self-

cognitive ability of students at the age of 6-12 yr, consistent with the findings of Winkler et al. (23). The precondition for pupils to form good personality traits is their self-cognitive ability because the correct self-cognitive ability can promote the self-development of students very well (24). In this study, the corresponding game link was done alternatively in the comprehensive psychological intervention, which could enhance students' degree of participation and drive them to integrate into the collective teaching. In the game, students could truly express themselves very well.

The results in Tables 5 and 6 show that after the intervention, the learning adaptability scores in the observation group were all higher than those in the control group, indicating that the learning adaptability of students at the age of 6-12 yr can be effectively promoted by the comprehensive psychological intervention. This finding is similar to that of Boisits et al. (25). Learning adaptability refers to individual ability to adjust their status according to the environmental changes during the learning process for them to adapt themselves to the learning process and learning environment and gain better learning efficiency. A partially low learning adaptability level of pupils will affect their school records and psychological health status to a certain degree. Hence, the comprehensive psychological behavior intervention can effectively correct the learning adaptability of students at the age of 6-12 yr as a feasible and effective means of improving children's learning adaptability.

Conclusion

Comprehensive psychological intervention can effectively improve the psychological behavior problems of children at the age of 6-12 yr and enhance their self-cognitive ability and learning adaptability. This intervention method also allows students to enjoy light-hearted game time in the middle of tedious collective teaching. Therefore, comprehensive psychological intervention can be easily accepted and recognized, as being worthy of promotion.

Journalism Ethics considerations

Ethical issues (Including plagiarism, Informed Consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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Conflict of Interest

The authors declare that there is no conflict of interests.

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