The Role of Social Support and Environment: The Mediating Effect of College Students’ Psychology and Behavior

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Abstract: Purpose: explore the interaction mechanism among college students’ social support, environment, behavior and psychology, so as to provide reference for college students’ behavior guidance and mental health intervention. Methods: 2,510 college students were investigated by general situation questionnaire and college students’ quality of life evaluation concise scale (QOLCS-23). Result: (1) social support has a significant positive correlation with environment, behavior and psychology; (2) behavior plays a partial mediating role between social support, environment and college students’ psychology. The mediating effect is significant, and the proportion of mediating effect is 55.22%; (3) compared with life behavior, time management contributes more to college students’ behavior ($\beta = 0.75$, $P < 0.001$). Conclusion: social support and environment can directly predict the psychology of college students, and can also indirectly affect their psychology through behavior. To improve college students’ mental health level, we should pay attention to college students’ feelings and satisfaction of social support and environment, guide college students to build good behavior, especially establish the awareness of time management.

Keywords: Quality of life; Social support and environment; Psychology; Behavior; College students

1. Introduction

Social ecosystem theory holds that the developing individual is nested in a series of interactive environments, and the ecosystem composed of individual and environment is the basic unit of individual psychological development research[1]; evolutionary psychology also puts forward that the formation of psychological quality is a process of continuous exclusion and integration with the surrounding environment[2]. Social support refers to that in the social living environment, individuals receive support or assistance from all aspects of society[3], and its impact mechanism on individual psychology is mainly divided into main effect and buffer model[4]. The former refers to that social support directly affects psychology, while the latter believes that social support can promote individuals to form more good behaviors, and then internalize and accumulate into certain psychological...
quality\cite{5,6}. Therefore, individual psychological development is affected and restricted by the ecosystem, which is also the product of the internalization of individual behavior habits, and individual behavior is also affected by social support and environment. College students are in a special period of transformation from students to socialized roles. Their minds are not mature, and they are in an important stage of shaping or changing their outlook on life and values. Their internal state is very vulnerable to external factors such as interpersonal relationship, academic pressure, social adaptation and employment vision\cite{7}, which makes college students vulnerable to all kinds of psychological and behavioral problems, and the severity is increasing\cite{8}. The growth time of the university is in the school ecosystem\cite{9}, which has the closest contact with the campus environment. The social support obtained mainly comes from the school and family. Its psychological construction and behavior formation are the results of long-term adaptation to the campus environment and social support, and interacts and restricts with the campus environment. A large number of studies have shown that behavior styles affect college students’ mental health, and good behavior styles such as exercise and healthy living habits can promote the development of mental health\cite{10-12}. This study believes that behavior may play an intermediary role between social support and environment and psychology. In order to explore the relationship between the three more accurately, taking college students’ behavior as the intermediary variable, this paper constructs the relationship model between social support and environment, behavior and psychology, and introduces the clustering algorithm to automatically divide the task group and construct the comparison group to support the conclusion from multiple angles.

2. Object and Method

2.1. Research object

From March to June 2019, this study took college students from five colleges and universities as the research object. Students were randomly selected according to their majors for questionnaire survey. A total of 2,700 questionnaires were distributed, 2,510 valid questionnaires were recovered, and the effective recovery rate was 92.96%. Among them, 1,266 boys (50.44%) and 1,244 girls (49.56%); the average age was (20.81 ± 1.43) years; there were 985 (39.24%) urban students, 1,525 (60.76%) rural students; 1,167 (46.49%) students from normal colleges, 922 (36.73%) from engineering colleges, medical colleges 421 (16.77%) from colleges and universities; 719 (28.65%) freshmen, 978 (38.96%) sophomores, and 813 (32.39%) juniors and above.

2.2. Research tools

2.2.1. General information questionnaire

The self-made general situation questionnaire was used to investigate the sociodemographic characteristics of college students, including gender, age, place of origin, University category, major, grade, whether to live in school, etc. Through internal consistency test, Cronbach’s $\alpha$ coefficient is 0.74, indicating that the reliability of the questionnaire is good and suitable for questionnaire survey.

2.2.2. Concise scale of college students’ quality of life evaluation

In this study, the scores of social support, environment, behavior and psychology of college students were measured by the 23 item concise scale (QOLCS-23)\cite{14}, Cronbach’s, which was simplified and verified by Miao and others based on the questionnaire of quality of life of college students (QOLCS-51)\cite{13}, $\alpha = 0.845$, Cronbach’s $\alpha = 0.845$, the Cronbach’s $\alpha$ coefficient of each dimension is greater than 0.7, the evaluation is more dynamic, the
evaluation time is shortened, the cooperation degree of students is improved, and the comprehensive effect of evaluation is better.

The simplified QOLCS-23 scale includes 23 items in the five dimensions of physiology, psychology, behavior, environment and social support. Each item is scored with a 5-point grade, and all items are scored positively. The lowest score is 1 and the highest score is 5. The original total score of each dimension is obtained by calculating the sum of the scores of the items it contains, and according to the percentile formula
\[
Dimension\ score = \frac{Dimension\ Raw\ Total\ Score - \text{Number\ of\ Dimension\ Entries}}{4n} \times 100
\]
The total score of quality of life is the average of the scores of five dimensions. The higher the score is, the better the quality of life will be.

2.3. Common method deviation inspection

In this study, strict quality control was carried out in terms of investigator training, questionnaire arrangement, pre-survey, anonymous test and other survey procedures; after the data were recovered, Harman single factor test was used to statistically confirm the common method deviation, and principal component analysis was conducted on the questionnaire items. The results showed that there was no case that the eigenvalue of only one factor was greater than 1, and the variation explained by the first factor was 13.44%, lower than the critical standard of 40%, indicating that there was no serious common method deviation in the data of this study.

2.4. Statistical methods

SPSS24.0 for descriptive statistics, correlation analysis and K-means Cluster analysis; AMOS21.0 establish the structural equation model, and test the intermediary effect by bootstrap method. Select the 95% confidence interval, the sample size of bootstrap is 5,000 times, and the test level is \( \alpha = 0.05 \).

3. Results

3.1. Correlation analysis between psychology, behavior, social support and environment

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<tbody>
<tr>
<td>Psychological dimension</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Emotion</td>
<td>60.67</td>
<td>17.11</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2. Willpower</td>
<td>57.82</td>
<td>11.94</td>
<td>0.415**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3. Self-cognition</td>
<td>55.41</td>
<td>14.07</td>
<td>0.438**</td>
<td>0.406</td>
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<td></td>
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<tr>
<td>4. Self-regulation behavior</td>
<td>61.62</td>
<td>20.94</td>
<td>0.293**</td>
<td>0.252**</td>
<td>0.287**</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>5. Time management</td>
<td>55.44</td>
<td>18.22</td>
<td>0.323**</td>
<td>0.327</td>
<td>0.497**</td>
<td>0.300</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Life behavior, social support and environment</td>
<td>44.69</td>
<td>25.34</td>
<td>0.106**</td>
<td>0.188**</td>
<td>0.216**</td>
<td>0.135**</td>
<td>0.258**</td>
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<td></td>
</tr>
<tr>
<td>7. Social support</td>
<td>58.01</td>
<td>19.93</td>
<td>0.271**</td>
<td>0.205</td>
<td>0.379**</td>
<td>0.199**</td>
<td>0.284**</td>
<td>0.166**</td>
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</tr>
<tr>
<td>8. Environment</td>
<td>55.43</td>
<td>21.83</td>
<td>0.193**</td>
<td>0.166**</td>
<td>0.302**</td>
<td>0.172**</td>
<td>0.233**</td>
<td>0.171**</td>
<td>0.371**</td>
</tr>
</tbody>
</table>

Note: *P < 0.05, **P < 0.01, ***P < 0.001, and the same below.

Because social support and environment can support the psychological development of college students, but the secondary indicators are not subdivided in the questionnaire and there are few items. From the perspective of model analysis, these two dimensions are combined into the observation of social support and environmental latent variables. Descriptive statistical analysis and correlation analysis were carried out on the dimensions of
The results showed that there was a significant positive correlation between each variable. See Table 1 for details.

3.2. The relationship among college students’ social support, environment and psychology: The intermediary role of behavior

The structural equation model is established by AMOS software. Firstly, Model 1 is constructed with social support and environment as independent variables and psychology as dependent variables. The results show that the path coefficient of social support and environment on psychology reaches a significant level ($\beta = 0.67$, $P < 0.001$). Secondly, investigate the intermediary role of behavior between social support and environment and psychology, and construct Model 2. The model meets the requirements of RMSEA < 0.06, and NFI, TLI and CFI are all close to 0.95, PCFI and PNFI are greater than 0.05, and the model fit is good$^{[15,16]}$. Then, considering the degree of data fitting, add the correlation path between the two error terms, build Model 3, improve the fitness between the hypothetical model and the sample data, and get the final intermediary structural equation model. See Table 2 and Figure 1 for details.

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$/df</th>
<th>RMSEA</th>
<th>NFI</th>
<th>RFI</th>
<th>IFI</th>
<th>TLI</th>
<th>CFI</th>
<th>PNFI</th>
<th>PCFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>8.929</td>
<td>0.056</td>
<td>0.971</td>
<td>0.946</td>
<td>0.974</td>
<td>0.951</td>
<td>0.974</td>
<td>0.518</td>
<td>0.520</td>
</tr>
<tr>
<td>Model 2</td>
<td>7.722</td>
<td>0.052</td>
<td>0.955</td>
<td>0.926</td>
<td>0.961</td>
<td>0.935</td>
<td>0.961</td>
<td>0.580</td>
<td>0.583</td>
</tr>
<tr>
<td>Model 3</td>
<td>3.489</td>
<td>0.031</td>
<td>0.986</td>
<td>0.973</td>
<td>0.990</td>
<td>0.981</td>
<td>0.990</td>
<td>0.530</td>
<td>0.530</td>
</tr>
</tbody>
</table>

Figure 1. Relationship Model between college students’ social support and environment, behavior and psychology.

The results show that social support and environment significantly positively predict college students’ behavior ($\beta = 0.58$, $P < 0.001$), and behavior has a significant positive predictive effect on college students’ psychology ($\beta = 0.64$, $P <0.001$); after incorporating the behavioral dimension, the positive predictive effect of social support and environment on psychology decreased, but still reached a significant level ($\beta = 0.29$, $P < 0.001$). It can be seen that behavior plays a partial intermediary role between social support and environment and psychology$^{[17]}$, the indirect effect value is $0.58 \times 0.64 = 0.37$, the direct effect value of social support and environment on psychology is 0.29, and the intermediary effect amount of behavior is $0.58 \times 0.64 / 0.67 = 55.22\%$.

From the direct effect of potential factors on the measurement indicators, the path coefficients of social...
support and environment on the measurement indicators were 0.55 and 0.68 respectively ($P < 0.001$), and the path coefficients of psychology on the measurement indicators were 0.49-0.81 ($P < 0.001$), the path coefficient of behavior to time management is 0.75 ($P < 0.001$), but the path coefficient to life behavior is only 0.35 ($P < 0.001$), indicating that compared with life behavior, time management can more effectively reflect the characteristics of behavior dimension and contribute more to behavior.

3.3. Clustering analysis based on K-means algorithm

This study uses SPSS24.0 K-means cluster analysis was conducted on 2,510 test populations. The initial cluster centers were randomly generated. The selected variables were social support and environment sub-dimension (social support, environment), psychological sub-dimension (emotion, willpower, self-cognition and self-regulation), and behavior sub dimension (time management and life behavior). In order to compare the results more intuitively, $K = 2$ and $K = 4$ were used for cluster analysis respectively. When $K = 2$, it converges after two rounds of iteration, and the population is divided into two clusters. Cluster 1 contains 1,315 test individuals and cluster 2 contains 1,195 test individuals; when $K = 4$, the population converges after four rounds of iteration and is divided into four clusters. Cluster 1 contains 522 test individuals, cluster 2 contains 564 test individuals, cluster 3 contains 830 test individuals and cluster 4 contains 594 test individuals. See Table 3 for details.

Through the analysis of the final cluster center, it is found that the high and low groups of each sub dimension are easier to get together, indicating that these traits are closely related in the population. cluster 1 and cluster 3, cluster 2 and cluster 4 were compared into two groups. It was found that in each group, the distance of life behavior variables was far, the difference was large, and the distance of other variables was close; comparing cluster 1 with cluster 2 and cluster 3 with cluster 4, it is found that the distance between life behavior variables is close, while the gap between other variables is large. The two comparisons show that life behavior has little effect on population clustering. The above two points further support the view that time management can more effectively reflect the characteristics of behavior dimension than life behavior. See Figure 2 and Figure 3 for details.

4. Discussion

4.1. There is a significant positive correlation between social support and environment and college students’ psychology

This study found that social support and environment have a significant positive predictive effect on college students’ psychology, that is, for individuals, the more social support they get, the more satisfied they are with the environment, the more they can improve their mental health. The results of cluster analysis showed that the scores of social support, environment, emotion, will, self-regulation and self-cognition of the same group tended to be the same, that is, individuals with high scores of social support, environment and psychology were more likely to appear in the same group, which also confirmed that there was a significant positive correlation between social support and environment and psychology. Social support is an important protective factor for mental health. The more social support an individual can obtain, the more material conditions and spiritual encouragement he will have. In the face of difficulties and challenges, he will have a sense of security, confidence and strength. College students are in the stage of role transformation. It is of great significance to college students’ mental health to bear the pressure of studies, employment, social adaptation, interpersonal relations and so on, give full play to the role of social support and environment in mental health, and reduce psychological problems.
<table>
<thead>
<tr>
<th>Cluster</th>
<th>Initial clustering center</th>
<th>Final clustering center</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$K = 2$</td>
<td>$K = 4$</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Emotion</td>
<td>100.00</td>
<td>25.00</td>
</tr>
<tr>
<td>Willpower</td>
<td>90.00</td>
<td>20.00</td>
</tr>
<tr>
<td>Self-cognition</td>
<td>100.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Self-regulation</td>
<td>100.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Time management</td>
<td>87.50</td>
<td>0.00</td>
</tr>
<tr>
<td>Life behavior</td>
<td>100.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Social support</td>
<td>100.00</td>
<td>50.00</td>
</tr>
<tr>
<td>Environment</td>
<td>100.00</td>
<td>37.50</td>
</tr>
</tbody>
</table>

**Figure 2.** Final cluster center at $K = 2$.

**Figure 3.** Final cluster center at $K = 4$. 
4.2. Behavior plays an intermediary role between social support, environment and college students’ psychology

The results of mediating effect analysis show that social support and environment can not only directly affect college students’ psychology, but also indirectly affect their psychology through behavior. The university campus is a “reduced version of society”. A good campus environment can enable college students to get more opportunities to contact social life and practice scenes[18]. College students who get rid of the heavy learning tasks in senior high school have more free time, try to live and think independently in the campus environment, learn effective communication and communication, constantly challenge themselves in competition and cooperation, and learn to treat people and society, continuously improve your behavior. However, college students will inevitably encounter setbacks in the process of self-development and need external experience guidance and material and spiritual support. Teachers and parents have rich life experience and mature material conditions, which can provide guidance and support for college students, help them make correct choices and correct college students’ bad behaviors in time. There are great commonalities in the values and behavior styles of peers, which can produce a unique subculture[19], which is conducive to rapid reception, absorption and mutual improvement, and its help and support role is even stronger than that of teachers and parents. Therefore, the more social support college students receive from teachers, classmates, relatives and friends, the more satisfied they are with the campus environment, and the more conducive they are to shaping good behavior. At the same time, behavior has a significant positive predictive effect on college students’ psychology. Through the transformation of the environment and behavior norms, college students’ self-control and self-regulation ability have been effectively improved, their comprehensive ability and overall quality have been enhanced to varying degrees, they can face difficulties and setbacks in life and study with more strength and confidence, they are easier to maintain a positive psychological state, and are not easy to produce negative emotions and psychological problems; college students receive external guidance and support, gradually establish a healthy way of behavior, comprehensively improve their physical and mental health, and promote the development of personal mental health. Therefore, behavior plays a partial intermediary role between social support and environment and psychology.

4.3. Time management has a greater impact on college students’ behavior

This study found that compared with life behavior, time management can more effectively reflect the characteristics of behavior dimension and contribute more to behavior. Time management reflects the individual’s concept and attitude towards time resources and the characteristics of overall management[20]. College students with strong time management tendency are often able to scientifically and reasonably dominate and make good use of time, set up clear action plans, reduce the sense of loss and lack of adaptability, improve self-control ability and learning focus, and become active and efficient strategic learners. In addition, students with strong time management ability are full of confidence in their self-organization and management ability and execution, so they show a high sense of time value, responsibility and self-efficacy, which plays a positive role in the explicit behavior of college students. Existing studies[21,22] also show that time management also has an important impact on individual mental health, self-discipline awareness, achievement motivation, well-being and so on. Therefore, guiding college students to establish the concept of time management is conducive to establish a good way of behavior and promote the physical and mental health development of college students.

To sum up, college students’ psychological dimension, behavior, social support and environmental dimension are positively correlated. To strengthen the psychological construction of college students, we should not only pay attention to the direct role of social support and environment, improve college students’ feeling and
satisfaction of social support and environment, but also play the intermediary role of behavior, guide college students to cultivate healthy behavior, pay attention to time management, and comprehensively improve the health level of college students.

Conflict of Interest

The authors declared no conflict of interest.

Acknowledgement

2019 National Social Science Fund Project “Research on the formation mechanism and guidance path of residents’ medical behavior based on hierarchical diagnosis and treatment system” (19BGL251); Jiangsu Provincial Department of education project “Research on the formation mechanism of residents’ medical behavior under the background of graded diagnosis and treatment in Jiangsu Province” (2019SJA0943); funded by the “Blue Project” of Jiangsu Universities.

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