

Feasibility Research on the Application of Facial Expression Recognition in College Students' Mental Health Interview

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Abstract: Using computer expression recognition technology to learn the different reflections of mental sub-health status, and then explore the possibility of using facial expression recognition method in new interviews to identify mental sub-health status through this method. Methods the sub-health self-assessment scale and symptom checklist 90 (SCL-90) were used for questionnaire survey. Twenty-one subjects were selected and divided into experimental group 1, experimental group 2 and control group through pairing. An experimental study of facial expression feedback was carried out. Results compared with the control group, the somatization, interpersonal sensitivity, anxiety and psychosis of the experimental group 1 were significantly lower than those of the control group ($t=2.25, -2.45, -2.42, -2.39; p<0.05$); Compared with the control group, the interpersonal sensitivity and anxiety of the experimental group 2 were significantly lower than those of the control group ($t=-2.06, -2.16, -2.23; p<0.05$); There was no significant difference between experimental group 1 and experimental group 2. Through the computer analysis test of the sampled data, the conclusion shows that the use of computer facial expression recognition can identify the possibility of mental sub-health status of college students.

1. Introduction

Researchers such as psychologist Cairo Izard put forward a hypothesis that the theoretical analysis and feature recognition of facial expression, or the time-related potential research of facial expression processing, are all functional analysis of facial muscle contour using computer related software technology, while there are few studies on changing mental health through facial expression experimental feedback. Therefore, this study first investigated the psychological state of college students, and then conducted facial expression feedback experiments through computer video to study the impact of facial expression feedback on College Students' mental health.

2. Research object and method

2.1. Research object

A questionnaire survey was conducted among the students of the school of Humanities and management of Tianjin University of traditional Chinese medicine, of which 250 questionnaires were distributed and 241 questionnaires were recovered (96.4); 227 valid questionnaires (94.2%); There are 100 boys (44.05%) and 127 girls (55.9%), aged 16-25 years old.

2.2. Research methods

Symptom checklist 90 (SCL-90) and sub-health self-assessment scale were used; Using computer video to carry out facial expression feedback experiment.

2.3. Research procedure

Among the 227 valid questionnaires collected, 21 students with psychological symptoms were selected and matched according to the sub-health score and SCL-90 score. They were divided into three groups: experimental group 1, experimental group 2, control group; There was no significant difference in the front of the three groups. Group activities were carried out first in experimental group 1, and then facial expression Feedback Video experiments were carried out, 1 5 hours, once a week, 6 times in total; Face expression Feedback Video experiments were performed on experimental group 2, 1 hour each time, once a week, a total of 6 times; The control group was not treated, and each experiment was divided into three parts, namely the beginning part and the middle part. End. At the beginning, let the subjects face the computer video equipment take pictures of the initial state of their facial expressions, and give corresponding grade scores (all use 5 points to score, and the self feeling is not good to perfect, which is 12345 in turn). In the middle part, experimental group 1 carried out facial expression feedback experiment under the leadership of the main test, supplemented by group activity intervention; Experimental group 2 carried out the end part of the facial expression feedback experiment. After the experiment, each subject photographed their most satisfactory facial expression state through computer video again and gave the child the corresponding grade score. Post test was carried out after 6 experiments.

2.4. Statistical processing

Using SPSS 17.0 statistical software analyzes and processes the data.

3. Results

The posterior comparison of health and SCL-90 factors between experimental group 1 and control group is shown in Table 1

Table 1: Comparison results of rear side of experimental group 1 and control group (\pm s)

project	healthy	body	force	Interpersonal	depressed	anxious	hostile	terror	Bigotry	Psychosis	Total score
Experimental group 1	48.6 \pm 15.45	1.25 \pm 0.35	1.75 \pm 0.47	1.54 \pm 0.65	1.60 \pm 0.58	1.45 \pm 0.71	1.74 \pm 0.65	1.35 \pm 0.58	1.68 \pm 0.58	1.48 \pm 0.58	1.68 \pm 0.58
control group	52.45 \pm 19.87	1.57 \pm 0.68	1.84 \pm 0.78	1.76 \pm 0.64	1.65 \pm 0.78	1.67 \pm 0.78	1.75 \pm 0.68	1.45 \pm 0.51	1.87 \pm 0.68	1.68 \pm 0.58	1.75 \pm 0.78
t	-4.78	-2.25*	-1.78	-2.45*	-1.15	-2.42*	-1.36	-1.23	-1.71	-2.39*	-1.47

Note: * p <0.05, ** p <0.01, the same below

The posterior comparison of sub-health and SCL-90 factors between experimental group 2 and

control group is shown in Table 2

Table 2: Comparison results of experimental group 2 and control group ($\pm s$)

project	healthy	body	force	Interpersonal	depressed	anxious	hostile	terror	Bigotry	Psychosis	Total score
Experimental group 2	49.6 \pm 12.45	1.55 \pm 0.65	1.25 \pm 0.47	1.74 \pm 0.65	1.60 \pm 0.58	1.45 \pm 0.78	1.74 \pm 0.65	1.25 \pm 0.58	1.88 \pm 0.58	1.48 \pm 0.58	1.58 \pm 0.58
control group	55.55 \pm 15.47	1.57 \pm 0.38	1.57 \pm 0.78	1.66 \pm 0.64	1.65 \pm 0.78	1.77 \pm 0.88	1.75 \pm 0.68	1.55 \pm 0.61	1.97 \pm 0.78	1.68 \pm 0.58	1.75 \pm 0.78
t	-4.86	-2.15*	-1.88	-2.45*	-1.15	-2.42*	-2.36	-1.23	-1.78	-2.39*	-1.47

The posterior comparison of sub-health and SCL-90 factors between experimental group 1 and experimental group 2 is shown in Table 3

Table 3: Comparison results of the rear side of experimental group 1 and experimental group 2 ($\pm s$)

project	healthy	body	force	Interpersonal	depressed	anxious	hostile	terror	Bigotry	Psychosis	project
Experimental group 1	48.6 \pm 17.45	1.35 \pm 0.35	1.75 \pm 0.66	1.74 \pm 0.65	1.60 \pm 0.58	1.45 \pm 0.78	1.74 \pm 0.65	1.25 \pm 0.58	1.88 \pm 0.58	1.58 \pm 0.38	1.58 \pm 0.58
Experimental group 2	49.45 \pm 15.47	1.57 \pm 0.53	1.57 \pm 0.78	1.66 \pm 0.64	1.65 \pm 0.78	1.89 \pm 0.88	1.75 \pm 0.68	1.55 \pm 0.61	1.97 \pm 0.88	1.68 \pm 0.58	1.75 \pm 0.78
t	-4.86	-2.15*	-1.88	-2.45*	-1.15	-2.42*	-2.36	-1.38	-1.28	-2.39*	-1.47

4. Discussion

After the implementation of facial expression feedback combined with group activity intervention, the mental health status of experimental group 1 and control group was post tested. Table 1 shows that in the total sub-health score and SCL-90 factors of experimental group 1 and control group, the score of experimental group 1 is significantly lower than that of control group, and in the Somatized interpersonal sensitivity anxiety and psychotic factors the difference has reached a significant level. The reason is that facial expression feedback combined with group activities can effectively improve the mental health level of college students. In the facial expression video feedback regulation, each member adjusts their most satisfied expression through video, which affects their mood and mental state at that time. In the group counseling activities, the atmosphere is more active. Various activities and discussions let the students relax physically and mentally, and many lives and learning pressures are released, such as some psychological relaxation training: muscle relaxation method and deep breathing method. These training make the students relax physically and mentally, feel happy, and then the emotional changes are shown from facial expressions to achieve physiological awakening, and enhance self-awareness.

Table 2 shows that the difference of Somatized interpersonal sensitivity and anxiety between the experimental group 2 and the control group in the total sub-health score and SCL-90 factors reached a significant level, which may be because in the facial expression video experimental feedback, each member adjusted his most satisfied expression through video, and some facial expression training skills made the subjects feel relaxed and confident, so as to overcome shyness when facing the public, Find their own highlights according to the emotional theory of yizad and others, facial expression is the external expression of emotion, emotion will affect expression, and expression will also affect emotion in turn. Through the regulation of expression, people's emotional experience is changed, and the whole psychological face of people is further changed. In addition, expression is mainly controlled by the limbic system of the nervous system, and the corresponding physiological mechanism of expression regulation also has a corresponding impact. [1]

Table 3 shows that there is no significant difference between the rear side of the two experimental groups. The reason is that group activities in experimental group 1 are more common, and the content of activities can improve some psychological symptoms, such as overcoming interpersonal sensitivity and alleviating anxiety. On the other hand, facial expression feedback is

actually equivalent to some psychological activities, psychological relaxation, and the effect of group activities is equivalent.

5. Problems in the use of facial expressions in college students' mental health interviews

5.1. There are errors in the recognition of facial expressions

According to the existing data, even those who have received professional training still have certain errors in the recognition of micro expressions. [2] This constitutes a practical problem in the application of microexpressions in news interviews from two aspects. First of all, the error of microexpression recognition cannot correspond to the strict authenticity of news, which makes it more difficult for reporters to grasp the opportunity and degree of microexpression application. Secondly, in face-to-face interviews, if reporters make mistakes in using microexpressions, they will not only fail to ask key questions, but also may arouse the interviewees' negative emotions and affect the quality of the entire interview. [3]

5.2. The possibility of the interviewer's personal emotions will increase

Impartiality and objectivity are the basic conditions and value elements of news, while neutrality is the expression of impartiality and objectivity. In the interview, it is very important for reporters to restore the news facts and not project personal emotions into them. The most critical factor of micro expression recognition is the person who performs the test and analysis. Even those who have received professional training and can objectively ensure the accuracy of identification are still subjective individuals. This person may not only bring personal feelings, or even prejudice, into the interview, but also be affected by many uncertain factors such as disease, knowledge, gender and so on. Such a micro expression recognition subject does not meet the requirements of "science", and its recognition accuracy will also be affected to a certain extent. Therefore, from this point of view, there are certain problems in the application of micro expressions in interviews. [4]

5.3. Hardware problems in implementation

The male protagonists in American dramas need the help of modern technology to recognize micro expressions. Of course, these instruments are not imagined by the screenwriters, but come from the real world. When using micro expression recognition in psychology and investigation, only the intervention of these instruments can ensure the accumulation of experimental research data, observation and analysis, and ensure the accuracy of the research. [5]

For example, the accent analyzer is used to measure the pitch of the measured person when speaking and calculate the anxiety value. It focuses on how the tested person expresses, not the specific content. The subjects have typical accents when answering typical questions. These were recorded as the baseline of the subjects' heavy pronunciation, and also the baseline of the highest tolerance. When the subject is very anxious, his tone will pierce the highest baseline. [6]

In addition, micro expression training machine, secret room, camera and other commonly used equipment. It's easy to present these in American dramas, but it's difficult to appear on the interview scene. Through the imitation training of facial expressions and the use of video equipment to capture some instant expressions, the expressions can be reflected to the greatest extent. However, at present, it is difficult to interview the facial expressions of college students in actual interviews.

6. How to use facial expression knowledge in mental health interviews

6.1. Strengthen the learning of facial expression related knowledge

In news interviews, although no one has made it clear that they have used microexpressions, in fact, the recognition of microexpressions is only common sense for some experienced interviewers. A good interviewer can keenly judge the emotion through an expression or action of the interviewee, and then ask questions around the theme step by step. However, this generally requires a long time of practice and experience accumulation, and micro expression recognition training can help interviewers recognize micro expressions faster and more accurately, effectively shorten the time required for interviewers to obtain relevant accumulation, and reduce the potential dangers that may be faced by practice. [7] Therefore, strengthening the learning of micro expression recognition can make the interviewer's cognition of the interviewee's emotion more scientific and the interview more efficient.

6.2. Strictly use facial expression skills in real practice

Counseling office of college might as well try to start the interview naturally with a micro expression, such as a friendly smile, eyes, joys and sorrows, which are highly consistent with the interviewee, which are enough to convey the affinity of the interviewer, narrow the distance between each other as soon as possible, and achieve psychological proximity. [8]

Next, interviewers should use micro expressions such as posture, tone of voice, facial expressions, gestures, and even the distance between people to fill in and enrich some deficiencies, losses, or deficiencies of their language symbols in the dissemination of information. This not only expands the stimulation surface of the interviewees' senses, causes and maintains the excitement of each other's cerebral cortex, but also improves the quality of news dissemination. [9]

Finally, the interviewer should use micro expressions to communicate the feelings of both sides and adjust the harmonious interview atmosphere. The interviewee is not an insulator or a one-way receiver, but a person who constantly feeds back communication signals. Under the influence of positive microexpressions such as interviewer expectation and respect, they will have positive emotional identification and emotional transfer to the interviewer, and their brain is in a good state of excitement; After receiving these positive information feedback, the interviewer further strengthens his "positive emotions", so repeatedly, forming a virtuous circle, and creating an atmosphere of harmonious cooperation. At the same time, the interviewer can also avoid extreme problems and avoid the negative emotions of the interviewees by observing the micro expressions of the interviewees. Moreover, when the conversation deviates from the interview requirements, the interviewer can dilute the expression of concentration through his micro expression, remove his gaze, or put down his pen and get up to light cigarettes and pour tea, so as to remind and hint the other party to get to the point. It can be seen that the use of micro expressions is conducive to the creation of a harmonious interview environment.

6.3. Help of facial expression to later writing and editing

Although it is impossible to move all the equipment in American dramas to the interview scene, it is easy to intervene in the interview with the appropriate help of electronic equipment, and it is very helpful for later writing and editing. These devices are not uncommon in routine interviews, but reporters have not used them enough in the past. [10] For example, the digital recorder is compact in appearance, easy to carry, easy to hide, and records audio through digital storage. As usual, reporters use it to help recall information when writing a manuscript. In fact, it can do more

than that. After the interview, the reporter may be able to remember what the other person said, but he may not remember which sentence he said with a raised tone, pause or knot. After mastering the micro expression recognition, the reporter can use the recording pen to repeatedly play the recording, further detect the voice changes of the reporter and analyze his emotions.

Not only that, the data recorded by these devices can also be input into the computer for analysis. The advantage of software analysis is that it can set the baseline parameters of the interviewee. The changes within the set parameter range belong to the baseline response. If the connecting angle between the eyebrow and the tip of the eyebrow exceeds this range, the instrument will definitely catch it accurately, and it can judge the size of the angle difference to judge the size of the eyebrow shape change, so as to deduce the fullness of emotion. The combination of software and artificial analysis can effectively improve the efficiency and accuracy of micro expression recognition in news interviews.

7. Conclusion

In conclusion, facial expression feedback has a significant impact on mental sub-health; The effect of facial expression feedback combined with group activities on mental health is equivalent to that of facial expression feedback on mental sub-health. The basic facial expression is an important reference in the reflection of College Students' physical and mental health. It directly affects the measurement effect of facial expression and reflects the physical health status of college students. It can be seen that the overall facial expression of the human body reflects the mental health status of college students and affects the interview research. In the process of studying the whole expression of people, studying the basic expression of personal face has a very important impact on the observation of the physical and mental health development of college students. Through the recognition of College Students' facial expressions, it has a significant effect on Preventing College Students' physical and mental health and preventing college students from mental health problems.

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