

Full Length Research Paper

Effect of different stress stimulation on frustration tolerance of female college students with different temperament

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To investigate effect of different stress stimulation on frustration tolerance of female college students with different temperament, 145 female college students were chosen to perform four different training programs of aerobics, and then the frustration tolerance was investigated and analyzed. The results showed that frustration tolerance of female college students with phlegm temperament significantly increased with increasing stress stimulation ($p < 0.01$). Frustration tolerance of female college students with choleric temperament, sanguine temperament and melancholic temperament varied with increasing stress stimulation, but the difference was not significant ($p > 0.05$). Frustration tolerance of female college students with choleric temperament and sanguine temperament increased rapidly under high-intensity stress stimulation. Frustration tolerance of female college students with melancholic temperament showed U-shape under different levels of stress stimulation.

Key words: Stress stimulation, frustration tolerance, temperament, female college students.

INTRODUCTION

Frustration tolerance is the ability of a person on a task when frustration occurs due to setbacks and difficulty (Spacapan and Cohen, 1983; Motowidlo et al., 1986; Martimportugués-Goyenechea and Gómez-Jacinto, 2005; Zhang, 2006). Excellent frustration tolerance is necessary for one to be mentally healthy (Costa and McCrae, 1993; Brackney and Karabenick, 1995; Kitzrow, 2003; Sun, 2008; Dai, 2009). Frustration means maturity as well as shock and it is very important for every college student to correctly identify frustration and deal with it (Ripley, 1972; Ciaccio, 2000; Zhang, 2008). For female college students, they are currently in an important stage to be mentally healthy during which their minds are becoming more and more mature. Meanwhile, it is a period full of confusion and dramatic changes on individual mind. Based on some related studies, currently among college students, psychological problems occur approximately 20 to 30% in Chinese colleges (Zhang and Li, 2006; Lu et al., 2009). Most of the psychological problems are caused by the gap between reality and ideal. It has been demonstrated that the frustration tolerance of college students is generally low and research on methods of

improving frustration tolerance is rare (Gerra et al., 1993; Liu and Zhang, 2007; Yan, 2009). Therefore, the study aims to improve the frustration tolerance and learning initiative of female college students based on investigation about effect of different stress stimulation on frustration tolerance of female college students with different temperament.

MATERIALS AND METHODS

Experimental subjects

There are a total of 145 female college students from levels 1, 2, 3 and 4 who offered aerobic courses of 2009 in Huzhou Teachers College. The male students and females who have aerobics experience as well as those who have chronic diseases and injuries are excluded; which are 31 students.

Experimental methods

A pre-experiment was done to justify temperament type of female college students based on existed methods (Zhu, 2007; Yao, 2008;

Table 1. Analysis of temperament type and frustration tolerance of female college students before the experiment of stress stimulation.

Temperament type	Experimental subjects number	Frustration tolerance
Choleric	25	22.26 ± 4.21
Sanguine	50	24.28 ± 4.40
Phlegm	40	24.29 ± 4.06
Melancholic	22	22.77 ± 6.50
F		1.304
P		0.276

Jiang, 2009). Temperament type includes phlegm, choleric, sanguine and melancholic temperaments. In this study, variables were the different levels of stress stimulation, that is, low-, medium- and high- intensity stress stimulation. Low-intensity stress stimulation is an aerobic movement of five eight-beat combination according to 0.1° of difficulty (DD); medium- intensity stress stimulation is an aerobic movement of five eight-beat combination according to 0.2 DD; high-intensity stress stimulation is an aerobic movement of five eight-beat combination according to 0.3 DD. Dependent variables were frustration tolerance, which was used according to existing methods (Yang and Wu, 2007; Zhu, 2007; Yao, 2008). Frustration tolerance included three dimensions, that is, action orientation, mission challenge and emotional feelings.

Experimental design

145 female college students were chosen to perform four different training programs of aerobics for 4 weeks. In the first week, temperament type for female college was judged by the pre-experiment, then frustration tolerance of female college students was investigated before the experiment of stress stimulation. In the second week, the frustration tolerance of female students was investigated in the experiment of stress stimulation (0.1 DD). In the third week, the frustration tolerance of female students was investigated in the experiment of stress stimulation (0.2 DD). In the fourth week, the frustration tolerance of female students was investigated in the experiment of stress stimulation (0.3 DD).

Statistical analyses

Statistical analyses were performed using the paired t-test, Wilcoxon's signed-rank test and chi square test (SPSS ver. 11.5 SPSS Inc., Chicago, IL, USA). P-values less than 0.05 were deemed to be statistically significant.

RESULTS

Analysis of temperament type and frustration tolerance of female college students before the experiment of stress stimulation

A pre-experiment was done to justify temperament type of 145 female college students, 8 of whom with combined temperament were excluded. There were a total of 137 students left in whom 25 were with choleric temperament, 50 were with sanguine temperament, 40 were with phlegm temperament and 22 were with melancholic temperament, respectively. As shown in Table 1, before

the experiment of stress stimulation, frustration tolerance of female college students with different type of temperament showed no significant differences ($p > 0.05$).

Analysis of frustration tolerance of female college students under different levels of stress stimulation

Analysis of frustration tolerance of female college students under low-intensity stress stimulation are shown in Table 2. Frustration tolerance and its three dimensions (action orientation, mission challenge and emotional feelings) of female college students with different temperament type showed no significant differences ($p > 0.05$). This means under low-intensity stimulation, the reaction, adaptation and resistance of frustration of college students with different temperament type are almost the same.

Analysis of frustration tolerance of female college students under medium- intensity stress stimulation are shown in Table 3. Although the frustration tolerance of female college students with choleric temperament, phlegm temperament and sanguine temperament increased, the difference was not significant ($p > 0.05$). Meanwhile, the mission challenge dimension of female college students with the above three types of temperament was significantly different ($p < 0.05$) and the order was phlegm > choleric > melancholic > sanguine.

Analysis of frustration tolerance of female college students under high-intensity stress stimulation are shown in Table 4. Frustration tolerance of female college students with different temperament type was highly significantly different ($p < 0.01$) and the order is phlegm > melancholic > sanguine > choleric. Meanwhile, the mission challenge and emotional feelings dimension of female college students with melancholic temperament were also significantly different ($p < 0.05$).

Analysis of frustration tolerance of female college students with different types of temperament

As shown in Tables 5 and 6, there is no significant difference in frustration tolerance between female college

Table 2. Analysis of frustration tolerance of female college students under different levels of stress stimulation.

Temperament type	No. of experimental subjects	Action orientation	Mission challenge	Emotional feelings	Frustration tolerance
Choleric	25	7.76 ± 2.47	7.04 ± 1.82	7.00 ± 2.22	21.80 ± 5.64
Sanguine	50	8.61 ± 2.41	7.17 ± 2.27	7.63 ± 2.52	23.41 ± 5.62
Phlegm	40	9.09 ± 1.96	7.68 ± 1.98	8.07 ± 2.11	24.80 ± 4.97
Melancholic	22	8.90 ± 2.45	7.59 ± 2.32	8.45 ± 2.46	24.95 ± 6.29
F		1.887	0.668	1.830	1.964
P		0.134	0.573	0.144	0.122

Table 3. Analysis of frustration tolerance of female college students under medium-intensity stress stimulation.

Temperament type	No. of experimental subjects	Action orientation	Mission challenge	Emotional feelings	Frustration tolerance
Choleric	25	8.48 ± 1.56	7.44 ± 1.56	8.44 ± 1.66	24.36 ± 3.20
Sanguine	50	8.70 ± 2.31	7.00 ± 2.23	8.52 ± 2.22	24.22 ± 5.23
Phlegm	40	8.73 ± 1.58	8.16 ± 1.68	8.32 ± 2.08	25.20 ± 3.92
Melancholic	22	7.59 ± 1.65	7.32 ± 2.46	8.59 ± 2.42	23.50 ± 4.52
F		2.111	2.746	0.107	0.807
P		0.102	0.045	0.956	0.492

Table 4. Analysis of frustration tolerance of female college students under high-intensity stress stimulation.

Temperament type	No. of experimental subjects	Action orientation	Mission challenge	Emotional feelings	Frustration tolerance
Choleric	25	8.76 ± 2.17	7.00 ± 2.61	8.80 ± 2.25	24.56 ± 6.12
Sanguine	50	8.84 ± 2.16	7.78 ± 2.23	8.80 ± 2.26	25.42 ± 5.53
Phlegm	40	9.72 ± 1.97	9.30 ± 1.74	9.40 ± 2.61	28.83 ± 4.40
Melancholic	22	9.36 ± 1.53	8.95 ± 1.81	9.05 ± 2.18	26.73 ± 4.61
F		2.033	8.489	2.936	5.062
P		0.112	0.000	0.035	0.002

Table 5. Analysis of frustration tolerance of female college students with choleric temperament (Experimental subjects number of 25).

Stress Stimulation	Action orientation	Mission challenge	Emotional feelings	Frustration tolerance
Low-intensity	7.76 ± 2.47	7.04 ± 1.88	7.00 ± 2.22	21.80 ± 5.64
Medium-intensity	8.48 ± 1.56	7.00 ± 2.61	8.44 ± 1.66	24.36 ± 3.20
High-intensity	8.76 ± 2.17	7.16 ± 2.05	8.80 ± 2.25	24.56 ± 6.12
F	6.509	0.347	5.334	2.232
P	0.228	0.708	0.007	0.115

Table 6. Analysis of frustration tolerance of female college students with sanguine temperament (No. of experimental subjects; 50).

Stress stimulation	Action orientation	Mission challenge	Emotional feelings	Frustration tolerance
Low-intensity	8.61 ± 2.40	7.17 ± 2.27	7.63 ± 2.52	23.41 ± 5.62
Medium-intensity	8.70 ± 2.31	7.00 ± 2.23	8.52 ± 2.22	24.22 ± 5.23
High-intensity	8.83 ± 2.16	7.78 ± 2.23	8.80 ± 2.26	25.42 ± 5.53
F	0.133	1.837	3.707	1.866
P	0.876	0.163	0.027	0.158

Table 7. Analysis of frustration tolerance of female college students with phlegm temperament (No. of experimental subjects; 50).

Stress stimulation	Action orientation	Mission challenge	Emotional feelings	Frustration tolerance
Low-intensity	9.09 ± 1.96	7.64 ± 1.98	8.07 ± 2.11	24.80 ± 4.98
Medium-intensity	8.73 ± 1.58	8.16 ± 1.68	8.32 ± 2.08	25.20 ± 3.92
High-intensity	9.72 ± 1.97	9.30 ± 1.74	9.80 ± 1.60	28.82 ± 4.40
F	3.313	10.119	10.632	11.255
P	0.039	0.000	0.000	0.000

Table 8. Analysis of frustration tolerance of female college students with melancholic temperament (No. of experimental subjects; 50).

Stress stimulation	Action orientation	Mission challenge	Emotional feelings	Frustration tolerance
Low-intensity	8.90 ± 2.45	7.59 ± 2.32	8.45 ± 2.46	24.95 ± 6.29
Medium-intensity	7.59 ± 1.65	7.32 ± 2.46	8.59 ± 2.42	23.50 ± 4.52
High-intensity	9.36 ± 1.53	8.95 ± 1.81	8.41 ± 2.61	26.73 ± 4.610
F	5.060	3.447	0.031	2.119
P	0.009	0.038	0.969	0.129

students with Choleric and Sanguine temperaments under different levels of stress stimulation ($p > 0.05$), but emotional feeling dimension of female college students was significantly different ($p < 0.05$).

Frustration tolerance and its two dimensions (mission challenge and emotional feelings) of female college students with phlegm temperament were highly significantly different ($p < 0.01$); Meanwhile, action orientation dimension of female college students was significantly different ($p < 0.05$) (Table 7).

As shown in Table 8, frustration tolerance of female college students with melancholic temperament showed no significant differences under different levels of stress stimulation ($p > 0.05$), but mission challenge dimension of female college students was significantly different ($p < 0.05$); Meanwhile, action orientation dimension of female college students was highly significantly different ($p < 0.01$).

In summary, the ability to resist, adjust to and deal with frustration has increased as the stress stimulation of study rises for female college students with phlegm, sanguine and choleric temperament. But at the same time, the ability to resist, adjust to and deal with frustration showed U-shape for female college students

with melancholic temperament (Table 9). So, frustration tolerance of female college students can be trained and improved through stress stimulation.

DISCUSSION

Firstly, there were no significant differences between female college students with different types of temperament before the stress stimulation experiment. Based on the analysis, the frustration tolerance is not genetically transmitted; it is gained from post-natal learning. Furthermore, various degrees of emotional and behavioral response emerge due to different types of temperament.

Secondly, there was significant difference in frustration tolerance of female college students with different types of temperament under high-intensity stress stimulation and the order was Phlegm > melancholic > sanguine > choleric. On the other side, there was no significant difference under low-intensity and medium-intensity stress stimulation. However, there was significant difference in mission challenge dimension. The analysis has demonstrated that as the stress stimulation gradually increased,

Table 9. Analysis of frustration tolerance of female college students with different types of temperament.

Temperament	Frustration tolerance
Choleric	high-intensity > medium-intensity > low-intensity
Sanguine	high-intensity > medium-intensity > low-intensity
Phlegm	high-intensity > medium-intensity > low-intensity
melancholic	high-intensity > low-intensity > medium-intensity

the ability to resist, adjust to and deal with frustration also changed in a variety of aspects. This was caused by the diverse cognitional judgment of female college students with different types of temperament. Hence, there was significant difference under the high-intensity stress stimulation.

Thirdly, the female college students with phlegm temperament who received a 3-week continuous stress stimulation showed significant differences in total frustration tolerance and action orientation, mission challenge and emotional feelings dimension. The female college students with melancholic temperament showed significant differences in action orientation and mission challenge dimension and they showed U-shape in total frustration tolerance and action orientation, mission challenge and emotional feelings dimension. However, the female college students with choleric temperament and sanguine temperament only showed significant differences in emotional feelings dimension. The analysis believed that the significant enhancement on frustration tolerance of the female college students with phlegm temperament was associated with favorable individual characteristics such as emotional stability, flexibility and high, etc. Also the U-shape frustration tolerance of the female college students with melancholic temperament was associated with individual characteristics such as deep experience of emotion, slow formulation of emotional stability and steadiness etc. For the female college students with sanguine temperament, who were weak-minded and easily shifted attention, they could decompose the stress stimulation so their frustration tolerance increased in a small extent. Frustration tolerance of female college students with choleric temperament increased rapidly under high-intensity stress stimulation.

Clifford (1988) proposed the theory of constructive failure. Clifford believed that under appropriate extent of adventures and challenges, the failure experience could produce positive and constructive responses (Clifford, 1984, 1988). The theory was in line with the results of this study. In other word, to gradually increase pressure stimulation was appropriate for the female college students with choleric, phlegm and sanguine temperament. Therefore, positive and active constructive responses, that is, frustration tolerance, became higher and higher. Medium-intensity stress stimulation was an interim for female college students with melancholic temperament so that decreased frustration tolerance appeared. After adjusting to frustration and carrying out

strategies to deal with it, the frustration tolerance increased remarkably under high-intensity stress stimulation.

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