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Validity and Reliability of the Aydin-Flow Coping with Stress Scale (AFCSS) on Multiple Samples in the United States

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Abstract

The Aydin-Flow Coping with Stress Scale (AFCSS) based on flow theory was developed on United States college students and consists of multiple samples (N=203). The scale contains five subscales: Self-Assurance, Removal of Obstacles, Setting New Goals, Focus on the World/Active Contact with the Social Environment, and Unselfconscious/Unselfish, according to the previous study in the exploratory factor analysis. The model was reproduced well in a confirmatory factor analysis. Trait anxiety (STAI-T) was related to coping dimensions. Unselfconscious was related to Escape, Distancing, Self Control, Positive Reappraisal, Confronting, Accepting Responsibility, Seeking Social Support, and Planful Problem Solving of Ways of Coping Questionnaire-Revised. Self Assurance was related to Escape, Positive Reappraisal, and Planful Problem Solving. Setting New Goals was related to Self Control, Positive Reappraisal, Seeking Social Support, and Planful Problem Solving. Focus on the World was related to Escape, Positive Reappraisal, and Planful Problem Solving. Removal of Obstacles was related to Escape, Distancing, Self Control, Positive Reappraisal, Confronting, and Planful Problem Solving.

Introduction

American college students face numerous challenges—psychological, social, and academic—while pursuing their educations. Among the most serious of these challenges are high levels of stress which, if not successfully coped with, can result in poor academic performance. According to Aydın's (2013c) research on international students studying in America, order of importance of stress sources for international students are as follows: 1) Concerns about the future (graduation, employment, marriage, etc.); 2) Language barriers/difficulties; 3) Academic burdens (grades, difficult classes, excessive homework, etc.); 4) Fear of not being able to be successful in academic activities; 5) Not being able to find time for academic activities; 6) Not being able to find time for recreational activities, personal development, and socio-emotional interaction; 7) Financial difficulties (tuition, rent, transportation, etc.); 8) Racial discrimination; 9) Culture shock (confusing and nervous feelings a person may have when he/she moves to a new country); 10) Loneliness; 11) Inadequate university-sponsored opportunities to improve one's English; 12) Inadequate professional psychological support at the university; and 13) Inadequate orientation programs for newcomers.

However, students deal with stressful situations in various ways: Depending on their

personality type, they may overcome minor setbacks with ease and even find them somewhat encouraging (as the challenge provides them with an obstacle to overcome); conversely, they may succumb to the difficulties of stress and find the anxiety brought on by the negative circumstances to be insurmountable. Researchers have noted that the outcome of stressful situations depends to a large extent on an individual's personality traits. Accordingly, college students who possess an extraverted personality (Gallagher, 1990), those with high levels of self-esteem (Tice, 1991), and those who describe themselves as optimistic (Cantor &Norem, 1989) are generally are able to withstand anxiety, whereas those with less favorable personality traits are much more prone to become stressed.

Although hereditary concerns such as these are certainly important, it is also essential to focus on cultural phenomena when explaining why some people are better able to deal with stress. This is particularly crucial in the United States. Western nations that are capitalist democracies tend to focus on the importance of individualism, while non-Western countries often, but not always, focus on conformity and collectivism. Since people who are raised in a certain culture usually behave similarly when coping with stress, the great "melting pot" of the United States presents a significant challenge in that a large percentage of American college students are international and thus represent many different cultures. Therefore, students who prefer active (or approach-focused) coping methods, which are common in Western nations, are mixed in with students from Asia, Africa, and the Middle East who commonly prefer passive (or avoidance-focused) coping methods. Although eventually homogeneity will increase as the United States becomes more globalized, for the present time the student population in America remains quite heterogeneous, especially in terms of students' methods of coping with stress. Furthermore, if racial and ethnic conflicts persist in the United States, levels of stress that are already experienced by students can be expected to become heightened.

Various methods of measuring students' susceptibility to stress and assessing their ability to cope with it have been created, most recently the Aydin-Flow Coping with Stress Scale (AFCSS). This scale was developed by Aydin (2013a) on 593 United States college students who were from various ethnic backgrounds and of different ages. In this research to extend our investigation, we first sought construct validity support by attempting to replicate the AFCSS factor structure with a confirmatory factor analysis on data obtained from a mixed ethnic/racial sample. Then, we examined the AFCSS's convergent and divergent/discriminant validities with a couple of measurements of State Trait Anxiety Inventory (STAI-Trait; Spielberger, 1983) and Ways of Coping Questionnaire-Revised (Folkman & Lazarus, 1985).

Method

Participants and Data Collection

Permission was granted from the Institutional Review Board (IRB) of Georgia State University, US, and data were collected through a hard copy survey in the 2012 spring term. Informed consent, demographic variables, the AFCSS, the STAI-T, and WOCQ-R were included in the survey system. Data were collected randomly by the researchers on campus on the undergraduate and graduate students on a total of 203 participants, with 36.9% African American, 17.7% Asian American, 29.1% Caucasian, 4.9% Latino American, 1.0% Native American, and 10.3% international. Male and female participants represented 49.8% (*n* = 101), 48.8% (*n* = 99), and 1.5% were missing of the sample, respectively. The mean age of participants in the sample was 22.43 years (*SD*= 5.09; min.17, max. 57).

Instruments

Aydın-Flow Coping with Stress Scale. AFCSS used to measure coping was developed by Aydin (2013a) basing on flow theory (Csikszentmihalyi, 1990) on students with various ethnic backgrounds in USA. The scale consists of 32 items with a 5-point-rating scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The scale contains five subscales which are Self-Assurance, Removal of Obstacles, Setting New Goals, Focus on the World/Active Contact with the Social Environment, and Unselfconscious/Unselfish. The maximum amount of points that can be obtained from the entire scale is 160, while the minimum amount is 32. The variance values for Self Assurance, Removal of Obstacles, Setting New Goals, Focus on the World, Unselfconscios/Unselfish, and total variance accounted for the five copoing factors were 15.62, 11.95, 11.27, 9.68, 8.65, and .57, respectively. The Cronbach's alphas for the entire scale, Self-Assurance, Removing the Obstacles, Setting New Goals, and Unselfconscious/Unselfish were .93, .88, .87, .83, .82, .76, respectively. The convergent validity of the AFCSS with trait anxiety (STAI-T; Spielberger, 1983) was ranged between -.24 and -.48, $p < .01$. The strongest correlation is between STAI-T and Self Assurance subscale ($r = -.48$, $p < .01$).

Spielberger's State Trait Anxiety Inventory (STAI-Trait, STAI-T; Spielberger, 1983). This research utilized the trait anxiety scale. Trait anxiety refers to a personality characteristic that indicates someone's predisposition for anxiety responses. Thus, STAI-T is relatively stable over time and impervious to situational stress. STAI-T is a 20-item Likert-type scale developed and improved by Spielberger. It is the most frequently used scale to report anxiety (Iwata, Mishima, Okabe, Kobayashi, Hashiguchi, & Egashira, 2000). The subject self-reports the presence or absence of anxiety on a scale of 1-4 with a low score indicating low anxiety and a high score indicating high anxiety. The concurrent validity of the STAI-T was reevaluated and high correlations of scores with the Manifest Anxiety Scale (MAS) and the Anxiety Scale Questionnaire (ASQ) were found to be .85. The internal consistency reliability reported for the entire STAI

scale is .90 (Spielberger, Sydeman, Owen, & Marsh, 1999).

Ways of Coping Questionnaire-Revised-WOCQ-R (Folkman & Lazarus, 1985). The WOCQ-R is a 66-item questionnaire containing a wide range of thoughts and acts that people use to deal with the internal and/or external demands of specific stressful encounters. Usually, the encounter is described by the subject in an interview or in a brief written description saying who was involved, where it took place, and what happened. Sometimes a particular encounter, such as a medical treatment or an academic examination, is selected by the investigator as the focus of the questionnaire. WOCQ-R differs from the original Ways of Coping Checklist (Folkman & Lazarus, 1980) in several ways. The response format in the original version was Yes/No; on the revised version the subject responds on a 4-point Likert scale (0=does not apply and/or not used; 3=used a great deal). Redundant and unclear terms were deleted or reworded, and several items, such as prayer, were added. Scale has 8 subscales: 1) Confrontative, 2) Seeking Social Support, 3) Planful Problem Solving, 4) Self Control, 5) Distancing, 6) Positive Reappraisal, 7) Accepting Responsibility, 8) Escape or Avoidance. 1-3 of coping strategies concentrate on the problem, 4-8 concentrate on feelings. The eight scales accounted for 46.2% of the variance (Folkman, Lazarus, Dunkel-Schetter, Gruen, & DeLongis, 1986).

Data Analyses

To provide one more support to the construct validity of the AFCSS, factors and the items assumed to be representing the five factors were examined with the STATISTICA 8 program (Özdamar, 2010) using confirmatory factor analysis (CFA). Before the CFA, data were examined with respect to outliers, distortion, and kurtosis, samples propriety for factor analysis (Sample Adequacy Measure coefficient was calculated as .87), and principle component analysis. Fit statistics (Sümer, 2000; Toit & Toit, 2001; Özdamar, 2010) mostly recommended were used as listed follows:1) Adjusted Chisquare Goodness of Fit (x2 /df), 2) Goodness of Fit Index (GFI), 3) Adjusted Goodness of Fit Index (AGFI), 4) Root Mean Square Error of Approximation (RMSEA), and 5) Chi-square. Then, AFCSS's convergent and divergent/discriminant validities with the WOCQ-R and STAI-Trait. The reliability of the scale was examined using Cronbach's Alpha.

Results

CFA of the AFCSS

The chi-square to degrees of freedom ratio (X^2/df) was 2.58, which was considered as fit. GFI (.70), which showed a good fit, AGFI (0.66), which showed a low level fit, RMSEA (.006), which showed a good fit, Chi-square was calculated as 1200, ($df = 464$, $p < 0.001$) showing that it was not fit; in other words, observed covariance matrix, defined covariance matrix and factor models are not the same (see Özdamar, 2010). As can be seen in Table 1 on page 9 all of the latent to observed variable loadings were

large and significant at .001. While the lowest factor load is at .30, the largest is at .93. The items' factor loads based on social relationship/close relationship are largest (item 26 and item 27). It is understood from this result that even for individuals with individualist culture, close relationship is much more important in a stressful situation. Consequently, the model fit the data and the measurement is valid in the middle level.

Table 1

Factor Loadings of the AFCSS Items and Its Significance

Factors	Items	Factor Loads
F.1.	**Self-assurance**	
1.	I was able to keep the negative impact to a minimum.	0,78
2.	I was able to remain calm even though things were getting worse.	0,73
3.	I was able to decrease the stressful effects of my negative thoughts, feelings, and behavior.	0,79
4.	I was calm because I believed that I would be able to find the appropriate solutions.	0,85
5.	In spite of my emotions, I was able to look at things objectively.	0,79
6.	I was able to control my feelings.	0,84
7.	I was able to be patient.	0,72
8.	I did not worry about the things I could not change.	0,81
9.	I was able to be content with what I had.	0,81
F.2.	**Removal of Obstacles**	
10.	I was able to remove obstacles in the way of reaching my goals.	0,72
11.	I reviewed my important goals to ensure that they were attainable.	0,79
12.	I was able to see potential obstacles getting in the way of my goals.	0,76
13.	I understood the impact of stress on attaining my goals.	0,68
14.	I was motivated by imagining myself reaching my goals.	0,68
15.	I tried to diminish the effects of the stress by concentrating more on existing goals.	0,44
F.3.	**Setting New Goals**	
16.	When I realized that I was unable to reach my goal, I established a new one.	0,65
17.	I was able to set aside some of my goals when necessary.	0,53
18.	I simplified my goals when necessary.	0,57
19.	I set new goals to forget the stressful situation.	0,43
20.	I considered the potential obstacles in setting my goals.	0,61

21.	I was reasonable in considering my skills when setting my goals.	0,52
22.	I was able to establish new goals after the event.	0,53
F.4.	**Focus on the World/Active Contact with the Social Environment**	
23.	I continued efforts to make myself feel better.	0,34
24.	I was able to tell myself that things would get better in time.	0,30
25.	I sought support from others who are important to me.	0,58
26.	I maintained my social connections.	0,93
27.	I stayed connected to the significant people in my life.	0,91
F.5.	**Unselfconscious/Unselfishness**	
28.	I was able to behave unselfishly	0,73
29.	I was able to put aside my personal needs to cope with my stress.	0,60
30.	I tried to consider the rules of society while also coping with my own stress.	0,50
31.	Following the rules helped me reduce my stress level.	0,52
32.	I was not selfish.	0,62

Correlations of the Aydin-Flow Coping with Stress Scale Factors

As seen in Table 2 on page 10, there are significant relationships ($p < .01$) among AFCSS's factors. The strongest relationship is between Removal of Obstacles and Setting New Goals. Both strategies together results in the discovery of new solutions, according to flow theory, which is gotten by dividing two factors to facilitate the measurement by the resarcher. Consequently, the strongest correlation between these factors confirms the flow theory. Similarly we were expecting a strongest correlation between Self Assurance and Unselfconscious/Unselfish because the two factors appeared together as Unselfconscious self assurance in flow theory.

Table 2

Means, Standard Deviations, and Correlations of the AFCSS Coping Factors

Variable	*M*	*SD*	1	2	3	4	5
1. SA	30.66	7.42	-	.47**	.39**	.48**	.17*
2. RO	21.50	4.66		-	.53**	.47**	.26**
3. SNG	24.88	4.30			-	.45**	.28**
4. FW	18.57	3.62				-	.27**
5. USC/US	9.37	2.90					-

*p< .05. **p<.01.

SA: Self Assurance, RO: Removal of Obstacles, SNG: Setting New Goals, FW:Focus on the World, USC/US: Unselfconscious/ Unselfish

Convergent and Divergent/Discriminant Validity of the AFCSS

To study the construct validity of the AFCSS, as seen Table 3, Positive Reappraisal and Planful Problem Solving subscales of WOCQ-R are related to all subscales of AFCSS in a positive direction and significance. There are significant positive relationships at .30 (p <.01) and above between the subscales of AFCSS and Planful Problem Solving (PPS) subscale of WOCQ-R. Unselfconscious subscale of the AFCSS is related with all subscales of the WOCQ-R respectively: Escape (.05, $p < .05$), Distancing (.26, $p < .01$), Self-control (.35, $p < .01$), Positive Reappraisal (.37, $p < .01$), Confronting (.43, $p < .01$), Accepting Responsibility (.49, $p < .01$), Seeking Social Support (.53, $p < .01$), and Planful Problem Solving (.62, $p < .01$).The strongest correlation is between Unselfconscious and Planful Problem Solving (.62, $p < .01$). Self assurane negatively correlated with Escape (-.38, $p < .001$), yet it correlated positively with both Positive Reappraisal (.25, $p < .01$) and Planful Problem Solving (.30, $p < .01$). Setting New Goals positively associated with Self Control, Positive Reappraisal, Seeking Social Support, Planful Problem Solving (.23 $p < .01$, .29 $p < .01$, .18 $p < .05$, .30 $p < .01$) respectively. Focus on the World negatively related with Escape (-.25, $p < .01$) and positively correlated with Positive Reappraisal (.17, $p < .05$), Seeking Social Support (.19, $p < .05$), and Planful Problem Solving (.34, $p < .01$). Removal of Obstacles negatively correlated with Escape (-.17, $p < .05$), and positively correlated with Distancing (.19, $p < .05$), Self Control (.22, $p < .05$), Positive Reappraisal (.34, $p < .01$), Confronting (.19, $p < .01$), and Planful Problem Solving (.36, $p < .01$). As to relationship between AFCSS and STAI-T,STAI-T negatively correlated with Setting New Goals (-.16 $p < .05$), Unselfconscious (-.21 $p < .01$,) Focus on the World (-.24 $p < .01$), Removal of Obstacles (-.34 $p < .01$), and Self Assurance (-.48 $p < .01$). As a result, it may be concluded that AFCSS is an effective coping scale.

Table 3

Correlations Results among Scores of The AFCSS and WOCQ-R

Scale	Escape	Distancing	Self Control	Positive Re-appraisal	Confronting	Accepting Resp.	Seeking Social Sup.	Planful Prob-lem S.
Unselfconscious	.05*	.26**	.35**	.37**	.43**	.49**	.53**	.62**
Self Assurance	-.38***	.12	.13	.25**	-.01	-.08	-.06	.30**
Setting new goals	-.12	-.01	.23**	.29**	.13	.01	.18*	.30**
Focus on the world	-.25**	-.01	.08	.17*	.03	.02	.19*	.34**
Remove the Obs.	-.17*	.19*	.22**	.34**	.19*	.12	.13	.36**

*p<.05, **p<.01, ***p<.001

Reliability

The reliability was analyzed with two methods: (1) Cronbach's Alpha coefficient, which studied and the result was .91 for the whole scale, and (2) item-total correlation, as in Table 4 on page 11 (The items have correlations above .20 except item 15 and item 19, and all items were significantly at .001).

Table 4

Corrected Item-Total Correlations of the AFCSS

Factor	Item	Corrected Item Total Correlation
F.1.	**Self-assurance**	
1.	I was able to keep the negative impact to a mini-mum.	0.55
2.	I was able to remain calm even though things were getting worse.	0.54
3.	I was able to decrease the stressful effects of my negative thoughts, feelings, and behavior.	0.58
4.	I was calm because I believed that I would be able to find the appropriate solutions.	0.66
5.	In spite of my emotions, I was able to look at things objectively.	0.60
6.	I was able to control my feelings.	0.58
7.	I was able to be patient.	0.55
8.	I did not worry about the things I could not chan-ge.	0.50
9.	I was able to be content with what I had.	0.67
F.2.	**Removal of Obstacles**	
10.	I was able to remove obstacles in the way of re-aching my goals.	0.60
11.	I reviewed my important goals to ensure that they were attainable.	0.63

12.	I was able to see potential obstacles getting in the way of my goals.	0.53
13.	I understood the impact of stress on attaining my goals.	0.49
14.	I was motivated by imagining myself reaching my goals.	0.59
15.	I tried to diminish the effects of the stress by concentrating more on existing goals.	0.15
F.3.	**Setting New Goals**	
16.	When I realized that I was unable to reach my goal, I established a new one.	0.48
17.	I was able to set aside some of my goals when necessary.	0.38
18.	I simplified my goals when necessary.	0.44
19.	I set new goals to forget the stressful situation.	0.15
20.	I considered the potential obstacles in setting my goals.	0.51
21.	I was reasonable in considering my skills when setting my goals.	0.55
22.	I was able to establish new goals after the event.	0.37
F.4.	**Focus on the World/Active Contact with the Social Environment**	
23.	I continued efforts to make myself feel better.	0.48
24.	I was able to tell myself that things would get better in time.	0.46
25.	I sought support from others who are important to me.	0.28
26.	I maintained my social connections.	0.50
27.	I stayed connected to the significant people in my life.	0.54
F.5.	**Unselfconscious/Unselfishness**	
28.	I was able to behave unselfishly	0.51
29.	I was able to put aside my personal needs to cope with my stress.	0.49
30.	I tried to consider the rules of society while also coping with my own stress.	0.34
31.	Following the rules helped me reduce my stress level.	0.27
32.	I was not selfish.	0.54

Discussion

The normal level of anxiety makes coping with stress easier for people, makes people overcome the needs of survival and helps people to adapt to the environment. However, if there is no particular reason for the anxiety, if it becomes constant and intensive, it has been proven to be harmful to both the physical and mental states of human beings (Feldman, 2011). Anxiety at the same time accompanies many physical and mental disorders. Spielberger's trait anxiety refers to a personality characteristic that in-

dicates someone's predisposition for anxiety responses. Thus, STAI-T is relatively stable over time and impervious to situational stress.

The significant and negative relationship between the AFFCS's sub-scales and trait anxiety in Aydin's (Aydın, 2013a) previous and current studies proves that AFCSS is a valid scale. The results of the studies show that AFCSS is an adaptive scale and confirms the flow theory (Csiksentmihalyi, 1990) as how to cope with stress. Aydın (2010) found out that the scale, based on the flow theory, among Turkish high school studends and Brief Symptom Inventory' anxiety subscale are negatively associated. This is also another proof that strategies for coping with stress based on the flow theory are adaptive. The strong and negative relationships between three subscales (self assurance, focus on the world, and removal of obstacles) of the AFCSS and escape/avoidance subscale of the WOC-R prove that AFCSS is an adaptive scale. A lot of research results are available in the literature with regard to the positive relationship between escape/avoidance and many mental problems (Morrow, Thoreson, & Penney, 1995; Blalock & Joiner, 2000). Research shows that there is a slight positive correlation between unselfsconscious/*Unselfish* strategy and escape/avoidance. Hence, a slight amount of escape/avoidance may be consistent with adaptation. According to literature (Chun, Moos, & Cronkite, 2006), this result may have resulted from those with collectivist culture in the sample were used avoidance strategie.

According to results of the confirmatory factor analysis in this research, hypothetic structure is compatible to real structure. Therefore, there is a provision about strategies for coping with stress in real life as Csikszentmihalyi (1990) suggests in his flow theory.

Conclusion and Recommendations

Conclusion

CFA. When noncentrality fit indexes are evaluated with other fit indexes, the original factors comply with observed factors so that the scale can be used without any modification. According to the CFA, the measurement is valid in the middle level. Therefore, AFCSS may be expressing the common acculturation of people from different races in US.

Convergent and Divergent/Discriminant Validity of the AFCSS. There were relationships between all subscales of the AFCSS and Planful Problem Solving subscale of the WOCQ-R. The strongest correlation is between all subscales of the AFCSS and Planful Problem Solving (PPS) subscale of the WOCQ-R. PPS is positively related with positive emotion and negatively related with symptoms. Therefore, it may be concluded that the AFCSS is a problem-focused coping scale, meaning it includes seeking information, planning, and taking action. Porblem-focused coping was positively correlated with overall health outcomes (Penley, Tomaka, & Wiebe, 2002), making AFCSS an effective coping scale. There are positive relationships between all subscales of the AFCSS

and the Positive Reappraisal Subscale of the WOCQ-R, the strongest correlation being with the Unselfconscious subscale. This result shows that people who are unselfish have a positive perspective, and focusing on positive aspects of a situation is an emotion-focused method of coping (Penley, Tomaka, & Wiebe, 2002). Therefore, the AFCSS is also an emotion-focused coping scale. People who use Unselfconscious coping strategies also use Escape Coping at lower rates. The strongest negative relationship between Self Assurance and Escape (.001) is consistent with literature (Williams & Krane, 1992). In other words, people who have self-confidence have less avoidance coping. We often face in literature the positive correlation between psychological distress like depression and avoiding coping (Morrow, Thoreson, & Penney, 1995), and therefore the people using self-assurance coping have less psychological distress because of using less avoidance coping. Self Asurance is an effective method of coping because of the positive correlations between Self Assurance, Postive Reappraisal, and Planful Problem Solving. It is verified that Setting New Goals (SNG) is an effective coping subscale in terms of the relationships between Setting New Goals, Self Control, Positive Reappraisal, Seeking Social Support, and Planful Problem Solving. It is understood that people who have SNG may have a large effective coping repertory and SNG is a effective coping strategy. There was a negative correlation between Focus on the World (FOW) and Escape. Also, there were positive relationships between FOW, Positive Reappraisal, Seeking Social Support, and Planful Problem Solving. FOW means that when one experiences stress, he or she can maintain contact with his or her close social environment. According to flow theory, being able to focus on the social environment protects a person from focusing on his or her “psych entropi” of the internal world. It is understood from this result that maintaining contact with close people in stressful stuations and getting social support from them are both highly important coping strategies—even in America where individuality is stressed. Moreover, it is evident that the highest factor loads are in the following items: “I maintained my social connections (.93)” and “I stayed connected to the significant people in my life (.91).” Removal of Obstacles (RO) was negatively associated with Escape. RO also was positively associated with Distancing, Self Control, Postive Reappraisal, Confronting, and Planful Problem Solving. It is understood from this result that RO is an effective coping method. All subscales of the AFCSS were negatively associated with trait anxiety, which shows that AFCSS is an adaptational coping scale (specifically because Self Assurance has more correlation than the other subscales). SA also had the strongest correlation in the Exploratory Factor Analiysis research (Aydın, 2013a), and the SA subscale had strongest statistical values such as variance, factor loads, and reliability both in EFA and in CFA. Therefore, it is accepted that SA is the strongest representative of the AFCSS. Thus, AFCSS is a scale which is based on self-confidence

Recommendations

Items 15 and 19 need to be corrected and should have their item-total correlations tested again. Individualist and collectivist cultures should be compared through AFCSS. Clinical and normal samples should be compared through AFCSS. The relationship between AFCSS and a social desirability scale should be further examined.

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