

〈原著論文〉

Development of a Scale to Measure Self-care Behavior for Temperament to Support Mental Health and the Examination of Its Reliability and Validity

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気質別のセルフケア行動尺度の開発および信頼性と妥当性

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〈Abstract〉

Purpose: The purpose of this study was to develop a scale to measure self-care behavior of temperament and examined the validity and reliability.

Method: Munakata based on Structured Association Technique method (SAT), pointed out that it is necessary to understand each characteristic of inherited temperament and self-care behavior. We examined the contents with the first author who has acquired the SAT temperament test (advanced) and the second author who specializing in psychiatric nursing and has the Health Counseling Society Certified Certificate. We conducted pre and Pilot survey, finally decided 33 items. We conducted main survey for 448 university students. We also obtained an approval from the ethics committee from the Faculty of Education of Ehime University.

Results: The participants were 448 students (male 172, female 242, unknown 34) and the mean age was 19.44 ± 1.29 . The collection rate was 93%. Exploratory factor analysis revealed that the list of items has a four-factor structure including "involvement with others", "respect for others" and "adjustment of perfectionism" and "adjustment of the environment". Confirmatory factor analyses to examine consistency validity revealed that acceptable fit indices were $GFI=.905$, $AGFI=.867$, $CFI=.863$ and $RMSEA=.076$. For internal consistency reliability analysis, the Cronbach's α for all 17 items was 0.836 (Sub items: 0.46 - 0.803).

Conclusion: The result indicated that had subscale "involvement with others", "respect for others", "adjustment of perfectionism" and "adjustment of the environment" by 17 items. The reliability of scale was showed internal consistency

〈要旨〉

目的: 本研究は宗像らが提唱する気質について、それらのセルフケア行動を測定するための尺度を作成し、尺度の信頼性及び妥当性を検討することを目的とした。

方法: 宗像は SAT 法の臨床経験に基づき、気質の特徴および気質のニードに効果的に応えられる気質別の自己対処についてまとめている。これらについて、SAT 気質検定（上級）を取得済みの筆頭筆者および精神科看護の専門であり、ヘルスカウンセリング学会公認資格を持つ第二著者と内容を検討した。プレ予備調査および予備調査を行い、最終的に 33 項目の仮尺度を作成した。その尺度について、448 名の大学生を対象に本調査を実施した。調査は愛媛大学教育学部倫理委員会による承認の下で行われた。

結果: 対象は 448 名（男性 172 名、女性 242 名、未記入 34 名）であり、平均年齢は 19.44 ± 1.29 であった。回収率は 93% であった。探索的因子分析の結果、「他者への働きかけ」、「他者尊重」、「完全主義の調整」、「環境の調整」の 4 因子構造であることが明らかとなった。検証的因子分析を行った結果、適合度指数は

GFI=.905、AGFI=.867、CFI=.863、RMSEA=.076 であり、概ねの適合度が得られた。尺度の信頼性については、全体で α 係数 = .836 であり、下位尺度では 0.46 - 0.803 であった。

結論: 気質別のセルフケア行動尺度を作成したところ、「他者への働きかけ」、「他者尊重」、「完全主義の調整」、「環境の調整」の4つの因子からなる17項目で構成されることが示された。尺度の信頼性について、十分な内的一貫性が示された。

キーワード

temperament

self-care behavior

scale

気質

セルフケア行動

尺度

I. Introduction

Research on behavior genetics has been reported for temperament studies by Shimoda M.¹⁾, Tellenbach, H.²⁾, Kretschmer E.³⁾, and Cloninger C. R. *et al.*⁴⁾. In relevance to psychiatric disorders, “cyclothymic temperament” and “persistent temperament” are considered to be the premorbid characters of depression and manic depression⁵⁾. Therefore, in psychiatry, diagnostic procedures and treatment policies are recommended⁶⁾ with careful attention to the temperament and personality. Munakata⁷⁾ summarized those as “temperament” based on the results of previous inherited research. Temperament consists of character temperament and stress temperament. The character temperaments are the basis of human personality and behavior patterns, and it includes “cyclothymic temperament”, “adhesive temperament”, and “autistic temperament”. The stress temperament determines the sensitivity of the character temperament and the strength of the reaction and includes “persistent temperament”, “anxious temperament”, and “novel temperament”. According to Munakata *et al.*⁸⁾, persistent temperament has been reported to have a moderate positive correlation with “persistence” in Cloninger’s Temperament and Character Inventory (TCI)⁴⁾. Anxious temperament also has a moderate positive correlation with TCI’s “harm avoidance”. It has been reported that the recognition of these temperaments have an effect on the mental health. For example, compared with the

group that scored low recognition of anxious temperament, the group that scored high recognition of anxious temperament had a negative self-image and tended to suppress their feelings as they had a high sense of depression⁹⁾. In addition, in case persons are highly aware of their persistence and anxious temperament, although the persons are highly capable of problem solving, it is said that the persons’ emotions are suppressed and their mental health is not in a good condition¹⁰⁾. Furthermore, it is reported that those with stress temperament have poor mental health compared with others¹¹⁾. With regard to such temperament, Munakata *et al.*⁸⁾ have discussed the necessity of understanding the characteristics of temperament the person is born with, for smooth interpersonal relationships and the development of better coping skills. It is important to take advantage of the strengths of each temperament and cope with the weaknesses for a healthy and happy life. Taniguchi K.¹²⁾ reported that temperament coaching was incorporated into the self-management program for patients with mental health disorders, and improvement in self-efficacy and depressive mood was observed. On the other hand, Kijima¹³⁾ has summarized the personality theory of Cloninger C. R. but has only picked out the characteristics of temperament and personality without mentioning the need for self-coping. Munakata suggests a method of self-care for temperament, and summarizes it as the “confidence assessment for self-care behavior

by temperament". Ito C. *et al.*¹⁴⁾ reported the results of the exploratory factor analysis of the "confidence assessment for self-care behavior by stress temperament", but the scale of self-care behavior of the entire temperaments has not been studied. However, the measuring of the self-care behavior for temperament has never been attempted in the past. Therefore, in this study, we aim to develop a scale to measure the self-care behavior for temperament and to examine its validity and reliability.

II . Method

1. Development of self-care behavior for temperament

1.1 Selection of items of self-care behavior for temperament

Based on the clinical experience of the Structured Association Technique (SAT) method, Munakata *et al.*⁸⁾ has summarized the self-care methods for each temperament to effectively respond to the needs and characteristics of the temperament. For this study, we examined the contents with the first author, who acquired the certificate of the SAT temperament test (advanced), and the second author, who specializes in psychiatric nursing and is certified by the Health Counseling Society. For these temperaments, a total of 41 items were selected (five items for cyclothymic temperament, six items for adhesive temperament, six items for autistic temperament, 10 items for persistent temperament, nine items for anxious temperament, and five items for novel temperament). We conducted a pre-pilot survey on these items targeting 21 university students in Japan. We prepared four answer options: "Strongly Agree", "Agree", "Somewhat Agree", and "Disagree". We examined the validity of the expression of the contents and the items and finally adopted 33 items.

1.2 Pilot survey

In May 2016, a pilot survey was conducted targeting a total of 46 university students (25 males and 21 females) in Shikoku region in Japan. In the pilot sur-

vey, to examine the construct validity of the scale of self-care behavior scale for temperament (provisional), we also investigated the scale of self-repression behavior trait, the trait anxiety inventory, and the scale of temperament. The exploratory factor analysis was performed to confirm the factor structure of the scale. First, we calculated the mean \pm standard deviation to check the distribution of response. As a result, "I develop relationships with people I can deeply trust" had a ceiling effect among the self-care behaviors for anxious temperament, but we decided to adopt this based on the validity of contents. From these results, it was found that there were partial relationships of the scale of self-care behavior for temperament with self-repression behavioral trait and trait anxiety. Finally, we adopted 33 items in the main survey.

2. Main survey

In July 2016, we conducted the main survey using a self-administered questionnaire method having the respondents remain anonymous. The participants were 448 university students in Kan-to, Kansai, and Shikoku regions in Japan.

The contents of the survey were about the 33 items of self-care behavior for temperament by the pilot survey. The instructional sentence was "To what extent do the following items apply to your usual way of thinking and behavior. Please circle the applicable items".

3. Ethical considerations

This research was carried out after providing written and oral explanation and obtaining agreement from the students. We also obtained an approval from the ethics committee from the Faculty of Education of Ehime University(No.6).

4. Analysis method

Exploratory factor analysis was performed in creating the scale to confirm the factor structure of the scale. We examined the construct validity by confirmatory factor analysis. In the confirmatory factor analysis, we set the path from the dispersion of the variables and the error variables to the observation variables as 1. The goodness of fit index (GFI), adjusted GFI (AGFI), comparative fit index (CFI), and root mean square error of approximation (RMSEA) were examined as the fit indices of the model. The standardized estimates were assumed to be 5%. The reliability of the scale was examined using Cronbach's α . The SPSS 20.0 J for Windows and AMOS 22 were used for the statistical package.

III . Results

1. Participants

The participants were 448 students (male 172, female 242, unknown 34) and the mean age was 19.44 ± 1.29 . The collection rate was 93%.

2. Exploratory factor analysis

We calculated the mean \pm standard deviation to confirm the distribution of items. As a result, a total of 15 items, i.e., two items with the ceiling effect and 13 items with the floor effect, were deleted, and 18 items were finally selected. Factor analysis using the principal axis factoring and promax rotation was performed for the 18 items. Factors were picked out according to the criteria of the eigenvalue of 1.0 or more, the factor loading of 0.35 or more, and the commonality of 0.2 or more. As a result, due to the low commonality to Item 31 (.126), it was deleted and after reanalyzing, four factors were picked out (Table 1). The first factor includes "Every day, I make an effort to talk to people I get along with" and "I am interested in others and I get involved" and consists of eight items related not only to the respondents but also to others. Therefore, we named this section "Involvement with others". The second factor consists of four items, such as "I try not to pressure

people and check how others feel when moving forward with things" and "I am open to other opinions". Therefore, we named this section "Respect for others". The third factor consists of three items related to self-care behavior for adhesive temperament, such as "I try not to expect 100% from myself or others" and "I do not expect the same things from others", which are about making adjustments with how the respondents deal with perfectionism toward others and themselves. Therefore, we named this section "Adjustment of perfectionism". The fourth factor consists of two items, "I try to avoid extremely stressful situations as much as possible" and "I try not to put myself in situations that require excess competition". These are about the environment where the respondents are placed. We named this section "Adjustment of the environment".

3. Confirmatory factor analysis

The hypothesis model was verified by the confirmatory factor analysis. For covariance, as a result of correlation analysis of each item, we assumed the variance between items 18 and 19, that between items 28 and 29, and that between items 20 and 21. Items 20 and 21 are related to the self-care behavior for cyclothymic temperament. The standardized estimates were all significant and the fit indices were GFI=0.905, AGFI=0.867, CFI=0.863, and RMSEA=0.076(Fig.1).

4. Reliability by internal consistency

For the 17 items of the scale of self-care behavior for temperament, the internal consistency was examined using Cronbach's α . The result was 0.836 for the overall scale (subscales: 0.460-0.803).

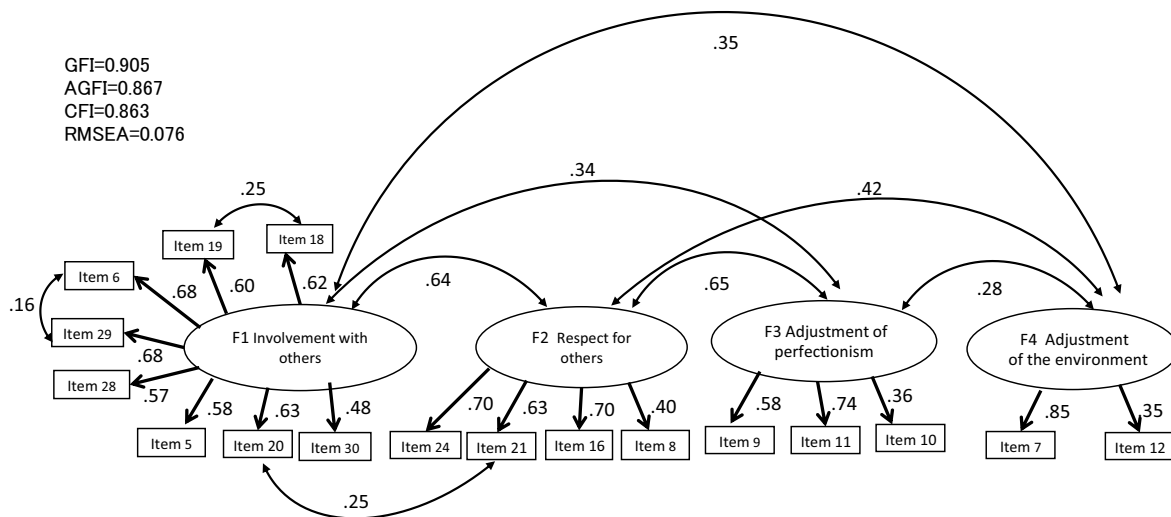
IV . Discussion

In this study, we developed a scale to measure self-care behavior for temperament and examined its validity and reliability. The results indicated that the scale consists of "Involvement with others" (eight items), "Respect for others" (four items), "Adjustment of perfectionism" (three items), and

Table 1 Factor loading and factor correlation matrix

Item of the scale	F1	F2	F3	F4
Item 18 Every day, I make an effort to talk to people I get along with	0.71	-0.09	-0.03	0.15
Item 19 I try connecting with people and animals through communication and physical contact	0.68	-0.04	-0.00	0.14
Item 6 I develop relationships with people I can deeply trust	0.66	0.04	-0.08	0.23
Item 29 I am interested in others and I get involved	0.63	0.08	0.20	-0.22
Item 28 I share personal opinions and respond to others to convey my thoughts	0.56	0.04	0.22	-0.25
Item 5 I try to keep a stable mind by enjoying my favorite activities	0.55	0.02	0.03	0.28
Item 20 I express appreciation toward others	0.53	0.30	-0.12	-0.11
Item 30 I try not to solve everything on my own by asking help from others around me	0.48	-0.07	0.17	-0.01
Item 24 I try not to pressure people and check how others feel when moving forward with things	0.01	0.80	-0.09	-0.03
Item 21 I try to be understanding toward differences (temperament) in others	0.20	0.60	-0.13	-0.02
Item 16 I am open to other opinions	0.14	0.52	0.11	0.03
Item 8 I do not force my emotions on others	-0.22	0.43	0.13	0.28
Item 9 I try not to expect 100% from myself or others	0.07	-0.08	0.65	0.33
Item 11 I do not expect the same things from others	-0.19	0.39	0.46	0.14
Item 10 I try to act without getting too caught up with perfection	0.23	-0.10	0.45	-0.08
Item 7 I try to avoid extremely stressful situations as much as possible	0.25	0.10	-0.05	0.46
Item 12 I try not to put myself in situations that require excess competition	0.05	-0.05	0.13	0.44

	F1	F2	F3	F4
F1	1.000	.467	.237	-.076
F2		1.000	.408	.259
F3			1.000	.108
F4				1.000



数値は標準化推定値、誤差変数は省略
図中の標準化推定値は5%水準で有意

Fig. 1 Results of confirmatory factor analysis of scale of self-care behavior for temperament (N=153)

“Adjustment of the environment” (two items).

In confirmatory factor analysis, the fit indices of the model were sufficiently high, and the validity of the factor structure of this scale was confirmed. It was considered that the small number of items resulted in the low reliability for the subscales. Cronbach's α of the overall scale was high, showing a certain internal consistency.

The first factor, “Involvement with others”, consists of the self-care behaviors related to anxious, cyclothymic, and autistic temperaments. The items in the first factor can be considered as self-care behavior to achieve peace of mind and are similar to the contents of “seeking emotional support” in the General Coping Questionnaire¹⁵⁾. The characteristic of cyclothymic temperament has both cheerfulness and depression, and anxious temperament is characterized by the pessimistic feeling and extreme anxiety. People with these temperaments can achieve peace of mind by having a relationship with a credible person. The characteristic of autistic temperament is sensitive and easily affected by others, they have an insensitivity that results from being confined to their own world. It is recommended for those with autistic temperament to have a relationship with others consciously as self-care behavior. Thus, it can be said that the first factor was picked out as a common concept of self-care with emotional ups and downs, or “actively getting involved with others”.

The second factor, “Respect for others”, consists of the self-care behaviors related to cyclothymic, adhesive, persistent, and novel temperaments. People with cyclothymic and persistent temperaments have a strong desire for approval. People with persistent temperament tend to have a narrow mind as they try getting their point across. People with novel temperament have strong impulses. As described by Hamer D.¹⁶⁾, people with high novel temperament are quick to make decisions without sufficient information. The commonality of these temperaments is that they are obsessed with an

idea, and they become narrow minded trying to prioritize their ideas. As a method of self-care to this tendency, the idea of respect for other opinions and positions, was picked out.

The third factor, “Adjustment of perfectionism”, consists of the self-care behaviors related to persistent temperament. Perfectionism and meticulousness are the traits of persistent temperament. In extreme cases, people with this temperament tend to seek the perfection toward themselves and others and force their common sense and values upon others. Thus far, it has been reported that high level of persistent temperament positively correlated with anxiety and self-repression behavioral trait. In other words, because they have a strong desire for approval and value how they are evaluated by others, they tend to feel anxiety and to repress themselves resulting in negative behavior. The third factor was picked out owing to these characteristics of persistent temperament.

The fourth factor, “Adjustment of the environment”, consists of the self-care behaviors related to anxious and persistent temperaments. Toshima H. *et al.*¹⁷⁾ reported that those who have high anxiety tend to be biased in terms of anxiety-related stimuli. As mentioned here, people who easily become anxious should consciously adjust the stimulation from the environment. On the other hand, people with persistent temperament have thoroughness, strong sense of responsibility, and perfectionism. Since persistent temperament tends to keep increasing the requirement level, it is important to keep an eye out on excessive competition. As described here, the fourth factor was picked out as a common factor of self-care behaviors assuming the exceeding environments such as the “extremely stressful environment” and “environment demanding excessive competition”. The purpose of the self-care behavior for temperament is related to the daily beliefs and ideas. The contents of the scale included are similar to the concepts in the general coping questionnaire

(GCQ)¹⁵, Kikuchi's Social Skill Scale: Kiss-18¹⁸ that measures social skills, Resilience Scale¹⁹ and the sub-scale "acceptance of others" in the communication skill scale ENDCORE²⁰. This scale summarizes the concepts that were measured in these different scales in the framework of self-care behavior for temperament. Using this scale, it is possible to understand the necessary self-care behavior and how well it is performed. Moreover, the information can be applied in mental health support.

Limitations

The sample group in this study was limited to only students. In the future, we need to conduct a survey with more people and examine the reliability and validity of the scale.

V. Conclusion

In this study, we examined the validity and reliability of the scale of self-care behavior for temperament. As a result, the scale has four factors, "Involvement with others", "Respect for others", "Adjustment of perfectionism" and "Adjustment of the environment", which consist of 17 items. The internal consistency was sufficient for the reliability of the scale. In mental health support, finding the necessary self-care behavior using the scale of self-care behavior for temperament will enable support to maintain mental health and achieve a well-being way of life.

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