

# Correlations Between Purpose in Life (*ikigai*) and State Anxiety in Schizoid Temperament with Considerations of Early Life, Youth, and Adulthood Experiences

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**Summary.** This study elucidated correlations in early life, youth, and adulthood experiences with purpose in life (PIL) (*ikigai*), temperament, and state anxiety under acute stress. Participants were 62 healthy male and female adult volunteers. Acute anxiety was induced by entering a laboratory, meeting an instructor for the first time, or filling out five subjects more like tests, and followed by a performance of mental arithmetic. All subjects completed the Personality Inventory (INV) and were subsequently assigned to one of two groups: schizoid temperament or other temperaments. Subjects also completed the Early Life, Youth, and Adulthood Experiences Inventory (EYAEI) modified from the Youth and Adulthood Experiences Inventory (YAEI), the PIL test, the State-Trait Anxiety Inventory (STAI), and the Interest in Mental Arithmetic Test (IMAT). For those with a schizoid temperament, positive significant correlations between positive experiences before elementary school and in adulthood and PIL scores, and negative significant correlations between PIL and state anxiety scores were observed. In the other temperaments group, there were positive significant correlations between positive experiences before elementary school to adulthood and PIL scores, and no significant correlation between PIL scores and state anxiety scores. In conclusion, a firm purpose in life develops by positive experiences before elementary school and in adulthood in individuals with a schizoid

temperament and before elementary school to adulthood in those with other temperaments. These results indicate that a firm PIL might contribute to a lower state anxiety caused by meeting others only in people with a schizoid temperament.

**Key words**— existentialism; stress; psychological events; integration; positive experiences.

## INTRODUCTION

Existentialism emphasizes that life is finite and that the world is not constant but changes, and therefore people should have the freedom to choose their own course in life.<sup>1,2)</sup> Purpose in life (PIL) (*ikigai*) is a concept drawn from existentialism and means “the will to achieve meaning in one's life.”<sup>3,4,5,6)</sup> Having a firm PIL contributes to being able to evaluate psychological events, which develop as a result of stimuli from other persons and things, and to integrate them using intuition rather than complex thoughts. This process leads to low anxiety.<sup>7)</sup> Kitamura et al. reported that students who had a firm PIL had experienced positive events in their early life such as “were taught by a good teacher” and “started a romantic relationship.”<sup>8)</sup> Ishida and Okada presented evidence that healthy adults having a firm PIL who have various kinds of temperaments developed this purpose through positive experiences such as “succeeding in attempts” “being

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**Abbreviations** – IMAT, Interest in Mental Arithmetic Test; PIL, purpose in life.

affected by people” in youth and “holding people in respect” in adulthood.<sup>6</sup> Early life, youth, and adulthood experiences are important factors for establishing PIL in adults. Furthermore, Ishida and Okada presented evidence that having a firm PIL results in a lower trait anxiety (how one generally feels) and lower sympathetic nervous activity when watching a roller coaster video.<sup>6</sup> However, previous studies failed to identify a relationship between PIL and state anxiety (how one feels at the moment), regardless of the importance of the situation.

Variations in emotional response to stress have been found to depend on differences in temperament.<sup>9,10</sup> A variety of temperaments are well known, including schizoid, cyclothymic, viscosity, hysterical, asthenic, combined, and miscellaneous (e.g., common and uncharacterized temperaments).<sup>11</sup> Schizoid, cyclothymic, and viscosity temperaments are related to genetic factors. Hysterical and asthenic temperaments develop by interaction with the environment and/or discipline based on each of the three previous temperaments.<sup>11</sup> The term “schizoid” has been used to describe people who are socially withdrawn, introverted, eccentric, and uncomfortable for a long time; that is, they feel anxious when together with other people<sup>12</sup> and tend to avoid such meetings.<sup>13</sup> They are also likely to be quite involved in a virtual world.<sup>12</sup> Furthermore, people with a schizoid temperament tend to have an irritable emotional response to stressful psychological events caused by persons and/or things.<sup>9,13</sup> They also easily develop anxiety.<sup>14</sup> Plus, it is difficult that people with a schizoid temperament take a social supporting.<sup>15</sup> In summary, those with a schizoid temperament are likely to have more personal and social problems. On the other hand, People who have a cyclothymic temperament, enjoy having relationships with other people and live in a real world, not a virtual world. Individuals with a viscosity temperament show perseverance and act based on social norms, whereas those with a hysterical temperament are likely to depend on others and are vain. People with an asthenic temperament appear to have a lack of self-confidence and have an inferiority complex.

It is assumed that each person may have different experiences, i.e., different memories, in each life stage according to variations in temperament. In particular, those with a schizoid temperament who have a definite PIL000 are likely to feel little state anxiety because they can integrate stressful psychological attempts. Therefore, the present study is to clarify the correlations between early life, youth, and adulthood experiences and purpose in life. It also examines the correlations between PIL, state anxiety under acute stress, and temperament.

## METHODS

### Study population

Sixty-two healthy male and female adult volunteers in a variety of occupations, such as housewives, salesmen, elementary school teachers, and technician, were recruited for this study. The average age was 31.19 years old, with ranging from 18 to 68 years old and a standard deviation (SD) of 12.80 years old. Neither drinking alcohol, tea, nor smoking was required to all the participants during the experiment. Each subject was tested individually. The ethics committee of the Faculty of Medicine of Niigata University approved the study (No. 361), and all subjects provided written informed consent.

### Testing instruments

Five kinds of self-report testing instruments were used in this study. First off, the Personality Inventory (INV),<sup>11</sup> a well-known instrument for assessing temperament, was completed by all subjects. It is scored on a 4-point Likert scale (from zero: not at all to three: very strongly). A total of five temperaments (schizoid, cyclothymic, viscosity, hysterical, asthenic temperament) are rated respectively according to 10 items in the INV, and each item is scored from zero to three points. Among these, the total raw score was shown in a histogram constructed with 10 and 20 percentile lines. Based on whether or not the raw score for each temperament was less than 10 or 20 percentiles in the histogram, or based on the decision of the assessor if the each raw score of temperament was more than 20 percentile, each subject was identified as belonging to one of the following temperament groups: schizoid, cyclothymic, viscosity, hysterical asthenic, combined (i.e., more than one temperament), or miscellaneous (i.e., common or uncharacterized) temperament. Furthermore, based on the results, the subjects were assigned to one of two groups, namely, a Schizoid Temperament or Other Temperaments Group (Table 1). The PIL test<sup>16</sup> was then completed. This includes a self-report test consisting of 20 items such as “In life I have very clear goals and aims,” “My life is filled with exciting and good things” and “If I pass away today, I would feel that my life has been very worthwhile.” It is scored on a 7-point Likert scale (from one: not at all to seven: very strongly). The normalized mean score for the PIL test is 50.

The State-Trait Anxiety Inventory (STAI)<sup>17</sup> was developed in order to assess state and trait anxiety levels. However, in this study, only the state anxiety was assessed because the correlation between the PIL and trait anxiety had already been proved by a previous study.<sup>6</sup> The STAI was completed by all subjects in order

**Table 1.** Demographic and psychological parameters of each temperament group

Parameters	Temperament score (Mean ± SD)							
	Schizoid	Other	Other temperaments					
			Cyclothymic	Viscosity	Hysterical	Asthenic	Combined	Miscellaneous
Demographic parameter								
Number of subjects (male:female)	13 (5:8)	49 (15:34)	17 (6:11)	5 (1:4)	4 (2:2)	8 (2:6)	5 (2:3)	10 (2:8)
Age, years (Mean ± SD)	31.08 ± 7.73	31.22 ± 13.91	25.41 ± 8.86	42.60 ± 13.43	37.75 ± 21.84	36.50 ± 15.97	21.80 ± 2.39	33.30 ± 14.77
Psychological parameter								
PIL test scores	51.62 ± 10.23	53.67 ± 9.03	57.47 ± 7.32	50.20 ± 9.68	50.00 ± 14.21	50.50 ± 6.41	43.20 ± 9.58	58.20 ± 5.03
State anxiety scores	38.31 ± 7.73	38.86 ± 7.45	35.00 ± 8.13	42.80 ± 4.76	37.00 ± 6.48	43.50 ± 4.17	38.80 ± 6.42	40.50 ± 7.86
IMAT scores	1.92 ± 0.86	1.73 ± 1.24	1.94 ± 1.30	1.60 ± 1.34	1.25 ± 1.26	1.38 ± 1.30	2.20 ± 1.64	1.70 ± 0.95

SD, standard deviation; PIL, purpose in life; IMAT, Interest in Mental Arithmetic Test.

to differentiate between their state anxiety levels. State anxiety is related to acute stress.<sup>17,18)</sup> The state anxiety test consists of 20 items such as “upset, “comfortable,” “jittery,” “worried” and “over-excited.”<sup>17,18)</sup> The test is scored on a 4-point Likert scale (from one: not at all to four: very strongly). The normalized mean score for the state anxiety test is 50.

The validity and reliability of the INV, the PIL, and the STAI have previously been demonstrated.<sup>11,16,17)</sup> However, psychological tests which have undetermined validity and reliability might be used to clarify an individual case.<sup>19)</sup> According to our previous study,<sup>6)</sup> this study shows that the Early Life, Youth, and Adulthood Experiences Inventory (EYAEI) and the Interest in Mental Arithmetic Test (IMAT) were developed.

The EYAEI, which was modified from the Youth and Adulthood Experiences Inventory (YAEI) developed by Ishida and Okada,<sup>6)</sup> was administered to assess experiences before elementary school (a period added to the present study), and during elementary school, junior high school, senior high school, and university, or correspondingly to each age range and adulthood (Table 2). Examples of positive experiences about early life and youth events are, “Do you remember whether the following things happened to you before elementary school (before six years of age)?” followed by, “Were you praised by your teachers?” and “Were you surrounded by beautiful nature?” Examples of negative experiences are, “Were you scolded by parents?” and “Did you fail in attempts?” Adulthood events are all positive experiences as “Do you hold people in respect?” and “Are you surrounded by beautiful nature?” The test is scored on 6-point Likert scale (from zero: not at all to five: very strongly).

The IMAT was administered to assess the intensity of interest in mental arithmetic (MA) because it may contribute to feelings of anxiety in anticipation of performing MA. The test is scored on a 6-point Likert scale (from zero: not at all to five: very strongly) as in, “Are you interested in mental arithmetic?”

#### An acute stressful situation

An example of an acute stressful experience that can be assessed psychologically is when a subject enters an unknown room and meets an unfamiliar person for the first time.<sup>20)</sup> Another is being asked to participate in a timed MA task and to spontaneously provide verbal answers.<sup>21)</sup> According to evidence from previous studies,<sup>20,21)</sup> an acute stressful situation that would continue about 40 min was prepared. Subjects entered the laboratory one at a time and met an instructor for the first time. They were placed in a chair, and the instructor then explained the purpose and contents of the study as follows: “The purpose of this study is to clarify relationships between purpose in life, temperament, and anxiety. You will be asked to complete tests measuring INV, PIL, STAI, EYAEI, and IMAT, and will then perform a MA test. This test will be performed in the presence of the instructor. You should do it as fast and accurately as possible, giving verbal answers.” The task of MA was a sequential subtraction, for example,  $1000 - 6 = 994$ ,  $994 - 6 = 988$ ,  $988 - 6 = 982$  etc., which continued for a total of four min. This simple sequential subtraction was considered to be an achievable task for those with a basic elementary education. After given the instructions, the subjects filled out the five test sheets and then performed MA.

**Table 2.** Kendall's correlation coefficients between the positive experience scores of EYAEI and scores of PIL

	Early life and youth					Adulthood
	BE	EL	JH	SH	UN	
Schizoid temperament (Number of subjects = 13)						
Did you play sufficiently?	0.384	0.203	-0.117	0.318	-0.073	
Did you devote time to events?	0.678*	0.514	-0.079	0.063	0.252	
Were you praised by teachers?	0.402	0.444	0.162	0.079	0.311	
Were you praised by your parents?	-0.071	-0.226	-0.086	-0.185	-0.073	
Were you praised by friends?	0.267	0.043	0.071	-0.014	0.086	
Were you praised by your neighbors?	0.448	-0.100	0.056	0.148	0.218	
Did you succeed in attempts?	0.452	0.289	-0.311	0.215	0.059	
Were you affected by people?	0.533	0.287	0.042	0.246	0.311	
Were you affected by events?	0.498	0.350	-0.056	0.181	0.331	
Were you surrounded by beautiful nature?	0.467	0.445	0.178	0.441	0.167	
Do you hold people in respect?						0.526*
Are you surrounded by beautiful nature?						0.536*
Other temperaments (Number of subjects = 49)						
Did you play sufficiently?	0.252	0.309*	0.272	0.323*	0.082	
Did you devote time to events?	0.201	0.204	0.298*	0.135	0.225	
Were you praised by teachers?	0.319*	0.212	0.464**	0.237	0.259	
Were you praised by your parents?	0.419**	0.373**	0.534**	0.395**	0.366**	
Were you praised by friends?	0.257	0.313*	0.363**	0.160	0.111	
Were you praised by your neighbors?	0.282*	0.094	0.167	0.083	0.086	
Did you succeed in attempts?	0.322*	0.473**	0.332*	0.191	0.152	
Were you affected by people?	0.274	0.353**	0.232	0.339**	0.256	
Were you affected by events?	0.234	0.400**	0.297*	0.204	0.156	
Were you surrounded by beautiful nature?	0.154	0.251	0.135	0.215	0.092	
Do you hold people in respect?						0.075
Are you surrounded by beautiful nature?						0.223*

EYAEI, Early Life, Youth, and Adulthood Experiences Inventory; BE, before elementary school (before six years of age); EL, elementary school (six-11 years of age), JH, junior high school (12-14 years of age); SH, senior high school (15-17 years of age); UN, university (18-21 years of age). \* $p < 0.05$ , \*\* $p < 0.01$ .

### Statistical analyses

An unpaired 2-tailed  $t$  test was used for evaluating differences in age, PIL scores, and state anxiety scores between the two groups. Mann-Whitney's  $U$  test was

used for evaluating differences in the intensity of interest in MA between the two groups. The chi-square test was used for evaluating the difference in the distribution of gender between the two groups. Kendall's correlation coefficient with Bonferroni correction was used to test for correlations between the PIL test scores and EYAEI

**Table 3.** Pearson's correlation coefficients for correlations between PIL test scores and state anxiety scores in each temperament group

Temperament	Number of subjects (male:female)	State anxiety
Schizoid	13 (5:8)	-0.578*
Others	49 (15:34)	-0.037 (0.801)

Refer to **Table 1** for the other temperament groups. *p* value in the parenthesis. \**p* < 0.05.

scores. Pearson's correlation coefficient was used to test for correlations between the PIL test scores and state anxiety scores. Statistical significance was accepted at the *p* < 0.05 level. SPSS® software was used for the statistical analyses.

## RESULTS

No significant differences were shown in gender, age, PIL test scores, state anxiety scores, or intensity scores of interest in MA between the Schizoid Temperament Group and Other Temperaments Group (Table 1). In the Schizoid Temperament Group, positive significant correlations between scores of positive experiences of EYAEI before elementary school and in adulthood and PIL scores were observed (Table 2). In the Other Temperaments Group, a positive significant correlation between scores of positive experiences of EYAEI before elementary school to adulthood and PIL scores were observed. In the Schizoid Temperament Group, negative significant correlations between PIL and state anxiety scores were shown (Table 3). In the Other Temperaments Group, no significant correlation was shown between PIL scores and state anxiety scores.

## DISCUSSION

New findings in this study include: first, positive experiences especially before elementary school and in adulthood were associated with having a firm purpose in life in the Schizoid Temperament Group, and from before elementary school to adulthood in the Other Temperaments Group; second, having a firm purpose in life was associated with lower scores of state anxiety in the Schizoid Temperament Group and not associated in the Other Temperaments Group. Therefore, discussion focused on the Schizoid Temperament.

Because people with a schizoid temperament show little concern with other persons and things,<sup>11,20</sup> it is suggested that they have fewer positive experiences, i.e., memories, from elementary school to university, compared with people of other temperaments. However, it should be

noted that positive experiences in both the period before elementary school and adulthood are mainly associated with having a firm PIL in those with a schizoid temperament. In the period before elementary school, the virtues of "purpose," "will," and "hope" develop through good relationships with parents, especially mothers, as well as other family members.<sup>22</sup> Further, in adulthood, the virtues of "wisdom," "caring," and "love" develop through good relationship with friends and other people. This suggests that, irrespective of temperament, good human relationships with family before elementary school and being around areas of beautiful nature in adulthood are important factors in developing PIL, and in those with a schizoid temperament, an additional factor of more extensive human relationships in adulthood is also much the same important in developing PIL.

In the "acute stressful situation" in the present study, for the differences in the level of state anxiety, no variances were observed between Schizoid and Others. However, individuals with a schizoid temperament generally demand little human contact and show discomfort with other people.<sup>12</sup> They usually feel quite vulnerable and find human interaction confusing, frightening, and painful.<sup>12</sup> Therefore, it is suggested that for those with a schizoid temperament, having a PIL modifies this complex pattern. Individuals with other temperaments feel less uncomfortable with other people and have a less irritable emotional response to stimuli from other persons and things.<sup>11</sup> Accordingly, the two groups might differ in emotional response patterns, i.e., in an "acute stressful situation", there might be a significant negative correlation between PIL and state anxiety in those with a schizoid temperament and no significant correlation between these in persons with other temperaments.

Some limitations in the present study should be noted. First, it remains to be confirmed whether the responses from subjects in the INV definitely is true or not, that is why the assessor must be skilled in data analysis. Second, the present study assumed that an "acute stressful situation" caused state anxiety based on evidence from previous studies.<sup>20,21</sup> However, to clarify whether or not the "acute stressful situation" was sufficient to cause stress, the STAI need to be performed before and after the situation. Third, a number of subjects for

psychological data should be gathered in order to confirm the conclusions.

In summary, having a firm purpose in life appears to develop through positive experiences before elementary school and in adulthood in those with a schizoid temperament and from before elementary school to adulthood in people with other temperaments. In the light of these results, we believe that a firm PIL might contribute to a lower state anxiety caused by meeting others only in individuals with a schizoid temperament.

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