Factors Related to Anxiety in University Students in Japan and China

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Abstract

This study investigated factors related to anxiety in 290 Japanese and 295 Chinese university students. The students answered four commonly used questionnaires. The Japanese students scored higher on the anxiety scale than the Chinese students. In addition, this study examined the differences between students with high and low anxiety in both countries. Students with low anxiety in both Japan and China scored high on the "care" scale, which reflects maternal attitude in infancy, and low on the "over-protected" scale. It was evident that the Chinese students with low anxiety scored high on the "planning ability" and "time management" scales, both of which are subscales of the Sense of Purpose Inventory. When the emotional images of the lives of Japanese and Chinese students scoring high on anxiety were compared, Japanese students exhibited a more negative view of the future than of the past.

Introduction

The maternal attitude toward child rearing is a crucial factor in the child's development and growth. The mother's approach to child rearing is particularly influential in the personality development of the child (Bowlby, 1969). An appropriate maternal attitude and a sense of responsibility to bring up the child are important to start and maintain the reliable relationship with others for her child. The personality tendency of "anxiety" seems to be related to maternal attitude of child rearing (Parker, 1979). Significantly, the low care and the high over-protection from mother were associated with persons with high anxiety, which was not found in persons with low anxiety (Parker, 1981). Anxious people have often been brought up by a tightly controlling mother. Those with low anxiety have enjoyed fond treatment by their mothers. The undulations of

the anxiety seem to be influenced by the experience of the mother's attachment during childhood.

Bowlby (1969) described how the quantities of communication, response and sympathy from the mother were important in the construction of a good mother-child relationship. An inappropriate relationship with the mother is the factor which chiefly causes anxiety disorders in childhood and youth (Warren, et al., 1997). An inappropriate relationship with the mother produces emotional instability and a negative self-concept in the child. The excessive anxiety is brought on by failing to received the own personal affirmatively. If a child is brought up with appropriate fondness and attention from mother, he or she will be ready to develop a sense of reliability and safety. The nature of the mother-child relationship, though established early, persists throughout childhood and youth (Bowlby, 1969). University days are a time in which youths clarify their goals and construct a perspective on the future, considering future activities and developments that may be limited by aging. They gain a personal time perspective in which the past and the future enlarge time expansion and influence behavior in the present. In this time perspective, the future is viewed with hope, the present with satisfaction, and the past with realism (Nuttin, et al., 1985). The attitude toward the time-perspective and the interaction between the perceived future and the past influence behavior in the present (Maslow, 1962).

Braley et al., (1971) indicated that reduced time expansion was observed frequently in subjects with anxiety neurosis or mental illness, compared to a control group. Robertson (1978) reported that anxious people have reduced time expansion. Time expansion means "conceptualized time length in the future." Rychlak (1972) recognized that the highly anxious person had fewer words about the future although he or she felt that the present was long psychologically and cause for many complaints. It is difficult for the present-oriented person, distracted by anxiety and unstable emotion, to connect the present and the future. Thus, there is a negative correlation between anxiety and the length of one's personal time perspective. We discuss two kinds of relationships: that between the anxiety of university students and the maternal attitude towards child rearing, and that between anxiety and the personal time perspective. The time-perspective was measured by imaging the sense of purpose and emotional changes in the lives of university students.

This study searched for factors related to anxiety in university students in Japan and China. The study examined six factors: 1) the level of anxiety experienced by university students; 2) maternal attitude experienced by the university students in infancy; 3) the students' awareness of purpose; 4) the students' level of anxiety and its relationship to maternal attitude in infancy; 5) the relationship between anxiety and the goal consciousness of the students; and 6) the relationship between anxiety and personal time, as perceived by the student.

Methods

Subjects

The investigation period was from October to December 1999. There were 290 Japanese students (187, or 64.5%, men, and 103, or 35.5%, women) and 295 Chinese students (125, or 42.4%, men and 170, or 57.6%, women).

Instruments

The State-Trait Anxiety Inventory (STAI) (Spielberger, 1970) has a total of 40 items, including 20 state-anxiety items and 20 trait-anxiety items. Each scale is answered by a four-case method and the maximum score is 80 points. Trait anxiety was the focus for this study.

The Parental Bonding Instrument (PBI) (Parker, et al., 1979) is a questionnaire that asks about parental nursing attitude in childhood. Twenty-five items structure it, which are addressed by a four-case method. Two factors were extracted using factor analysis: "care" and "over-protected."

Using scores for the Sense of Purpose Inventory (SPI) (Tsuzuki, 1999), factor analysis extracted six factors from the data: "hope for the future," "possesses goals for the future," "time management," "planning ability," "craves goals for the future," and "feeling of emptiness."

The Ladder Rating Scale (Tsuzuki, 1999) measures personal time perspective, based on an individual's perception. This scale divides the human lifetime into 14 periods: baby, preschool, elementary school lower grades, elementary school upper grades, junior high school, high school, university entrance, the present, graduation time, and the 3rd, 4th, 5th, 6th, and 7th decades of life. The best image is scored as 10, and the worst as 0. The scale compares perceptions of the future with those of the present.

Results

Descriptive Data

The average age for the Japan sample was 20.0 years (SD=1.7)—men: 20.0 years (SD=1.8), women: 19.0 years (SD=1.4). For the China sample, the average age was 19.1 years (SD=1.5)—men: 19.1 years (SD=1.5), women: 19.0 years (SD=1.4). The information on birth order is summarized below.

Japan Sample	First child	125 persons (43.1%)
	Only child	20 persons (6.8%)
	Second child	125 persons (43.1%)
	Third child	37 persons (12.8%)
	Fourth child	3 persons (1.0%)
China Sample	First child	281 persons (95.3%)
	Only child	187 persons (63.4%)
	Second child	11 persons (3.7%)
	Third child	1 person (0.3%)
	Fourth child	2 persons (0.7%)

Factor analyses of PBI

The responses of all 25 items were analyzed for factors by the main factor analysis method. Two factors were extracted, based on the reduction rate of an intrinsic level. After rotation of the varimax method, items whose factor-loading level was 3.0 or more were adopted. Common items were adopted in Japan and China. The first factor in this study consisted of eleven items, including items 1, 2, 4, 5, 6, 11, 12, 14, 17, 18 and 24. Because a previous study (Parker et al., 1979) had used the term "care" for the same factor, that same term was adopted for the present study. The second factor consisted of eight items, including items 8, 9, 10, 13, 15, 19, 20 and 23. Because a previous study (Parker et al., 1979) had used the term "over-protected" for this same factor, that term was adopted here in accordance with the previous study.

Factor analyses of SPI

The responses to all 35 items were analyzed for factors by the main factor analysis method. Six factors were extracted, based on the reduction rate of an intrinsic level.　After rotation of the varimax method, items whose factor-loading level was 3.0 or more were adopted. Common items were adopted in Japan and China. The first factor in this study consisted of six items, including items 1, 7, 8, 26, 33 and 34, and was named "hope for the future." The second factor consisted of five items, including items 3, 6, 10, 16 and 22, and was named "possesses goals for the future." The third factor consisted of five items, including items 4, 11, 17, 23 and 29, and was named "time management." The fourth factor consisted of five items, including items 2, 9, 15, 21 and 27, and was named "planning ability." The fifth factor consisted of five items, including items 5, 12, 18, 24 and 30, and was named "craves goals for the future". The sixth factor consisted of five items, including items 13, 19, 25, 31 and 32, and was named "feeling of emptiness." The factor names corresponded to those used by Tsuzuki (1993).

Sample comparison on Main scores

The average anxiety score for university students in Japan was 50.1 and in China was 41.8. The difference was significant (p< .001). The average score for "care" in Japan was 24.4 and in China was 22.6. The average score for "over-protected" in Japan was 8.3 and in China was 8.2. The "care" score was higher for university students in Japan and the difference was significant (p< .001). There was no significant difference between the "over-protected" scores.

University students in China scored significantly higher on "hope for the future" (p< .001), "possesses goals for the future" (p< .001), "time management" (p< .001), and "planning ability" (p< .001). The average for university students in Japan for "feeling of emptiness" was significantly lower (p< .001). Figure 1 shows the averages for the Sense of Purpose Inventory subscales.

Figure 1 The average for the Sense of Purpose Inventory subscales in Japan and China
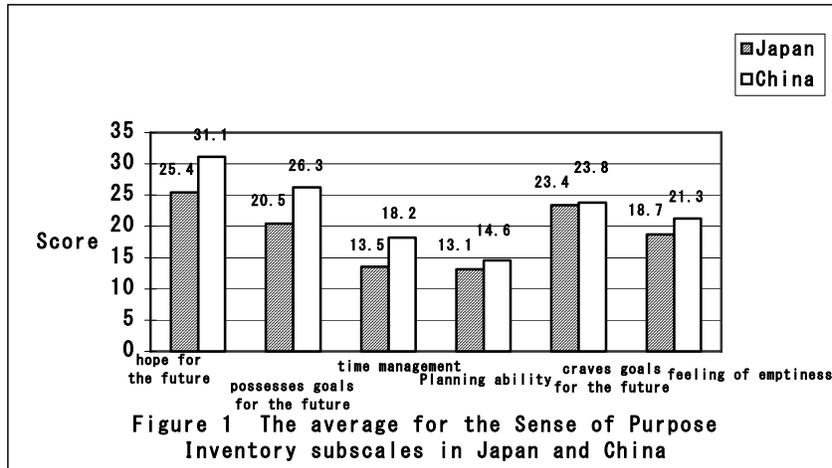
Anxiety and Rules of "Care" and "Over-Protected"

To examine the relationship between anxiety and maternal attitude (in infancy), students were divided into high and low anxiety groups and compared using the knowledge discovery method. The high anxiety group included students with the highest quartile of anxiety scores, and the low anxiety group included the lowest quartile. The high anxiety group contained 75 students in Japan and 77 in China. Similarly, the low anxiety group contained 79 and 76 students, respectively. Table 1 shows the rules governing university students in Japan. In the high anxiety group, the score for "over-protected" was greater than or equal to 11, and 39 students in the high and low anxiety groups met this criterion. Twenty-nine (74.4%) of these were in the high anxiety group; this corresponds to 38.7% of those in the low anxiety group.

In the low anxiety group, "care" was greater than or equal to 21 and the score for "over-protected" was less than or equal to 10. Ninety-nine students in the two groups met this criterion. Moreover, 61 of these 99 students belonged to the low anxiety group; this corresponds to 78.2% of those in the low anxiety group. Table 2 shows the rules for university students in China. There were two rules in the high anxiety group. First, "care" was less than or equal to 20. Forty students who met this criterion were in the two anxiety groups. Thirty of these (75.0%) were in the high anxiety group, which corresponds to 39.0% of the students in the high anxiety group. Second, "over-protected" was greater than or equal to 11. Thirty-seven students in the two groups met this criterion and 28 (75.7%) were in the high anxiety group; this corresponds to 36.3% of the high anxiety group. In the low anxiety group, "care" was greater than or equal to 21 and "over-protected" was less than or equal to 10. There were 92 students that

met these criteria in the two groups, and 59 (64.1%) were in the low anxiety group; this corresponds to 77.6% of persons of the low anxiety group.

Table 1. The rules governing university students in Japan

	Rule	Total	Rule prob.	Corresponding N	%
High anxiety	Over-protected>10	39	74.4 %	29	38.7
Low anxiety	Care>20 & Over-protected<11	99	61.6%	61	78.2

Table 2   The rules governing university students in China

	Rule	Total	Rule prob.	Corresponding N	%
High anxiety	Care<21	40	75.0 %	30	39.0
	Over-protected >10	37	75.7%	28	36.3
Low anxiety	Care>20 & Over-protected<11	92	64.1%	59	77.6

Anxiety and Rules of the Sense of Purpose Inventory

To examine the relationship between anxiety and goal consciousness, as related to anxiety and maternal attitude, rules were sought using the knowledge discovery method. Table 3 shows the rule for university students in Japan. In the high anxiety group, "hope for the future" was less than or equal to 24, "possesses goals for the future" was less than or equal to 18, and "feeling of emptiness" was greater than or equal to 19. Thirty-six students in the two groups met these criteria; and 33 (91.7%) were in the high anxiety group; this corresponds to 44% of those in the high anxiety group. The rule for the low anxiety group was that "hope for the future" was greater than or equal to 25 and "feeling of emptiness" was less than or equal to 18. Fifty-nine students in the two groups met these criteria, and 54 (91.5%) belonged to the low anxiety group; this corresponds to 68.4% of those in the low anxiety group. Table 4 shows the rules for university students in China. The rule states that "hope for the future" is less than or equal to 24 and "feeling of emptiness" is greater than or equal to 20. Thirty-one persons in the two groups satisfied these criteria and 96.8% were in the high anxiety group; this corresponds to 39.4% of those in the high anxiety group.

Table 3. The relationship between anxiety and goal consciousness in Japan

	Rule	Total	Rule prob.	Corresponding N	%
High anxiety	Hope for the future<25 & Possesses of goal for the future<19 & Feeling of emptiness>18	36	91.7%	33	44.0
Low anxiety	Hope for the future>24 &				

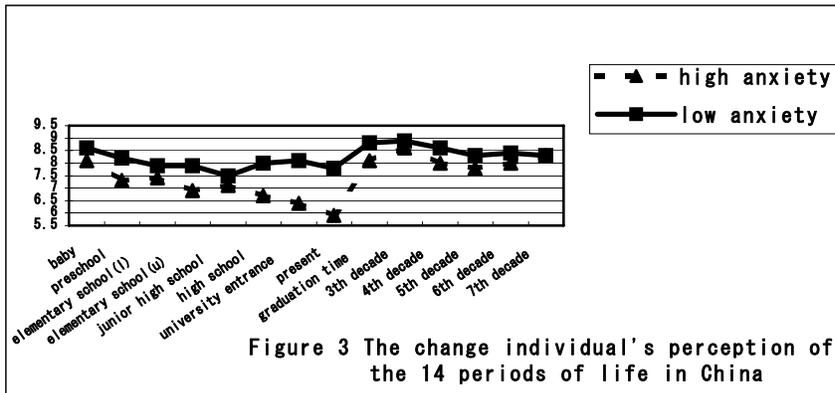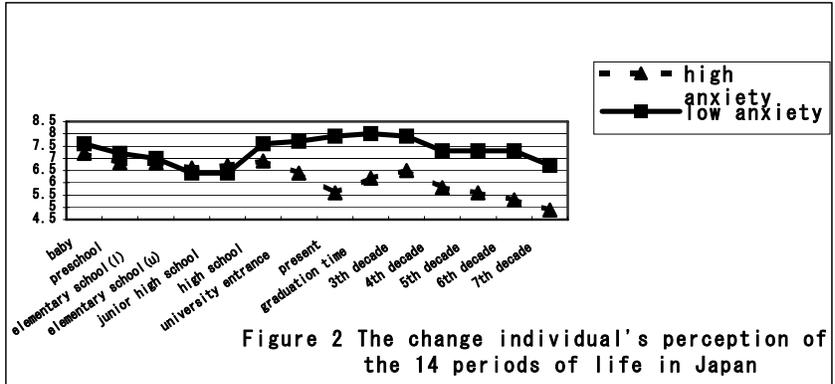|	Rule	Total	Rule prob.	Corresponding N	%
	Feeling of emptiness<19	**59**	**91.5**%	**54**	**68.4**

Table 4. The relationship between anxiety and goal consciousness in China

	Rule	Total	Rule prob.	Corresponding N	%
High anxiety	Hope for the future<25 &				
	Feeling of emptiness>19	**31**	**96.8**%	**30**	**39.4**
Low anxiety	Hope for the future>27 &				
	Planning ability >17 &				
	Feeling of emptiness<20	**29**	**82.8**%	**24**	**31.6**
	Hope for the future>27 &				
	Time management>17 &				
	Feeling of emptiness<20	**33**	**84.8**%	**28**	**36.8**

There were two rules in the low anxiety group. First, "hope for the future" was greater than or equal to 28, "planning ability" was greater than or equal to 18, and "feeling of emptiness" was less than or equal to 19. Twenty-nine students in the two groups met these criteria and 82.8% were in the low anxiety group; this corresponds to 31.6% of the students in the low anxiety group. The second rule was "hope for the future" was greater than or equal to 28, "time management" was greater than or equal to 18, and "feeling of emptiness" was less than or equal to 19. Thirty-three students in the two groups satisfied this rule, and 28 (84.8%) were in the low anxiety group; this corresponds to 36.8% of those in the low anxiety group.

The Change in Individuals' Perceptions of life

Figures 2 and 3 show the change in individuals' perception of the 14 periods of life for university students in Japan and China. In Japan, there were significant differences between the low and high anxiety groups for high school ($p< .001$), university entrance ($p<. 05$), the present ($p< .001$), graduation time ($p< .001$), and the 3rd, 4th, 5th, 6th, and 7th decades ($p< .001$, $p< .001$, $p< .001$, $p< .001$, $p< .001$). In all periods after high school, the image of the low anxiety group was significantly better than that of the high anxiety group. For Chinese students, there were significant differences between the low and high anxiety groups for preschool ($p<.05$), elementary school upper grades ($p<.01$), high school ($p<.01$), university entrance ($p< .001$), the present ($p< .001$), and graduation time ($p<.05$). In all periods before graduation time, the image of the low anxiety group was significantly better than that of the high anxiety group.

Figure 2 The change individual's perception of
the 14 periods of life in Japan

Figure 3 The change individual's perception of
the 14 periods of life in China

Discussion

The low anxiety groups in both Japan and China seemed to reflect two related categories: those with high care from their mothers, and those with low over-protection. In both countries, nearly 80% of low-anxiety students belonged to either of two categories. It seems that adequate maternal attitude during childhood is a determinant for stability and low anxiety among university students. Chinese students scored significantly higher than their Japanese counterparts on the sense of purpose subscale, including "hope for the future," "possesses goals for the future," "time management" and "planning ability." It is assumed that Chinese university students are steadily planning their future. On the other hand, Japanese university students, who had a lower frequency of "feeling of emptiness" than did those of Chinese students, seem to achieve satisfaction with life. Subsequently, the effects of higher and lower levels of anxiety on goal consciousness were analyzed for students from both countries. In Japan sample, a rule was led that students with high anxiety exhibited a similar

pattern in terms of "hope for the future," "possessing goals for the future," and "feeling of emptiness," namely, that scores were low for hope and purpose and high for the feeling of emptiness. Several explanations might be advanced to explain this. Simple lack of hope might account for the feeling of emptiness. Or their anxiety itself might account for low hope and purpose in the future. Contrary to the high anxiety group, the low anxiety group showed high hope for the future and the low feelings of emptiness. Consequently, it can be assumed that steady goal consciousness, a possible product of low anxiety, makes the future appear hopeful and decreases the feeling of emptiness. In contrast, the high anxiety group in China revealed low hope for the future and high feelings of emptiness. As may have been the case among Japanese students, anxiety seemed to reduce hope among high-anxiety Chinese students, which may in turn have led to feelings of emptiness. We found two rules in the low anxiety group. One rule saw students high both in "hope for the future" and "planning ability" and low in the "feeling of emptiness" combined into one group. The other saw students high both in "hope for the future" and "time management" and low in the "feeling of emptiness" combined into another group. From these two rules, it was possible to examine "planning ability" and "time management" for each national group. Chinese university students were well able to objectify their own present and future and were able self-managers. These tendencies may result from aspects of the Chinese national character and social change, since they were less in evidence among Japanese university students.

In this study, factors that caused anxiety were examined among Japanese and Chinese university students. The anxiety reflected the maternal attitude to child rearing. Also, anxiety was seen to influence the sense of purpose of university students. University students with high anxiety seemed to achieve less goal consciousness, which concerns their lifelong emotional recognitions.

University students in China had significantly lower anxiety than their Japanese counterparts. This implies that university students in China are more stable emotionally. University students in Japan scored significantly higher for "care," which reflects maternal attitude. This means that students in Japan are much more conscious of their mother's support. University students in China scored significantly higher for "goal consciousness," reflecting higher scores for hope for the future, the existence of goals, time management, and the construction of plans, than did their Japanese counterparts. This likely reflects influences from Chinese culture. On the other hand, university students in Japan scored significantly lower in the "feeling of emptiness," implying that university students in Japan are mentally aware of this feeling. As for the low anxiety group, scores for "care," which reflects maternal attitude, were high in university students from both countries, while "over-protected" scores were low. It is likely that maternal devotion plays a role in determining the level of anxiety. As for the low anxiety group of university students in China, the rule of goal consciousness

involves time management or planning. This is an interesting result.   The evaluation of emotional images in each period of life suggests that the degree of anxiety in the high anxiety group is related to differences in emotional images of the past or future, compared to that of the present image. This study investigated anxiety felt by students in Japan and China from various perspectives. Characteristic differences between the two countries were seen. In the future, we hope to investigate how anxiety changes over time and historic changes in the level of anxiety. Moreover, we hope to expand the investigation to include students in other countries.

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