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CONTENTS

Original Article

SAT-based Self-image Improvement Intervention to Ameliorate Anxiety in Chinese College Students

Wen-Yan, Hu[1)] *, Tsunetsugu, Munakata[1)], Sayuri, Hashimoto[1)], Wen-Jie, Yang[2)], Ying, Feng[3)]

**1) Department of Human Care Science, Graduate School of Comprehensive Human Science, University of Tsukuba, Tennoudai, Tsukuba, Japan 305-8577*

2) Mental Health Counseling Center, Yunnan University, Kunming 650091

3) School of Politics & Administration, Hainan University, Haikou 570228

E-mail addresses: hwy81@hotmail.co.jp (W. H.); munakata21@yahoo.co.jp (T. M.)

** Study on involvement in Enhancing College students' Social ability by using SAT method—taking Hainan University for example, Sponsored by 2009 Hainan education and science Eleventh Five-Year planning project*

■ Abstract

Objective: In this preliminary study, we examined the effectiveness of a 6 hours self-image promotion intervention program on improving perceived emotional support variables, self-image variables as well as on ameliorating anxiety. **Participants and Methods:** Participants were university students. We recruited 48 students and randomly assigned them to one experimental group (n=24) and two control groups (n=24). Four participants of the control group 1 ceased participation prior to completing the post-intervention survey; thus, the final sample size of 44 (24 experimental, 20 control) yielded a participation rate of 91%. Among them, 36% were male, and 64% were female and ranging in age from 18 to 22 years (Mean=20±.98). The self-image promotion intervention included 2 three-hour parts: Temperament coaching and SAT imagery therapy. Control groups were trained by communication skill and stress management. Measures of perceived emotional support variables, self-image variables and state anxiety were administered at pre-, post- and 5 month follow-up of the intervention to all these three groups. Trait anxiety was only administered at pre- and 5 month follow-up of the intervention. **Results:** Analysis indicated that relative to the control groups, experimental group had greater improvement on the perceived emotional support and self-image (i.e., self-affirmation and problem solving) at post- and follow-up than per-intervention. In addition, the experimental group had lower post- and follow-up scores on trait and state anxiety. **Discussion and Conclusions:** The current study makes clear that the positive self-image is very important for students to maintain low anxiety status. In order to control anxiety disorder self-image change is needed firstly. Additionally, the indepth

understanding of self and self-care behaviors for stress temperament is necessary. The findings indicate that the self-image promotion program might be useful for enabling college students to manage anxiety successfully.

Keywords: anxiety, self-image, parental image, positive expectation, self-care behavior

1. Introduction

Anxiety disorder is becoming one of the most common psychological disorders in school aged children and adolescents with high prevalence rate and many of them remaining unidentified and untreated [1]. A 17,415 college freshmen survey showed that from 2005 to 2008, Chinese college freshmen's mental health problem such as anxiety and depression symptoms significantly increased year by year [2]. Furthermore, a study pointed that such psychological problems are becoming the main reasons for high rate of withdraw from school, suicide and murder cases for Chinese students [3]. In addition, studies have proved that anxious individuals tend to choose a negative perception and interpretation on things over other possible ones, and anxiety trait may enhance the interpretation and/or processing of the cues conveying negative emotion [4-6]. Given the high prevalence rate and associated adverse effects, the need to prevent the development of anxiety disorders is paramount [1].

Worldwide, there are an increasing number of school-based and classroom-based intervention studies to treatment or prevention students' mental health or physical problems [7]. The school system has been identified as an ideal avenue for the promotion of prevention and early intervention programs for anxiety [8]. Schools are viewed as having unparalleled contact with youth and provide an opportunity to reach children and adolescents who have previously been unidentified and untreated [9]. Alison L. N. et al. reviewed 20 individual school-based prevention and early intervention programs for anxiety and suggested that both indicated and universal approaches produce positive results with small to moderate reductions in anxiety at post-test and follow-up. However, most of those programs lost follow-up data collected and almost of them take long intervention time range from 8 to 14 sections (one section is about 1.5h) or even lasting for 1 year [1]. Additionally, in another review study, the authors pointed that none of the reviewed programs included among its goals improving adolescents' ability to enjoy life, to laugh at themselves and the world, or to develop emotionally or spiritually, all of which are important components of mental health and nor did they make much systematic use of young people's own goals [7]. Therefore a short anxiety treatment and prevention school based program

that are easy to operate and designed based on focusing on supporting students make self-growth should be considered.

People's anxiety level is related to how they expect things. Those people who tend to feel anxiety is because of they have negative expectations to the future. In another word, people would feel easy and relax if they could have a positive expectation to things. So, what are the determining factors for expectation manner? Munakata suggested that the way that people anticipate things is determined by self-image [10]. Negative self-image always cause people cognize and anticipate things from a negative perspective and people who have positive self-image tent to have good and positive expectations about future.

Traditionally, the Cognitive Behavioral Therapy (CBT), stress management intervention, communication, relaxation and problem solving skills training have been used for treating and preventing anxiety symptom through improving participants' self-image such as self-esteem and self-efficacy [11-19]. However, the effectiveness of those methods was not consistent. This maybe because of the CBT relies heavily on the compliance of the clients, and it focuses on client's problem directly but not resolve the "root causes" [20, 21]. In other words, CBT focus on "solving problem" more than "supporting self-growth" and clients might have the risk of suffering mental health troubles again when other problems happened. There is another problem should be noticed. Emotions have more influence on determine human being's behavior than thought. This is might be one of explanations that why people usually know it is not good, want to make some changes but fail to change finally. Thus we suppose that the characteristic of CBT which try to change people's behavior through changing their thought and believe might be one of the reasons of the inconsistent effectiveness.

Social skills might easy to be carried out and show great effectiveness for managing anxiety for people with positive and strong self-image. However, for those who have negative self-image, the effectiveness might be limited since social skill training itself could not make improvement of self-image. Thus, even people mastered the skills, but it would be very difficult for some of them to put skills into action because of lacking positive expectation, feel powerlessness and lack of confidence.

Ueda et al.'s study pointed that the sense of self-denial, trait anxiety among university students were related to their parents' aversive expression [22]. Young's study also pointed that the negative parental images endorsed by individuals as adults, are the origins of their maladaptive self-images or schemas and these images are in turn responsible for adult emotional distress and disturbances in interpersonal functioning [23]. John et al.'s study supported the predictive relationship between

images of parents, self-image and emotional well-being [24]. Munakata explained the mechanism that how parental image determines self-image. He pointed that it's because people who have negative parental image tend to give up being themselves (i.e., repress their true feelings; emotionally and interpersonal dependent on others) and develop others-rewarded oriented lifestyle without realizing it [25]. According to Munakata (2010) [25], "others-reward oriented behavior" forms and related with aversive parental image. It means individual get dopamine secreted and obtain pleasure motivated by sufficing for human being's "want to be loved desire", pursuing social achievement, view social success as a primary goal and what's more, the judgment and standard of the outcome is controlled and determined by others. Such kind of behaviors will ceaselessly cause one feel anxiety, feel stress, cause negative self-image forming and result in psycho-somatic symptoms. In conversely, "self-rewarded seeking behavior" forms related with positive parental image. It means individuals get dopamine secreted and obtain pleasure motivated by sufficing for human being's "want to love oneself desire" "want to love others desire". For example, only pursue living positively, getting hopes, self-satisfaction, enjoyable, and appreciate others can help people maintain real well-being in such a stressful society. Because such kind of behavior is related to build positive self-image, the judgment and standard of the outcome can be controlled and determined by oneself, those rewards resource belongs to oneself.

Based on these previous research results, and with considering the problems of the existing social skill training and CBT intervention programs, one technique we used here is SAT imagery therapy that developed by Munakata, aimed to improve participants' self-image through the change of their parental image script firstly in an imagery work.

In recent years, self-care has developed as an important health care concept [26]. Self-care behavior based on one's own gene temperaments is also related to build positive self-image and maintain well-being [27]. According to Munakata's temperament theory, temperament is the genetic character about our desire and emotional reaction, which in turn define our behaviors. It contains two parts, one is personality temperament and another is stress temperament which defines the strength of our sensitiveness and reaction, and has been divided into persistence, neuroticism and novelty-seeking temperament [27]. Genetic temperament, nucleus of one's nature consisting of hereditary factors and biological factors related to neurotransmitter, does not change throughout one's lifetime. Among them all, those who have either " persistence temperament " observed in perfectionists or " neuroticism temperament" represented by pessimism and tendency to be opinionated incline to

become powerless, hopeless, fearful, solitary and stressful. Therefore, the self-care behavior becomes extremely essential for those people to manage stress and maintain well-being. However, other researches pointed that the issue of personal identity for the purpose of better understanding of the self, another main feature of managing the self, has received little attention when consider how to improve student's competence [28].

Therefore, in the current intervention program, stress gene temperament coaching was contained to improve participants' self-image through deeply understanding themselves, improvement their interpretation style toward to themselves and significant others and let participants know what kind of self-care behaviors should be done to care their stress gene temperament weak points. In order to compare the effectiveness of the current intervention program we set two control groups which were trained by communication skill and stress management coaching.

The aim of this study is to use a randomized controlled design and validated outcome measures to examine the effectiveness of self-image promotion intervention program on enhancing college students' positive self-image, and on improving participants' anxiety status. Our hypotheses are as the following: 1) social skill training couldn't make self-image improvement; 2) by looking parental substitute representation, self-image could be improved; 3) with the improvement of self-image, the anxiety level would decrease.

2. Methods

2.1 Subjects

Participants were university students recruited to take part in a self-image promotion program for improving anxiety status through improving self-image by doing self-care behavior and changing behavior from others-reward oriented pattern to self-reward oriented pattern. We recruited 48 students and randomly assigned them to experimental (n=24) and two control groups (n=24). Before they completed a pre-intervention survey, we informed all participants of the informed all participants of the natural and purpose of the study, and they voluntarily provided informed consent. Four participants (control group 1) ceased participation prior to completing the post-intervention survey; thus, the final sample size of 44 (24 experimental, 20 control) yielded a participation rate of 91%. The majority of students were second year (n=29, 66%), and then the first year (n=13, 29.5%), only 2 come from the third year (4.5%). Among them, 36% were male, and 64% were female and ranging in age from 18 to 22 years (Mean=20±.98). Persistence temperament score range from 1 to 5 points (Mean=3.91 ± 1.27), neuroticism temperament score range from 0 to 5 points

(Mean=3.36±1.36).

2.2 Procedure and Setting

Students volunteered by e-mail or telephone in response to flyers which were posted around campus. We informed potential participants that they would be randomly assigned to 1 of 2 groups: ① the experimental group (EG) involved completing a pre-intervention survey, attending a one day intervention (2 parts, 3 hours each) and completing a post-, one month and five month follow-up surveys; and ② the control group involved completing pre-, post-, one month and five month follow-up surveys on the same days as the experimental group. In addition, the control group was randomly divided into two groups: control group one (CG1) attending a one day communication skill coaching course (2 parts, 3 hours each) and control group two (CG2) attending a one day university stress management coaching (4 parts, 1.5 hours each). We give each one of the participants a ball pen and a notebook to encourage them fulfill the checklist seriously.

Self-image promotion intervention

The self-image promotion intervention included 2 three-hour parts: ①Temperament coaching and ② SAT imagery work.

The first part is temperament coaching help participants change their interpretation style to themselves' and others' image by making them deep understanding the characteristics of self's and others' genetic temperaments, and support them to know what behaviors they should do to care of the weak point of their temperaments. In this part participants were coached with genetic temperament knowledge and self-care behaviors about stress temperament, such as taking deep breath to calm down, or letting inner voice say that's all right for several times to decrease the expanded demand level. A human relationship improvement skill based on temperament knowledge and self-care behavior also been trained.

Part 2 is SAT imagery work, with the aim of creating a positive self-image, and changing students' behaviors from others-reward oriented to self-reward oriented pattern through changing their parental image to a positive one. SAT (structured association technique) imagery work is a series of techniques that based on structured questions, through makes use of intuition and association to support people finding problem solution method or change behaviors [29]. It is the Third Generation Cognitive Behavioral Therapy which is characterized by focusing on emotional change first. Munakata pointed that parental substitute representation is a very effective, simple and practicable method to help people control emotions[25]. SAT imagery work is a development of traditional CBT and offsetting its weakness which tries to change people's behavior begin with thought change. In the current study, we

support participants change and control their emotion by finding out and using parents substitute representation. Through the imagery work, they would feel unconditional love from parents, with the fulfillment of "want to be loved desire" their parental image would change to a positive one naturally. After changing their parental image, participants could change their behavior to self-rewarded oriented behavior which in turn both contribute to the fulfillment of "want to love oneself desire" and "want to love others desire", and contribute to self-image changing to a positive one.

Communication skill coaching

Communication skill coaching also included 2 three-hour parts: ① Communication skill lecture and ② Practice in pairs.

At the part one, participants were taught with listening skill, assertion skill and negotiation skill with the aim of support students' well-being from building empowerment interpersonal relationship. In order to strengthen the effect, at part two, participants practice ask for helping game, refuse game, encourage game, and positive feedback game by using these skills learned at part one.

Stress management coaching

It was with the aim of improving students' well-being through learning how to manage change and difficult situations more effectively. It also included 4 parts: ① Stress management; ②Autonomy; ③ Emotional management; and ④ Case analysis by watching DVD.

2.3 Measures

The questionnaire consisted three parts: ① attributes (age, gender, academic level, stress temperament types); ② anxiety status; and ③ self-image variables. In the present research, the Japanese version scales were first translated into Chinese and then back-translated into Japanese by two bilingually fluent researchers. High convergence between the two versions was obtained.

Anxiety status

State-Trait Anxiety Inventory (STAI)

Spielberger et al.'s (1983) [30] well-known STAI was designed to assess two types of anxiety, one's mood in the moment (**state anxiety**), and in general (**trait anxiety**). It contains two 20-item scales. For the state anxiety scale, response choices were from (1) "Strongly agree" to (4) "Strongly disagree". On the other hand, for trait anxiety scale, response choices were from (1) "not at all" to (4) "very often". Agreement to positive and disagreement to negative items scored 1 with a total score range from 20 to 80, respectively. We coded all items so that higher scores indicated higher levels of anxiety. In the current study the internal consistency of the Chinese version was 0.91 and 0.89, respectively. In the current study, we estimated the state anxiety at each

time, but for the trait anxiety, we only estimated it at pre- and 5 month follow-up.

Perceived emotional support

Two instruments—Perceived Emotional Support from Family (ESFFA) and Perceived Emotional Support from Peers (ESFP) scales (Munakata, 1996)[31] were used to estimate the subjective experience. Each scale had 10 items. Sample items in ESFP scale were: "Do you have any friend who supports your behavior". "Any friend" was replaced with "Family members" in ESFFA scale. The Cronbach's alpha in the current study was 0.70 for ESFFA and 0.66 for ESFP, respectively.

Self-image variables

Self-affirmation

The converse score of 10-item self-denial scale (Munakata2001)[32] was used to estimate perceived positive feelings of self-affirmation. The scale has 1 positive item ("I do like myself") and 9 negative items (e.g. "I want to die"; "I don't know why I was born"; "I am dirty"). In this study, the items were reverse scored: responses that approximated positive to self-denial were scored "0"("I always think so"), "1" ("sometimes I think so"), and "2"("I don't think so"); responses that approximated positive to self-denial were scored "2"("I always think so"), "2"("sometimes I think so"), and "0"("I don't think so"). The total scores range from 0 to 20. Higher scores indicate a high level of positive feelings of self-affirmation. Cronbach's alpha for the scale was 0.65 in this study.

Problem solving behavioral trait

10-item problem solving behavioral trait scale (Munakata, 2001)[32] was used to measure individual's behavioral trait that try to deal with the tasks and problems positively, effectively and realistically. The scale comprises of items such as "I always confirm the fact prior to make judgment" and "I always make plan and think about steps to take about what to do". Response choices were scored "2" ("I always do so"), "1" ("I do so"), or "0" ("I don't do so"), with total scores range from 0 to 20 and higher scores indicate high realistic problem solving behavioral trait. Lower score was suggested the tendency to repeat the same kind of failures or postpone to solve problems rather than facing the reality of fact. Cronbach's alpha for the scale was 0.75 in this study.

Self-expression behavioral trait

In this study we used the converse score of 10-item self-repression scale (Munakata, 1996)[31] to measure self-expression behavior trait. The original scale measures the expectations of being acceptable from others by repressing one's true feelings to satisfy people around. An example of a typical item such as "I tend to suppress my feeling""I usually can't express what I really think easily". Originally,

responses that approximated to self-repression were scored "2" ("I always do so"), "1" ("I do so"), or "0" ("I don't do so"). In the current study, responds were reverse scored "0" ("I always do so"), "1" ("I do so"), or "2" ("I don't do so") with total scores range from 0 to 20 and higher scores indicate a high level of self-expression behavior trait. Cronbach's alpha for the scale was 0.62 in this study.

Emotional autonomy behavior trait

The converse score of Japanese version of Hirschfeld, Gough, and Barrett (1977) [33] interpersonal dependency scale was used to estimate interpersonal independency behavioral trait. The original scale was used for personality assessment (Franche & Dobson, 1992) [34] and validity and reliability was examined. It is an 18-item scale measures one's tendency to socially depend on others and has both "dependence" and "independence" domains. Independence items include "I always rely on my own efforts" and "I don't care about what the other people say". Dependence domain questions include "I'm worried when I lose others' favor" and "I'd rather like become a follower than a leader". In this study the items were reverse scored: the dependence items were scored as"0" ("That's very true"), "0" ("That's true"), "1" ("That's generally true"), and "1" ("That's not so"); those independence items were scored as "1" ("That's very true"), "1" ("That's true"), "1" ("That's generally true") and "0" ("That's not so"). The total scores range from 0 to 18 and higher scores indicate high emotional autonomy behavioral trait. Cronbach's alpha for the scale was 0.66 in this study.

2.4 Ethical Considerations

Before starting the study procedures, the ethical permission was first obtained from the Ethical Committee of Graduate School of Comprehensive Human Sciences, University of Tsukuba. The permission number is No.21-175. Before the test was administered, each student signed an informed consent agreement. A brief description of the study was given to the participants, along with assurance that all answers would remain completely anonymous.

2.5 Data Analysis

SPSS Version 17.0 statistical software was utilized for the statistic analysis of this study. Means, standard deviations and reliability coefficients were conducted for experimental group, for all variables pre-, post- and 5month follow up of the intervention. We also conducted Mann-Whitney tests to determine whether there were any systematic differences between the groups at the baseline prior to the intervention. For each group, we conducted the Friedman test to examine whether there is significant change within group and if it was significant, we conducted Wilcoxon signed-ranks test continually to compare the changes of the data collected

at pre-, post- and 5month follow-up of the intervention. A p-value<0.05 was considered significant (Post hoc test with Bon ferroni correction).

3. Results

3.1 Baseline

The median age of all participants was 20 with no difference between the groups. 63.6% was female and 36.4% was male. All the demographic variables of this study population are depicted in Table 1. By using Mann-Whitney tests the demographics of age, gender, stress temperament (persistence and neuroticism temperament) have no significant difference among study groups (p>0.05). However, for the outcome variables, with regards to perceived emotional support from family there was a significant difference between experimental group (EG) and control group two (CG2) (p=0.049), and between control group one (CG1) and control group two (CG2) (p=0.005). With regards to problem solving, there was a difference between control group one (CG1) and control group two (CG2) (p=0.057), however it was not statistically significant. With regards to self-expression, there was a significant difference between between control group one (CG1) and control group two (CG2) (p=0.039). These differences would be considered which will validity affect the final result.

Table 1. Demographic variables and outcome variables of the participants at pre-intervention

Variable	EG	CG 1	CG 2	*p* Value
Demographics				
Age (Median±SD)	20.08±1.10	20.13±0.64	19.75±0.96	n.s.
Gender (male/female)	10/14	2/6	4/8	n.s.
Persistence temperament	3.96±1.26	3.75±1.48	3.92±1.24	n.s.
Neuroticism temperament	3.54±1.17	3.00±1.51	3.25±1.65	n.s.
Outcome variables				
Perceived emotional support from family	8.58±1.47	9.38±0.74	7.08±2.27	EG vs CG2 p=.038* CG1 vs CG2 p=.005**
Perceived emotional support from peers	8.54±1.91	9.50±0.53	9.00±1.20	n.s.
Self-affirmation	15.67±2.33	15.63±2.77	14.25±2.95	n.s.
Problem solving	8.79±3.85	9.00±1.60	7.50±1.73	CG1 vs CG2 p=.057†
Self-expression	9.87±3.23	8.25±1.83	10.42±2.53	CG1 vs CG2 p=.039*
Emotional autonomy	12.79±3.34	12.50±2.26	12.83±2.75	n.s.
State anxiety	39.62±10.60	37.12±7.40	38.25±8.30	n.s.
Trait anxiety	41.67±11.00	46.25±8.49	45.83±12.20	n.s.

Note. *** p<.001; ** p<.01; * p<.05; n.s. no significant

3.2 Changes after intervention

Table 2 showed all of the outcome variables changes for three groups from pre- to follow-up of the intervention. For experimental group, except the self expression scale (Friedman test, x^2 =4.22, p=0.121) and emotional autonomy scale (Friedman test, x^2 =4.76, p=0.092), all the other scales showed significant changes after intervention (Table 2). Comparison with the baseline, Wilcoxon signed-ranks test showed that the perceived emotional support from family significantly increased at post-intervention (p=0.004) and 5 month follow-up (p=0.028), the perceived emotional support from peers significantly increased at post-intervention (p=0.003) and 5 month follow-up (p=0.046), the self conceit significantly increased at post-intervention (p=0.000) and 5 month follow-up (p=0.006), the problem solving behavior significantly increased at post-intervention (p=0.007) and 5 month follow-up (p=0.018). The trait anxiety significantly decreased at 5 month follow-up (p=0.034), and the state anxiety significantly decreased at post-intervention (p=0.000) and 5 month follow-up (p=0.044).

On the other hand, in control group 1 all of the scales did not show any statistical significant changes between at baseline, post-intervention and 5 month later. All most the same, in control group 2, except the self-affirmation scale (Friedman test, x^2 =10.44, p=0.015), all the other scales did not showed significant changes after intervention. The post hoc test of self-affirmation significantly increased at post-intervention (p=0.022) and at 5 month follow up (p=0.045). Although the perceived emotional support from family showed statistical significant at Friedman test (Friedman test, x^2 =10.73, p=0.013), however, it lost significant at the post hoc test post-intervention vs. pre-intervention (p=0.078) and at 5 month follow up (p=0.062).

Table 2. Outcome variables changes for three groups from pre- to follow-up of the intervention

Scale	Group	Friedman test (P Value)	Pre-			Post-			5 month-			Wilcoxon signed-ranks test P Value (vs. Pre-intervention)	
			25%	median	75%	25%	median	75%	25%	median	75%	Post-	5 month-
PESFFA	EG	.001 **	8.00	9.00	10.00	10.00	10.00	10.00	9.00	10.00	10.00	.008 **	.032*
	CG1	.077 †.	9.00	9.50	10.00	9.00	10.00	10.00	10.00	10.00	10.00	—	—
	CG2	.013 *	4.50	8.00	8.75	8.00	8.00	9.00	7.25	9.00	10.00	.078 †	.062 †
PESFP	EG	.008 **	8.00	9.00	10.00	10.00	10.00	10.00	9.00	10.00	10.00	.006 **	.050 †
	CG1	.112n.s.	9.00	9.50	10.00	10.00	10.00	10.00	10.00	10.00	10.00	—	—
	CG2	.706 n.s.	8.00	9.50	10.00	8.25	10.00	10.00	9.00	9.50	10.00	—	—

	EG	.000 ***	14.00	16.00	17.75	17.25	18.50	19.00	16.25	18.00	19.00	.000 ***	.008 **
Self-	CG1	.172 n.s.	12.75	17.00	17.00	17.00	18.00	19.00	17.00	17.00	18.00	—	—
affirmation	CG2	.015 *	13.25	15.50	16.00	13.25	16.00	17.75	12.50	17.00	18.75	.022*	.045*
	EG	.033 *	5.25	9.00	12.00	7.50	10.00	15.00	8.00	9.00	13.75	.014*	.028 *
Problem	CG1	.361 n.s.	8.00	9.50	12.75	9.25	12.00	13.75	11.00	11.00	12.75	—	—
solving	CG2	.096 †	4.50	7.50	8.00	4.25	5.50	8.50	6.25	8.50	10.00	—	—
	EG	.121 n.s.	8.25	10.00	12.00	9.00	11.00	12.75	10.00	11.00	13.00	—	—
Self-	CG1	.266 n.s.	7.00	7.50	10.00	7.25	10.00	12.00	7.75	10.00	10.00	—	—
expression	CG2	.697 n.s.	8.00	11.00	12.00	9.25	10.00	12.75	8.50	11.50	12.75	—	—
	EG	.092 †	10.00	13.00	16.00	13.00	14.00	16.00	14.00	14.50	16.00	—	—
Emotional	CG1	.090 †	10.50	12.50	14.00	13.00	14.00	15.75	12.25	13.50	15.00	—	—
autonomy	CG2	.110 n.s.	10.25	13.00	15.50	10.25	13.00	15.00	11.25	14.50	16.00	—	—
	EG	.000 ***	31.50	36.50	48.00	23.25	26.00	34.75	25.00	31.50	43.25	.000 ***	.050 †
State	CG1	.090 †	29.75	35.00	40.50	22.25	25.00	28.50	22.25	29.50	41.75	—	—
anxiety	CG2	.086 †	28.25	36.00	44.75	32.50	42.50	44.75	31.25	36.50	42.25	—	—
	EG	.049 *	33.00	41.00	48.75	—	—	—	29.00	36.00	42.00	—	.034 *
Trait	CG1	.157 n.s.	40.25	46.00	53.50	—	—	—	39.25	43.00	48.00	—	—
anxiety	CG2	1.00 n.s.	34.50	51.00	55.75	—	—	—	39.25	48.00	53.50	—	—

Note. Perceived emotional support from family (PESFFA), Perceived emotional support from peers (PESFP).

*** p<.001; ** p<.01; *p<.05; n.s. no significant

Wilcoxon signed-ranks test was conducted continually only when Friedman test showed statistic significant.

4. Discussion

In this preliminary study, we examined the effectiveness of a 6 hours self-image promotion intervention program on improving self-image and anxiety status. Findings indicated that experimental group had greater improvement on the perceived emotional support and self-image (i.e., self-affirmation and problem solving) at post- and follow-up than per-intervention. In addition, the experimental group had lower post- and follow-up scores on trait and state anxiety. Oppositely, the social skill training seemed failed to change self-image and failed to make improvement of anxiety status. The reasons that caused different results between the experimental group and control groups might be determined by that whether the method focused on supporting self-growth, and whether the method could make improving of self-image.

A strength of current intervention is that different with traditional CBT and social skill training programs, it emphasized the importance role of parental substitute representation and self-care behavior about stress temperament in both improving

self-image and managing anxiety. The effectiveness of current intervention supports the previous research results [22, 25, 35, 36]. People have negative parental image perception when they have high standard of expectation to their parents. However, through the SAT imagery work, participants could awareness the existing of their unborn siblings who might be their sisters or brothers. They can get energy and emotional support from the unborn siblings, and through this imagery work the expectation standard to their parents would decrease at the same time. Then their parental image script would improve naturally and leads fulfillment of "three love desires". When participants feel secure they can take self-reward oriented behavior which could result in improving perceived emotional support ability, forming positive self-image and positive expectation.

Students also improved their interpretation style of self and others image script by temperament coaching, make them deep understanding self and others, and know what they should do to care of their temperament. With improving of perceived emotional support and self-image, students could recognize and interpret things in a positive manner (i.e., others' emotion, support, and even see a stress thing as a challenge), have positive expectation, and establish secure attachments with others, which in turn contribute to maintain low anxiety status.

Above all, the current study makes clear that the positive self-image is very important for students to control anxiety symptoms. In order to development positive self-image, deep understanding of self and self-care behaviors about stress temperament is needed. Such as students who have anxious temperament should take a deep breath let themselves cool down when they become emotional, and those students who have persistence temperament should let inner voice say "It's ok, that's all right"when they demand a perfect thing. In order to development a positive self-image, parental image must be considered to satisfy student's "to be loved desire". For example, to establish positive parental image by using a "parental substitute representation"or "unborn sibling's substitute representation" (they might be photographs with happy face, or Buddha picture or animated character) and do some efforts such as make the substitute representation portable, or set it to a desktop picture, with such high frequency of stimulation, the positive parental image would be fixed in the mind, replacing the negative one. Along with the parental image changing, students' "love desire" are satisfied, their perceived emotional support ability improved and finally these efforts would contribute to self-reward oriented behavior and individuals would develop positive self-image naturally while such behaviors continued.

Only the stress management training group (CG2) showed effectiveness on

improving the self-affirmation, however, neither the perceived emotional support variables nor anxiety status showed any changes in both the two control groups. Different with the previous researches results [1, 8, 9], in the current study, it seems that training by social skills alone seems impossible to help students who with negative self-image to improve their anxiety status without self-image change. We suggest that unless students develop a positive self-image first, they cannot perform those skills in their daily life, because of the lack of positive expectation, lack of self-confidence and powerlessness.

There are several limitations should be considered when interpret the current results. One is come from the program itself. Among the outcome variables, however, no significant change was observed in the self-affirmation and self-expression. Additional approaches seemed necessary. Second is the relatively small size of the sample, especially the small size of the control groups, which may have been a contributing factor in no significant results. Thirdly, we did not randomly select participants from the population which has implications for the generalizability of the results. The fourth is come from the questionnaires. Most of the scales were translated from Japanese to Chinese, although a back-translated was performed, but we did not make much modification to make the items more suitable for Chinese expression style, more easier understanding for Chinese college students which may be the reason that caused the low Cronbanch's alpha coefficient and affect the current results. Fifth is the ceiling effect which might affect the validity of the result, participants in control groups had a high score on perceived emotional support from peers at the baseline.

■ Authors' Contributions

Hu Wen-Yan suggested the idea of this study and facilitated the study procedures; she contributed to the conception, the design and the methodology; she conducted intervention training for the experimental group and the first control group, performed the statistical, interpreted the results and the discussion, and drafted the manuscript. Munakata and Hasimoto were involved in the study design and methodology revised the result. Munakata has made substantial contribution to interpretation of data, revise and improvement the final manuscript. Yang Wen-Jie and Feng Ying have been involved in the study design, getting permission for doing this study from Yunnan University, provided the training for the second control group and collecting references.

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Original Article

AIDS and Human Security in Orphan Adolescents, Sub-Saharan Africa

F. N. Onuoha & T Munakata
Graduate School of Comprehensive Human Sciences, University of Tsukuba, Tsukuba, Japan

E-mail address: fnonuoha@yahoo.com

■Abstract

Human security has been defined as the dignity, mental peace, and stability of the individual (UN 2003). This study examines human security factors of adolescents orphaned by AIDS in two sub-Sahara African countries – Uganda and South Africa. Six hundred and eighty-eight adolescents aged 10-19 (M=14.1 years) in three groups: AIDS-orphaned (n=178), other-causes orphaned (n=217), and non-orphaned (n=293) are recruited from schools, and child support centres in Kampala (Uganda, n=371), and Mafikeng/Klerksdorp (South Africa, n=317). Human security factors are food availability, perceived good health, friendly environment, and education. Others are self-esteem, social support, and foster/parental care. Child abuse, social discrimination, anxiety and depression are categorized as human security threat factors. The ANOVA showed that while adolescents orphaned by other-causes scored lower human security than did non-orphaned group, AIDS-orphaned adolescents scored lowest human security in the 3 groups. We concluded that although orphans face great human security threat factors, adolescents orphaned by AIDS face the greater threats.

Keywords: human security; orphan health; AIDS-orphaned adolescents

1. Introduction

1.1 Human Security

The traditional concept of security, with roots in the cold-war era, is the territorial protection of the state against external aggression; in most cases by military power. The result is the unprecedented arms race of the era (for defense and deterrence) that has failed to guarantee world peace. In the post-cold war era has emerged the contemporary advocacy for paradigm shift from “state” to “human” security.

Human security is less about armament or surveillance cameras to monitor crime, but more about the dignity and well-being of the individuals of the nation. It is the totality of grass root food security, health security, environment/community security, and political security (UNDP, 1994) for the mental peace and comfort of the individual. Human security not only *protects* the individual from the daily dangers of violence, hunger and poverty, but *empowers* him/her to overcome these dangers (UN, 2003). Ultimately, the individual’s security translates to community, state/national, regional, and international safety.

According to US President J.F. Kennedy, “Political sovereignty is but a mockery without meeting poverty, illiteracy and disease. Self-determination is but a slogan if the future holds no hope” (UN

General Assembly, 1961). Human security guarantees 3 freedoms to the individual: freedom from fear, freedom from want, and freedom to live in a dignified mental state (UN, 2003). These freedoms are crafted in the UN Millennium Development Goals. Regrettably, one of the greatest threats to meeting the millennium goals and human security are the challenges of global infectious diseases, particularly HIV/AIDS.

1. 2 HIV/AIDS

Over the centuries, science has resolved the global infectious disease challenges of the time – from the bubonic plague of the medieval era in Europe to the cholera in Latin America, pneumonic plague in India, ebola in Africa, dengue fever in Southeast Asia, mad cow in UK, anthrax attack in USA, SARS (severe acute respiratory syndrome) in China, bird flu in Korea, and swine flu in Mexico, among others – but AIDS that has defied resolution/cure.

"HIV/AIDS is … the greatest weapon of mass destruction on the earth" (Collin Powell, US Secretary of State, 2004). It is a threat to human peace and security (US National Intelligence Council, 2000; G8 meetings in Okinawa 2000, in Genoa 2001; UN Security Council, 1999). "The impact of AIDS is no less destructive than that of warfare itself …. Last year, AIDS killed about 10 times more people in Africa than did armed conflict." (Koffi Annan, UN Secretary General, June, 2000). In July 2001, the UN Resolution 1308 officially recognized AIDS as the global "risk to [human] stability and security" of our time.

Since its emergence over a quarter of a century ago, AIDS has claimed more lives than the two World Wars, the Vietnam War and the Korean War combined did (*Washington Post Editorial*, 2000). In 2007 alone, about 2 million adults and children died of AIDS, 33.2 million living with the virus, and 1.7 million new infections reported, worldwide (UNAIDS, 2008). Of these, over 67% occurred in sub-Saharan Africa (UNAIDS, 2008). Among children and adolescents below 18 years in sub-Saharan Africa, over 12% (or 42 million) of the children are orphans and 35% (or 15 million) of them orphaned by AIDS (UNAIDS, 2006).

1.3 Orphaning

Adolescents orphaned by AIDS may experience unique human security threat factors (Chitiyo, Changara, and Chitiyo, 2007). In sub-Saharan Africa, they face dual sad experiences: first, they are affected by AIDS when parent falls sick and they have to shoulder stressful responsibilities such as nursing ailing parent and/or engage in income generating activities; next they are affected by orphaning when parent dies (Gillespie, Norman, & Finley, 2005). These adolescents tend to grieve longer before parental death than other orphans, owing to the human wasting, AIDS-defining illnesses that often precede death (WHO, 2005). Because of the moral shame and life-terminality associated with AIDS, children left behind by AIDS-deceased parents may encounter higher externalized (Cluver, Gardner, & Operario, 2008) and internalized (Nyblade et al., 2003) social stigma/discrimination than children orphaned by other reasons. It is often

believed that AIDS-orphaned children, like their departed parents, may be HIV-positives who may die earlier than the “normal” children.

According to the UN, the distinctive social characteristic of AIDS is that it is more likely than other causes of death to create double orphaning - the loss of both parents (UNAIDS, UNICEF, & USAID, 2004). In South Africa and Uganda, double orphaning is four times more likely in AIDS-affected homes than in other homes (UNAIDS, UNICEF, & USAID, 2004). Studies of adolescent parental loss report that orphans tend to encounter such human security threat factors as social depression (Furukawa, Yokouchi, Hirai, Kitamura, & Takahashi, 1999), personality disorders (Paris, Zweig-Frank, & Guzder, 1994), anxiety/insomnia (Tweed, Schoenbach, George, & Blazer, 1989), hopelessness, and frustration (Mbozi, Debit, & Munyati, 2006). Abebe and Aase (2007), however, disagree. They argue that the symptomatic construct of orphans are media-induced stereotyping, orchestrated by academic scholars of traditionalist persuasions. Most orphans have the resilience and agency to get on with the challenges of life following parental death (Abebe & Aase, 2007).

The purpose of this study is to examine the human security of sub-Sahara African adolescents orphaned by AIDS. Human security is defined as mental peace and stability of the individual (UN, 2003; UNDP, 1994). The design is people-focused rather than hardware-concerned. Thus it captures the main thrust of human security – the individual. We hypothesized that adolescents affected by AIDS may show lower human security factors than

those orphaned by other reasons.

2. Method

2.1 Participants

The initial study participants are 957 sub-Sahara African adolescents in Uganda (n=474) and South Africa (n=483), recruited from 9 community schools, and 6 NGO child support centres in two towns – Mafikeng/Klerksdorp (South Africa) and Kampala (Uganda). The World Health Organization definition of adolescence as persons aged 10-19 years (WHO, 2003), and the UN classification of orphanhood as the loss of one or both parents (UNAIDS, UNICEF, & USAID, 2004) guided the study.

The study design has 3 groups: AIDS-orphaned, other-causes orphaned, and non-orphaned. Participants who responded in the affirmative to the questions: “Is your father living? (Yes/No); is your mother living? (Yes/No)” are categorized as non-orphans (n=293). Those who responded “no” to either question are asked the cause of death: “1. HIV/AIDS, 2. Others, 3. Don’t know.” Responses 1=HIV/AIDS (n=178), and 2=Others (n=217) are so categorized. Those who “don’t know” cause of parental death (n=269) are excluded from the study.

2.2 Ethical consideration

The Uganda National Council for Science and Technology (UNCST), the School of

Economics & Decision Sciences, North-West University, South Africa, and the Department of Human Care Science, University of Tsukuba, Japan, approved the study protocols, which required confidentiality, anonymity, and voluntary participation of the study participants (Mann & Tolfree, 2003).

Interviewers were Luganda (Uganda) and Xhosa/Afrikaans (South Africa) speaking research collaborators. When expedient the interviewer-administered questionnaire method was adopted for the low educational level participants; otherwise the self-report method was dominantly used. The first method required the interviewer to read out the question items in the local language to the respondent, and filled out the questionnaire on his/her behalf. In the second, the respondent completed the questionnaires unassisted. The interview duration lasted approximately 45 minutes per session at the end of which the respondent received a ball pen.

2.3 Measures

Food availability, perceived good health, education, friendly environment, self-esteem, social support, and foster/parental care as human dignity enhancing factors constituted the human security measures. In contrast, factors such as child abuse, social discrimination, anxiety, and depression are human security threats (UN, 2003).

We utilized Schwarzer and Schulz (2000) Received Support Scale, as adapted (alpha=.72), to estimate *perceived social support* received by the adolescents. The measure positively associated with self-esteem ($r = .42$, $p < .01$) and negatively with anxiety ($r = -.37$, $p < .01$). The

measure requires the respondent to “think about person(s) that is closest to you - your friend(s), guardian(s), or parent(s)/foster parent(s) - how does this person treat you?” Typical items are: S/he “is there when I need him/her; shows love to me; takes care of my financial needs; in general, I am satisfied with the way s/he treats me.”

Self-esteem is estimated with the Rosenberg (1965) Self-Esteem Scale, the most utilized measure of the favorable/unfavorable perceptions of the self (Blascovich & Tomaka, 1991). The Cronbach alpha for the Scale in the present study is .60, which compares favorably with the value found by Lorenzo-Hernandez and Ouellette (1998). The measure shows negative associations with anxiety ($r = -.34$, $p < .01$), and social discrimination ($r = -.38$, $p < .01$), suggestive of its validity.

We assessed *foster/parental care* with the Parker, Tupling, and Brown (1979) Parental Bonding Instrument (PBI). The PBI assesses both parental care and parental over-protection. Support for the reliability and validity of the PBI has been reported (Neale et al., 1994). We utilized the “care” subscale (alpha = .82) which estimates empathy, affection, warmth, and independence in the present study. Typical items include parents/foster parents: are affectionate to me; understand my problems and worries; let me do things I enjoy doing; enjoy discussing things with me; give me as much freedom as I want.

We utilized the anxiety subscale of the renowned General Health Questionnaire (GHQ-28, Golderberg & Hillier, 1979) to estimate *anxiety*. The subscale (alpha = .82) negatively ($r = -.34$, p

< .01) correlates with self-esteem, and positively (r = .40, p < .01) with the Weissman, Orvaschel, and Padian (1980) Center for Epidemiological Studies Depression Scale (CES-DC), as adapted.

The CES-DC, which test-retest reliability and concurrent validity are adequate (Faulstich, Carey, Ruggiero, Enyart, & Gresham, 1986) measures *depression.* Sample items on the Scale (alpha=.77) include: "I was bothered by things that usually don't bother me; I didn't feel like eating, I wasn't very hungry; I wasn't able to feel happy, even when friends tried to make me feel good; I felt like I was too tired to do things."

The 1995 Detroit Area Study Measure of Discrimination as modified (alpha = .77) measures *social discrimination*. In your daily life, *compared to other people around you,* do you: Feel differently treated? Feel unfairly treated? Made to feel inferior? Prevented from doing things others are allowed to do? People behave as though they are afraid of you? – are the typical questions. The measure correlates positively with depression (r = .38, p < .01), but negatively with social support (r = -.27, p < .01).

The *Child abuse* scale measures the physical, verbal, sexual, and labor dimensions of child abuse (Bagley & King, 1990). For example, are you - physically beaten in a manner you consider unfair; verbally abused in a manner you consider unfair; forced to "sleep"/have sex with anyone; forced against your wish to work on the farm for someone? The alpha reliability of the measure, which discriminates depression (r = .22, p < .01) and self-esteem (r = -.27, p < .01) is 0.76.

Food availability. On a scale of 0 to 3 times, respondents rated their daily meal intake.

Perceived good health: On a score of 0=don't know, 1=sick, 2=a little sick, 3=good health, respondents rated their perceived health status. We scored *If currently attending school* as Yes=2, No=0. *Friendly environment* is estimated with the question: Is the person you are living with kind to you? Yes=2, No=0.

Human security factors (25 items, alpha = .86) are the summation of food availability, friendly environment, good health, currently attending school, social support, parental/foster care, and self-esteem scores. *Human security* threat factors (24 items, alpha = .87) summated child abuse, social discrimination, anxiety, and depression scores.

3. Analysis

We performed the alpha reliability of the human security factors to estimate the internal consistency of the measures. Table 1 shows Pearson's directional association of the factors with human security to establish the validity of the measures. We executed the ANOVA of human security factors in the 3 groups to estimate the performance of the AIDS-orphaned adolescents (Table 2). We separated the orphan groups into single and double orphan-types, and examined their human security scores (Table 3).

Table 1.
Pearson's correlation coefficients showing the association of human security with its factors

	child abuse	social discrimi-nation	depre-ssion	anxiety	social support	foster/ parental care	self esteem	good health	food	kind environ-ment	school	human security
human security	-0.40 **	-0.35 **	-0.23 **	-0.43 **	0.83 **	0.84 **	0.69 **	0.40 **	0.45 **	0.43 **	0.09 **	1.00
human security threat	0.59 **	0.71 **	0.75 **	0.77 **	-0.40 **	-0.32 **	-0.43 **	-0.20 **	-0.32 **	-0.27 **	-0.07 *	-0.47 **

**p < .01

Table 2
ANOVA showing lowest human security factors in the AIDS-orphaned group

Variables	AIDS orphaned[a] n	M	(SD)	Other-causes orphaned[b] n	M	(SD)	Non orphaned[c] n	M	(SD)	Bonferroni Posthoc
1. Child abuse	176	3.33	(2.79)	215	2.75	(2.95)	293	2.06	(2.06)	a>b*, a>c**
2. Depression	178	10.95	(5.05)	217	9.92	(5.06)	292	9.21	(5.17)	a>b*, a>c**
3. Social discrimination	176	6.96	(6.96)	216	5.29	(3.73)	293	6.06	(4.37)	a>b**, a>c*
4. Anxiety	176	11.84	(6.34)	215	6.28	(4.33)	292	5.49	(3.77)	a>b**, a>c**
5. Parental/foster care	176	11.84	(6.34)	216	14.06	(6.58)	293	15.81	(6.00)	a<b**, a<c**
6. Self-esteem	178	14.25	(4.94)	217	16.29	(4.97)	293	17.24	(4.64)	a<b**, a<c**
7. Social support	176	8.12	(4.41)	215	9.52	(4.12)	292	10.01	(4.11)	a<b**, a<c**
8. Perceived good health	175	1.51	(1.18)	211	2.00	(1.18)	291	2.29	(1.04)	a<b**, a<c**
9. Food availability	172	1.59	(0.88)	212	2.00	(0.95)	287	2.21	(0.94)	a<b**, a<c**
10. Friendly environment	173	1.71	(0.45)	210	1.83	(0.37)	284	1.94	(0.24)	a<b**, a<c**
11. Currently in school	177	1.81	(0.59)	214	1.89	(0.46)	290	1.94	(0.33)	a<b*, a<c**
human security factors	178	39.46	(13.89)	217	46.67	(14.08)	293	51.15	(11.97)	a<b**, a<c**
human security threat factors	178	31.49	(12.53)	217	25.57	(11.85)	293	24.15	(11.97)	a>b**, a>c**

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

Table 3
ANOVA showing highest human security threat factors in both single/double AIDS-orphaned groups

	single AIDS-orphaned M(SD)[1]	double AIDS-orphaned M(SD)[2]	single other-causes orphaned M(SD)[3]	double other-causes orphaned M(SD)[4]	non-orphaned M(SD)[5]	Bonferroni Posthoc
Human security factors	41.02(14.52)	38.58(13.49)	48.13(12.80)	47.11(12.22)	51.05(12.06)	1>2[d], 3>4[d] 1<3*,4*,5* 2<3*,4*,5*
Human security threat factors	31.61(13.46)	31.80(12.33)	24.67(11.22)	25.36(10.91)	24.39(11.37)	1<2[d], 3<4[d] 1>3*,4*,5* 2>3*,4*,5*

[d] not significant, *p < .01

4. Results

Demographic characteristics: Six hundred and eighty-eight (688) sub-Saharan Africa adolescents of Ugandan (n=371) and South African (n=317) origins validly participated in the study. There were significantly more females (56%) than males (44%), $p < .01$. But between participants in the three groups no significant sex difference was observed [$F(1,686)= 0.78$, $p=.38$]. Age was significantly different between the three groups – AIDS (M=13.8 years), other-causes (M=14.3 years), and non-orphaned (M=14.2 years), $F(2,685)=2.94$, $p < .05$; grand age mean = 14.1 years. Expectedly, educational levels also varied between the groups, with the non-orphaned showing the highest education (M=1.64, SD=.73), and AIDS-orphaned showing the lowest (M=1.42, SD=.69), $p < .01$.

Other outcomes. Alpha reliability for each of the study measures was admissible (alpha M = .75). The measures also showed admissible discriminant validity (Table 1). Human security threat factors were significantly higher in adolescents orphaned by AIDS, than in the other two groups, $p < .01$. AIDS-orphaned adolescents showed highest child abuse, social discrimination, anxiety, depression, and lowest self-esteem, social support, and foster/parental care (Table 2). There was no significant human security risk difference between adolescents whose one parent died of AIDS, and those whose both parents died of the disease (Table 3). However, each of the two groups of AIDS-orphaned adolescents showed lower human security than their other-causes orphaned counterparts.

5. Discussion

The dignity of the individual rests in the self-esteem (Trzesniewski, Donnella, & Robins, 2003). Self-esteem defines everything about us. It is the foundation of personality (Spritize.blogspot, 2006). Self-esteem is more than self-confidence, the knowledge that one can succeed. It is the sum of self-confidence, self-acceptance and self-identity, each of which is desirable for human security. If one is not happy or satisfied with one's life for reasons one cannot pinpoint, it is probably because of one's self-esteem, which might be at a low ebb (Spritize.blogspot, 2006).

In the present study, adolescents orphaned by AIDS showed significantly lowest self-esteem. They scored significantly highest on the items "felt useless at times, felt unhappy with myself, people don't respect me, and overall I'm a failure." Reasons for their low self-esteem were not obvious. But the Pearson's association of variables suggests that social discrimination which showed the weightiest negative association with self-esteem in the group - followed by anxiety and child abuse, in that order – might account for their low self-esteem. It seemed likely that highest social discrimination against the AIDS-affected adolescents, could trigger their highest anxiety that precipitated lowest self-esteem and human dignity in the group.

The strongest associate of self-esteem was social support. The preponderance of psychosocial health literature agrees that social support is a rich factor for human dignity, mental peace and stability (Uchino, Cacioppo, & Kiecolt-Glaser, 1996). Social support whether tangible (monetary, social participation, material care) or intangible (emotional care, cognitive guidance) is

essential for the affective enrichment of the mind and body. But the AIDS-orphaned participants, in the study, scored least on all domains of this important factor, and in the foster/parental care variable. Friends and family members showed them least love, least comforted them when they felt bad, least took care of their financial needs or helped them do things they could not do. In general, compared with participants in the control groups, AIDS-orphaned adolescents were significantly most marginalized from the available social support in their environment. Perhaps the outcome to the question “are persons you are living with kind to you” further illustrates the unfriendly immediate social milieu of the AIDS-orphaned participants. Half (50%) of them reported “no”, compared with few (34%) other-causes orphaned, and less (17%) non-orphaned groups that so reported.

Food insecurity and malnutrition are critical in sub-Saharan Africa, where the vagaries of desertification and famine are not uncommon. But the depletion of the available productive human labor by AIDS may exacerbate the food situation. AIDS-affected households, typically characterized by double-parental loss, are most likely to confront food and nutritional inadequacy. In this study, over half (53%) of the AIDS-orphaned adolescents retired to bed daily on one or less meal intake, against 34% and 23%, respectively, in the other-causes and the non-orphaned groups. Any wonder that perceived good health was significantly lowest in the AIDS-orphaned group?

There was no measure of the daily meal intake of parents/guardians to permit an informed judgement whether the highest hunger prevalence among the AIDS-orphaned adolescents may be attributed to child abuse, social discrimination or their unfriendly immediate social environment. However, if as many as 23% of the non-orphaned adolescents had zero to one meal daily, then it may be a pointer to the permeating presence of material poverty in the study population.

Poverty has a symbiotic relationship with human insecurity; each strives on the other. Thus, locally and internationally, whereas poverty may be the underpin for most economic, food, health, environmental, community, political and personal insecurity crises, these crises themselves produce and deepen poverty. Most intra-community or state armed conflicts, private/organized crimes, “failed” state syndromes, terrorist actions, drug and human trafficking, environmental degradation, infectious disease spread, voluntary and involuntary human movements, and many other antisocial human activities that threaten local, national, regional and global peace are the direct or indirect products of poverty. In sub-Saharan Africa, poverty is both a cause, and a consequence of AIDS. The sexually active male poor, unable to afford condoms may engage in unprotected sex probably with multiple partners. The female poor, unable to provide for herself, may indulge in unprotected transactional sex with multiple partners that may lead to infection. Infected, the poor may be unable to afford ARV treatment, may borrow money to meet rising

hospital bills, may be unable to work on his/farm to guarantee food supply, and may be fired from work, among other adverse consequences that deepens poverty and human insecurity.

According to a model developed in Zambia (Kelly, 2000), AIDS is threatening education at three fronts: the demand for education (parents); the availability of resources for education (teachers); and the potential clientele for education (children). With fewer parents demanding to send their wards to school, fewer teachers as facilitators, and fewer children/adolescents as clients, the education demand-supply chain is at the risk of a collapse from AIDS. Yet education and human development are central to human security (UN, 2003; UNDP 1994). In the present study, we estimated education by whether or not one was "currently attending school." This measure seemed more resourceful than the measure of "educational level attainment," which varied significantly in the groups due to age variances. Adolescents orphaned by AIDS were significantly 1.64 times more likely to drop out of school than those orphaned by other causes. Against non-orphaned adolescents, they (AIDS-orphaned) were 3.48 times significantly more likely, suggesting higher diminishing prevalence of valuable human capital development in AIDS-affected households.

Good health, defined by WHO as not only the absence of disease but a positive state of physical, mental, and social well-being, is synonymous with human security. Good health

is both essential and instrumental to achieving human security. But AIDS-orphaned adolescents in the study scored the least perceived good health condition.

The human security circumstance of single and double AIDS-orphaned adolescents in the study seemed the same; no significant difference observed. So was the case between the two orphan types in the other-causes orphaned group (Table 3). The outcome was against popular view that children with no parent may show greater human security threat factors than those with at least one parent (Onuoha, et al. 2009; UNAIDS, 2004). However, irrespective of whether single or double orphaned, adolescents orphaned by AIDS scored highest human security threat factors than did adolescents in the control groups, supporting the study hypothesis.

The discussion of human security may not be complete without reference to wars as threats to global security. Wars and arms procurement for state security may continue to remain part of our human experience. But armed conflicts aid and abet the spread of AIDS. They generate displaced populations (refugees), many of whom may be single women and unaccompanied children. These women and children are vulnerable to being pressured into exchanging sex for food or being raped. Also there is a correlation between military presence and commercial sex boom in most localities. UNAIDS estimates that the military is 2 to 5 times more likely than their civilian counterparts to contract STD, including HIV, in times of peace; in times of

war, they are 50 times more likely (UNAIDS, 1998). A depleted, dilapidated, demoralized armed force from AIDS inevitably compromises state and global security.

6. Conclusions

Orphaning is a significant threat to human security. But AIDS-orphaning presents higher human security threats. In sub-Saharan Africa, prior to the advent of AIDS, deaths among persons aged 20-49 accounted for only 20% of overall deaths in the region, against prevailing 60% owing to AIDS (UNAIDS, 2006). Many of these adults bequeath children and adolescents as AIDS-orphans, whose human dignity seemed more debased than that of other orphans.

Human security epitomizes “faith in tomorrow” (UN, 2003), but adolescents orphaned by AIDS face higher uncertainty about the future owing to lower school attendance prevalence rates. If human security represents “a child who did not die, a disease that did not spread” (UN, 2003), then adolescents orphaned by AIDS are direst in need of human security owing to their lowest perceived good health conditions. We did not directly measure poverty in the study. But the invisible hands of poverty, judged by hunger prevalence was apparent in the population, especially among the AIDS-orphaned group.

In sub-Saharan Africa, AIDS may negatively impact on *good* governance required for human security. It creates high worker absenteeism, high worker mortality, high demand of medical goods and services, but lower productivity, and revenue/income tax generation. These

factors may undermine government financial resources to effectively control the disease, leading to its further aggravation.

■ Recommendations

AIDS prevention and control for enhanced human security is critical for community, national, regional, and global peace. Without intensified prevention efforts directed at the ABC (abstinence, being partner-faithful, and condom use) therapy, 62 million people are projected to be newly infected by 2015 (Global Health Council, 2009).

Expanded and free access to ARV (antiretroviral) drugs particularly in sub-Saharan Africa, where need is greatest, is advocated. The US President's Emergency Plan for AIDS Relief (PEPFAR) fund in which more than 100 countries have received support (Global Health Council, 2009) is commendable. Other major international donors for AIDS programs are the World Bank, UNAIDS, and the Global Fund. Unfortunately, as global funding increases arithmetically, global fund need seems to increase geometrically due to old and emerging new infections.

Recognizing poverty alleviation as a global responsibility is crucial for human security. The UN Millennium Summit (September, 2000) declaration to reduce global poverty at least by half by 2015 is praise-worthy. However, current global economic recession, continued intra-state armed conflicts and weak governance in Africa and elsewhere may conspire to render the millennium goals unachievable.

AIDS-orphaned adolescents are special vulnerable children, requiring distinctive human security protection policy programs

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Original Article

Examining the Effects of the group intervention using SAT to ameliorate mental distress among Cancer Survivors

Tsunetsugu MUNAKATA[1)], Noriko HIGUCHI[2)], Kazue NAKASHIMA[1)], Kiriko MURAKAMI[1)], Yoko WATANABE[3)], Yutaka YAMAGUCHI[1)], Hiroko IKENO[1)], Yuka IWANAGA[1)], Wen-yan HU[1)], Yoko ICHINOSE[4)], Atsushi NOMOTO[5)],

1) Graduate School of Comprehensive Human Sciences, University of Tsukuba
2) Faculty of Languages and Cultures, Meikai University
3) Teikyo Heisei Nursing Junior College
4) Tsukuba Medical Center Hospital
5) NPO Midorinokaze Health Support Japan

E-mail address: munakata21@yahoo.co.jp

■Abstract

The present study examined the effectiveness of SAT, a “next generation” CBT, to ameliorate mental distress among cancer survivors. CBT has been focusing primarily to change negative thinking patterns first in order to bring about positive behavior. However, SAT as a next generation CBT strives to change negative emotions first to enact positive behavioral actions. Both biometric and psychometric tools were utilized to estimate the effectiveness of the intervention between and within the study groups. Study participants were 17 female cancer survivors (mean age 51 years). Another group of 7 female survivors (mean age, 53 years) were the control. The intervention, which comprised a group lecture regarding the “result of a study on immuno-competence and gene defenses to overcome cancer by SAT therapy” and followed by group approach using SAT, sought to reconstruct the (1) self-image, (2) 3-generation image and (3) ancestral-generation image scripts of the participants from the negative to positive ones in order to decrease their mental distress. The results showed that the SAT therapy was effective: Participants showed decreased cortisol and increased SIgA post-intervention. Post persistence

temperament as stress temperaments were lower than baseline. Also psychological characteristics such as Trait Anxiety (STAI), depression(SDS), self-repression, difficulty in emotion recognition, and self-pity significantly decreased. Between baseline and the 4-month follow-up, those psychological characteristics continued to decrease while problem-solving ability increased. In the non-intervention group, these psychological characteristics did not change pre-post and 4-month later. The facilitatory effects of immune defenses and mental resilience on positive mental health were discussed.

Keyword: cancer survivor, immuno-competence, mental resilience, SAT therapy, mental health

1. Introduction

In Japan the incidence of cancer survivors is high. The statistics rose from approximately 3.65 million at the end of 2004 to about 5 million by 2015 (Yoshimura 2002). These survivors tend to have a high risk of serious mental distress compared to persons without cancer history (Hoffman et al. 2009). It has been pointed out that mental health problems in cancer survivors increase. In Japan and elsewhere, they fear recurrence and metastasis every day (Kuromaru 2009; Aarts et al. 2008). Such fear induces stress that interferes with their self-healing powers. The effects of psychosocial factors on cancer have been studied. These studies report associations between cancer and type C personality type (Temoshok 2003), which is characterized by suppression and denial of emotional expression. Other characteristics of the type C personality include stress-coping failure and resignation tendencies such as hopelessness and helplessness, which may precipitate the onset/progression of cancer (Temoshok 2003). Maeda et al. (2006) reported that the personality traits of gastric cancer patients included self-repression (persons who repress their emotions to obtain a good evaluation from others) and emotion recognition deficit (those who are unlikely to realize their emotions and try to solve problems by themselves, without any help). In other words, they are unlikely to realize and express

their real feelings and emotions and tend to be patient and adamant. Munakata(2007) added that cancer patients might be of the following types: dissociative identity types (who try to consider themselves as another person in order to calm themselves down), problem avoidance types (who have extremely positive thinking and try to handle problems without seeing the actual content of the problems) and the self-pity types (who feel sorry for themselves and work too hard). These persons were unlikely to realize their real feelings and emotions or ask for other's help. Moreover, the patients are likely to be extremely positive because they do not understand the seriousness of the situation.

Some have interpreted that such personalities who cannot express their discomfort but wrestle seriously with daily tasks and accumulate stress may experience tumor immuno-incompetence. Various prospective cohort studies on the causal relationship between a cancer-prone personality and the onset of cancer reported that the onset of cancer might be related to cancer patients' tendency toward depression and tendency to repress their emotions(Shekelle et al. 1981; Persky et al 1987; Bleiker et al. 1996). However, some of these studies reported no definite relationship between them (Hahn et al. 1988; Almada et al. 1991).

Personality consists of "temperament" which core is determined by genes and "self-image script," which is constructed from temperament. The stress-related personality comprises mainly of genetic characteristics, which create susceptibility to stress (or anxiety temperament and persistence temperament). In addition, they are aware of their other-rewarding personality, which is likely to excessively react to the above-mentioned stress caused by their experiences of birth trauma and/or infant trauma and subsequent repetition of such trauma. This becomes the script of their behaviors and establishes their stress-sensitive personality such as the self-repression type, emotion recognition deficit type, and the problem avoidance type.

The stress-sensitive personality is likely to have sympathicotonia, which results in the continuous secretion of adrenaline. As a result, the number of lymphocytes decreases while granulocytes increases. The active oxygen species released from the granulocytes rid the body of foreign bodies. At the same time, they damage

cells, nuclei, and genes, which may cause cancer (Abo 1997). Regardless of whether a person is a self-repression type, emotion recognition deficient types, or problem avoidance type, stress-sensitive personality is formed through “other-reward” seeking behaviors. The behavior is motivated in early childhood to increase reward responsiveness to “pleasure” as seen in the facial expressions, voice tones, and actions of children to avoid aversive expressions of anxiety, anger, and sadness by their parents and guardians. When they grow up, other-reward oriented behavior is motivated and sustained by the responsiveness of significant others in the population instead of parents and guardians.

On the other hand, activities representing own pleasure such as solitary play, play with friends, adventure, art work, sport activity, care of plants, pets and other people in early childhood motivate children to form and indulge in “self-reward” oriented behaviors. A self-reward oriented behavior elicits self-reward satisfaction. Own pleasure, interest, emotion, determination, accomplishment, growth, self-satisfaction, appreciation, and empathy are derived. Failure in self-reward oriented activities do not attract as much mental distress as with the other-reward oriented behaviors.

There are reports that cancer patients tend to possess strong persistence temperament, neglect their feelings and emotions, try to accomplish something by themselves without asking for help, and exhibit other-reward oriented behaviors to obtain good evaluations from others. They tend to have little communication or poor interpersonal relationships with their family members (Munakata 2007; Kobayash et al. 2007)

,. Some psychotherapies based on the hypothesis that stress influences the onset of cancer have been performed on cancer patients in Japan and overseas. An intervention psychological study in patients with breast cancer metastases, which was a randomized controlled study, reported that there was a survival benefit in the psychological intervention group (supportive–self-expression group therapy) (Spiegel 1989). A subsequent study disagreed with the previous study result about life prolongation, but demonstrated that the therapy decreased psychological stress and increased mitigation (Goodwin et al. 2001). There are also reports that the ratio of natural killer (NK) cells of the patients who underwent surgery for malignant melanoma was

greater in the short-term cognitive behavior therapy group than the control group (Fawzy et al. 1990; Goodwin et al. 2001). According to the study by Rehse et al. (2005), meta-analysis of adult cancer patients to evaluate the effects of psychosocial intervention indicated that psychosocial intervention improved their quality of life (QOL). On the other hand, randomized psychosocial intervention studies have reported that such interventions had no effect on the prolongation of survival time (Chow et al. 2004; Boesen & Johansen 2008). A number of studies regarding psychosocial intervention effects have been conducted, but the research is still insufficient.

Cancer survivors are classified into short-term survivors who survive less than 5 years after diagnosis and long-term survivors who survive 5 years or more after diagnosis, which are defined in terms of the outcome of cancer therapies by the medical profession. Recently, the meaning has been changed. “The National Coalition for Cancer Survivorship” in the US has announced a new concept of “cancer survivorship,” which “not only means long-term survival but also means that cancer patients remain cancer survivors from diagnosis to the end of life regardless of the presence or absence of cancer and/or the therapeutic effect” (National Coalition for Cancer Survivorship 1998). Endo (2004) stated that we should create “the significance of living your life” as the necessary support for cancer survivors based on the new concept . We also thought that surgical procedures for cancer did not sufficiently support cancer survivors in the true sense. Therefore, we studied and reported that cancer patients understood that they have had cancer and learned how to live a satisfactory life with cancer, which improved their immune-competence and enhanced the effect of mental resilience improvement on the transition to self-reward oriented behavior (Higuchi & Munakata 2009).

According to our surveys and clinical studies, structured association technique (SAT) therapy encouraged cancer patients by performing self-reward oriented behavior to realize their true feelings and enjoy who they are, communicate with others, and decrease other-reward oriented behavior including the self-repression type and emotion recognition deficit types (Munkata 2007). The therapy also significantly increased immuno-competence (increases of lymphocytes and activation) and the expression of tumor suppressor genes (Munakata 2007; Kobayashi 2007). Furthermore, the first and second authors developed a stress

management system using DVDs and Web content on the basis of SAT therapy in order to improve the mental health and immuno-competence of cancer survivors (Higuchi & Munakata 2009).

This study aimed to understand any changes in cancer survivors, including decreases of stress, changes in lifestyle, improvement of laboratory outcomes, and improvement of their QOL, by a group approach to shift other-reward oriented behavior to self-reward oriented behavior. It was hypothesized that -

(1) SAT would improve trait anxiety and depression level to a greater degree in the intervention group than the non-intervention group (mental health improvement).

(2) The group approach using SAT altered the personality to cause their stress to become chronic due to other-reward oriented behavior including the self-repression type, problem avoidance type, and emotion recognition deficit types greater in the intervention group than the non-intervention group (the facilitatory effect of mental resilience).

(3) The group approach using SAT changed the secretory immunoglobulin A (SIgA) antibody and adrenocortical hormone in saliva in the intervention group (the facilitatory effect of immune defenses).

We will explain how SAT therapy is a new generation cognitive behavior therapy. SAT therapy does not change emotion by changing their way of thinking, which causes mental stress, as in conventional cognitive behavior therapies. The therapy changes emotion first and then changes their way of thinking as a result of the change of emotion. Changing the way of thinking not only improves mental health, but it also changes their stressful emotion in response to physical diseases and/or workaholic tendencies and/or bulimia in the case of the problem avoidance type, dissociative identity type, and emotion recognition deficit types. Therefore, they feel well. Moreover, sympathicotonia lasts and the immune system decreases, which leads to increased granulocytes that release significant active oxygen species.

As described above, according to the theory of SAT therapy, which is a new generation cognitive behavior

therapy, the stress-sensitive personality has stress tendencies and remembers the facial expressions, voice tones, and actions of their parents and guardians, which are associated with their fear and tend to induce stress. Therefore, SAT therapy employs a hypothesis that "we can go back to the past* to change our past and improve our growing conditions," in order to change the images of the facial expressions of their parents and guardians in their memory. Then, the intrinsic expression of the parents and guardians, which is made by unconditional care, is visualized by various imagery techniques of meditation regression, in order to plant a substitute facial expression in their mind by continuously viewing photographs, pictures, religious statues, and bronze statues that look like their parents and guardians. Thus, they are encouraged every day to view the substitute facial expressions portrayed in the photographs, pictures, religious statues, and cartoons instead of their real parents and guardians in order to fix the improved images of their parents and guardians. If it is successful, the substitute facial expression will change their feelings and relax their body.

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*Note 1 Evolution starts from the Big Bang of the universe—elementary particles, nuclei, atoms, molecules, proteins, and organisms evolve into human being as times goes by. The life cycle of a human being starts from their ancestors and parents and continues through their birth and growth. Their self-image should be improved by travelling back to a certain time point in the past through self-image script changing therapy, which is described as follows.

(1) 3-generation imagery therapy – Technique to correct aversive images of the womb interior by using meditation regression imagery of the womb through the three generations to change the image script of their parents and guardians and to change their current self-image script.

(2) Ancestral generation imagery therapy - Technique to promote solving life-threatening risk factors in the past through meditation regression imagery of the womb in order to change the image script of their ancestors & parents and to change their current self-image script.

(3) Evolutional imagery therapy – Threats experienced as a particle and an organism are solved by using meditation regression imagery of the womb in order to change the image script of their parents and to change their current self-image script.

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2. Study method

2.1 Subjects

Intervention group: After a lecture regarding the "result of a study on immuno-competence and gene defenses to overcome cancer by SAT therapy," which was conducted in September 2009 in I prefecture, Japan, the

objectives and overview of a “practical study on group SAT therapy for cancer survivors” (multidisciplinary study of the University of Tsukuba) were explained to the study volunteers. The number of study volunteers was 18, and the number of participants in the first guidance was 12 (all females). Among them, 10 females who participated in the study of 3-generation imagery therapy of SAT therapy using group counseling were selected as subjects, and 7 females who participated in individual continuous intervention were selected as subjects when the intervention for psychological characteristics was studied.

Non-intervention group: Author asked the chairperson of the incorporated nonprofit organization of a cancer survivors club M in I prefecture in Japan to explain the objective and provide an overview of the “practical study on group SAT therapy for cancer survivors” (multidisciplinary project study of University of Tsukuba) and to recruit study volunteers. Of the nine volunteers, seven females who answered three questionnaires were selected as subjects.

The study period was from October 2009 to April 2010.

2.2 Intervention group

(1) 1st intervention: October 2009

Guidance was provided about the intervention using SAT therapy. SAT therapy employs a hypothesis method using a meditation regression imaging method to imagine the evolution of the human being from self → parents and guardians → ancestors → organism → particle and provides images of their past being changed; they are subsequently raised under the improved growing condition. The meditation regression method constructed is based on the body sensations of clients' and is used to create a growing environment with unconditional care, which has not been conveyed from their ancestors, and to urge them to realize the necessary environment and behavior to form the future self-image. The meditation regression imaging method visualizes the facial expressions of parents and guardians who provide unconditional care and finds substitute facial expression including photograph, pictures, religious statue, and bronze statues that look like their

parents and guardians. They are encouraged to continuously view them to frequently stimulate the visual center of the cerebrum and fix the facial expression as well as to change their aversive emotion to a rewarding emotion. In addition, they are encouraged to understand the communality between past unsolved problems and current problems as scripts and realize the behavioral objectives to improve such scripts (large, intermediate, small objectives). The above-mentioned procedures are 3-generation imagery therapy to promote emotion modification, thinking modification, and behavior modification.

(2) 2nd intervention: November 2009

3-generation imagery therapy was performed by group counseling. The therapy is a method used to correct aversive images of the womb interior by meditation regression imaging of the womb through the 3 generations of grandparents, parents/guardians and self to change current self-image script.

(3) 3rd intervention: December 2009 and January-February 2010

The patients participated in at least 2 sessions to undergo the 3-generation imagery therapy and the ancestral-generation imagery therapy. The therapy is a method to promote the resolution of life-threatening risk factors in the past that are imaged by meditation regression imaging of the womb in order to change the image script of their ancestors & parents and to change their current self-image script.

In interventions (1) and (2), the immuno-competent change was measured by using the psychological attributes inventory and a saliva test before and after the intervention by a SAT Health Psychotherapist certified by the Academy for Health Counseling. In (3), the psychological attributes inventory was performed before and after the intervention by a SAT Health Psychotherapist certified by the Academy for Health Counseling.

2.3 Non-intervention group

The questionnaires were sent to the subjects in October and November in 2009 and February 2010 and subjects were asked to perform a self-administered questionnaire.

2.4 Ethical considerations

We explained to the subjects of the intervention group and non-intervention group at the time of the guidance and before starting the study, respectively, that they were not identified in the study and analysis. In addition, they were told that they could participate in this study with free will so that they could decline their cooperation or withdraw from the study at any time and that there would be no effects on their daily life. Finally, we obtained their written informed consent. This study was approved by the epidemiologic research ethics committee of the University of Tsukuba.

2.5 Structure of questionnaire

The questionnaire used in this study consisted of (1) attributes of a subject (age, gender, occupation, composition of family, type of primary cancer, age at diagnosis, medical history of previous cancer treatment, type of cancer at present, and the presence or absence of current treatment and type of treatment if any) and (2) psychological index stress temperaments (persistence temperament, anxiety temperament), and psychological characteristics as measured by the self-esteem scale (Rosenberg, 1965), scale of self-repression (Munakata, 1990), emotional support network scale (Munakata, 1986), scale of problem-solving behavioral trait (Munakata, 1990), interpersonal dependency inventory (McDonald-Scott 1988), scale of state-trait anxiety (Spielberger et al., 1970), elf-rating depression scale (Zung, 1965), scale of difficulty in recognizing emotions (Munakata, 2007), scale of self-pity (Munakata, 2007), scale of the dissociative identity (Munakata, 2007), scale of self-denial (Munakata, 2007), and scale of the post-traumatic

stress syndrome (Munakata, 2007).

2.6 Biochemical index

This study measured SIgA and cortisol (adrenocortical hormone) by using a saliva test. SIgA is found in high concentrations in the saliva, lacrimal fluid, nasal discharge, respiratory tract, mucus, digestive juice, and milk, which is functionally involved in local immunity in the mucosal surfaces. Cortisol is one of glucocorticoids, the essential adrenocortical hormones for the human body, which inhibits carbohydrate, sugar, and protein metabolism. Cortisol is the most abundant in the body among the 3 glucocorticoids and accounts for approximately 95% of glucocorticoid activity; it is released by stress as well. It sometimes increases blood pressure and blood sugar level and decreases the immune function depending on the secretion.

2.7 Analytical method

Each parameter of the psychological characteristics was measured at baseline (after the guidance), at the time of completion of the 3-generation imagery therapy, and at the time of the ancestral-generation imagery therapy. The changes between these time points were statistically analyzed using statistical software SPSS17.0J for Windows. The Wilcoxon signed-ranks test was used to compare immuno-competence before and after the intervention.

3. Results

3.1 Intervention group

The subjects who underwent the group therapy using the 3-generation imagery therapy were 10 females with a mean age of 50.90±11.27 years. In terms of the stress temperaments, their persistence temperament was 3.30 (1.49), which was moderate, and their anxiety temperament was 3.80 (1.40), which was moderate. Their

cancers were breast cancer (7 subjects), ovarian cancer (1 subject), thyroid cancer (1 subject), and leiomyosarcoma of the left popliteal fossa (1 subject). The subjects who subsequently received the individual intervention were 7 subjects with a mean age of 52.57 (SD±11.370) years. In terms of their stress temperaments, their persistence temperament was 3.57 (SD±1.27), which was moderate, and their anxiety temperament was 4.14 (SD±1.22), which was also moderate. Their cancers were breast cancer (5 subjects), thyroid cancer (1 subject), and leiomyosarcoma of the left popliteal fossa (1 subject).

3.2 Non-intervention group

The subjects in the non-intervention group were 7 females with mean age of 53.00 (SD±7.84) years old. With respect to stress temperaments, their persistence temperament was 3.86 (SD±1.22), which was moderate, and their anxiety temperament was 3.00 (SD±1.73), which was also moderate. Their cancers were breast cancer (3 subjects), uterine cancer (1 subject), gastric cancer (1 subject), renal cancer (1 subject), and colon cancer (1 subject).

3.3 Changes by the intervention

(1) Changes of the biochemical index

Changes of the biochemical index before and after the group therapy intervention using the 3-generation imagery therapy. The adrenocortical hormone levels in the saliva tended to decrease from before and after the intervention (Wilcoxon signed-ranks test, z = -1.82, p = .069). The SIgA levels in the saliva immediately after the intervention were significantly greater than those before the intervention (Wilcoxon signed-ranks test, z = -1.99, p = .047).

(2) Changes of psychological characteristics

According to the comparison of psychological characteristics between at baseline and at the completion of the 3-generation imagery therapy, the scale of self-repression significantly decreased (Wilcoxon signed-ranks test,

z = -2.21, p = .027); the scale of difficulty in emotion recognition significantly decreased (Wilcoxon signed-ranks test, z = -1.89, p = .058); the scale of self-pity significantly decreased (Wilcoxon signed-ranks test, z = -2.03, p = .042); and PTSS significantly decreased (Wilcoxon signed-ranks test, z = -2.03, p = .042).

The comparison between at baseline and 4 months later when the intervention of the 3-generation and ancestral-generation imagery therapy were completed demonstrated that the scale of self-repression (Wilcoxon signed-ranks test, z = -2.20, p = .028), the scale of difficulty in emotion recognition (Wilcoxon signed-ranks test, z = -2.21, p = .027), the scale of self-pity (Wilcoxon signed-ranks test, z = -2.12, p = .034), the scale of dissociative identity (Wilcoxon signed-ranks test, z = -2.23, p = .026), and PTSS (Wilcoxon signed-ranks test, z = -2.03, p = .042) significantly decreased, and that the scale of problem-solving (Wilcoxon signed-ranks test, z = -2.22, p = .027) significantly increased.

In the non-intervention group, the scale of self-repression (Friedman test, χ^2 = .75, p = .687, the scale of difficulty in emotion recognition (Friedman test, χ^2 = .64, p = .727), the scale of self-pity (Friedman test, χ^2 = 1.06, p = .589), the scale of dissociative identity (Friedman test, χ^2 = 0.00, p = 1.0), and PTSS (Friedman test, χ^2 = 3.55, p = .170) did not change between at baseline and 1 month and 4 months later. On the other hand, there were changes between at baseline and 1 month and 4 months later in the scale of problem-solving and the interpersonal dependency inventory (Friedman test, χ^2 = 6.77, p = .035; χ^2 = 7.58, p = .023, respectively). The comparison of the scale of problem-solving between at baseline and 1 month later showed it tended to significantly decrease (Wilcoxon signed-ranks test, z = -2.03, p = .042), while there were no significant differences in the scale of problem-solving between at baseline and 4 months later (Wilcoxon signed-ranks tests, z = -1.52, p = .129). There were no significant differences in the interpersonal dependency inventory between at baseline and 1 month later (Wilcoxon signed-ranks test, z = -1.51, p =. 131), while the interpersonal dependency inventory significantly decreased between at baseline and 4 months later (Wilcoxon signed-ranks test, z = -2.27, P = .023).

In the group that received continuous intervention by SAT therapy, self-repression, difficulty in emotion recognition, self-pity, dissociative identity, and problem-solving, which are likely to induce chronic stress, were improved, and PTSS decreased. In the non-intervention group, the scale of problem-solving tended to decrease or remained low, and the interpersonal dependency inventory decreased 4 months later.

In addition, trait anxiety and depression in the intervention group between at baseline and after completion of all of the interventions were compared by using the Wilcoxon signed-ranks test.

The median score of trait anxiety in the intervention group at baseline was high at 55.0, which indicated that they were always anxious. The score after completion of 3-generation imagery therapy was 28.0 (Wilcoxon signed-ranks test, z = -2.20, p = .028) and that after the ancestral-generation imagery therapy was 27.0 (Wilcoxon signed-ranks test, z = -2.20, p = .028), which was significantly lower than that at baseline and showed a decrease of their anxious tendencies.

The median score of depression in the intervention group at baseline was 47.0, which showed their tendencies of slight depression. The score after completion of the 3-generation imagery therapy was 25.0 (Wilcoxon signed-ranks test, z = -2.20, p = .028) and significantly decreased. The score after completion of the ancestral-generation imagery therapy was 26.0 (Wilcoxon signed-ranks test, z = -1.86, p = .063), which showed a tendency to be significantly lower than that at baseline. On the other hand, there were no significant changes in the scores of trait anxiety and depression in the non-intervention group (Friedman test, χ^2 =.07, p =.964; χ^2 = 0.26, p = .878, respectively)

Table 1 Biochemical index

	SIgA				Cortisol	
	self-image script		3-generation image script		3-generation image script	
	Before	After	Before	After	Before	After
Median	325.95	385.55	148.85	317.60	.26	.16
Interquartile range	203.58	307.80	117.75	264.45	.29	.07

Table 2 Psychological characteristics

< Intervention group >

	Self-esteem			Self-repression		
	Baseline	2-3months after 3-generation	3-4 months after Ancestral-generation	Baseline	2-3months after 3-generation	3-4 months after Ancestral-generation
Median	7.00	10.00	9.00	11.00	6.00	4.00
Interquartile range	5.00	2.00	1.00	7.00	6.00	6.00

	Recognition of emotional support network (by family members)			Recognition of emotional support network (by people other than family members)		
	Baseline	2-3 months after 3-generation	3-4 months after Ancestral-generation	Baseline	2-3 months after 3-generation	3-4 months after Ancestral-generation
Median	10.00	10.00	10.00	6.00	8.00	8.00
Interquartile range	5.00	1.00	2.00	4.00	4.00	4.00
	Problem-solving			Interpersonal dependency		
	Baseline	2-3 months after 3-generation	3-4 months after Ancestral-generation	Baseline	2-3 months after 3-generation	3-4 months after Ancestral-generation
Median	11.00	10.00	17.00	9.00	4.00	4.00
Interquartile range	5.00	13.00	6.00	7.00	3.00	2.00

	Trait anxiety			Depression		
	Baseline	2-3 months after 3-generation	3-4 months after Ancestral-generation	Baseline	2-3 months after 3-generation	3-4 months after Ancestral-generation
Median	55.00	28.00	27.00	47.00	25.00	26.00
Interquartile range	18.00	16.00	15.00	16.00	11.00	14.00

	Required level of health counseling			Difficulty in emotion recognition		
	Baseline	2-3 months after 3-generation	3-4 months after Ancestral-generation	Baseline	2-3 months after 3-generation	3-4 months after Ancestral-generation
Median	8.00	1.00	2.00	11.00	4.00	5.00
Interquartile range	9.00	4.00	3.00	7.00	6.00	6.00

	Self-pity			Dissociative identity		
	Baseline	2-3 months after 3-generation	3-4 months after Ancestral-generation	Baseline	2-3 months after 3-generation	3-4 months after Ancestral-generation
Median	6.00	3.00	1.00	3.00	1.00	1.00
Interquartile range	8.00	6.00	3.00	5.00	3.00	2.00

	Self-denial			PTSS		
	Baseline	2-3 months after 3-generation	3-4 months after Ancestral-generation	Baseline	2-3 months after 3-generation	3-4 months after Ancestral-generation
Median	2.00	.00	.00	4.00	.00	.00
Interquartile range	2.00	1.00	.00	3.00	2.00	3.00

< Non-intervention group >

	Self-repression			Problem-solving		
	Baseline	1 month later	4 months later	Baseline	1 month later	4 months later
Median	5.00	5.00	7.00	11.00	10.00	11.00
Interquartile range	11.00	4.00	4.00	4.00	6.00	2.00

	Interpersonal dependency inventory			Trait anxiety		
	Baseline	1 month later	4 months later	Baseline	1 month later	4 months later
Median	4.00	4.00	3.00	39.00	38.00	41.00
Interquartile range	2.00	1.00	1.00	8.00	12.00	21.00

	Depression			Difficulty in emotion recognition		
	Baseline	1 month later	4 months later	Baseline	1 month later	4 months later
Median	32.00	32.00	33.00	5.00	5.00	4.00
Interquartile range	5.00	5.00	14.00	2.00	4.00	7.00

	Self-pity			Dissociative identity		
	Baseline	1 month later	4 months later	Baseline	1 month later	4 months later
Median	7.00	7.00	6.00	2.00	3.00	3.00
Interquartile range	5.00	3.00	4.00	3.00	4.00	2.00

	PTSS		
	Baseline	1 month later	4 months later
Median	1.00	2.00	2.00
Interquartile range	1.00	2.00	5.00

4. Discussion

4.1 Facilitatory effect of immune defenses

Changes in the biochemical index of the psychosocial intervention group and the non-intervention group were studied. The result indicated that the adrenocortical hormone levels in the saliva tended to decrease ($p < .07$)while the SIgA levels in the saliva significantly increased in the intervention group, which was the same as the result of significant increase($p < .05$) of the SIgA level in the saliva before and after SAT intervention described in our previous DVD study. The SIgA level in the saliva represents mental and physical stress and decreases by the stress load on the body or negative feelings (Labott 1990). The SIgA level in the saliva receives attention as the index to reflect moderate stress, but there are only a few reports on the relationship between the SIgA level in the saliva and stress; future evidence accumulation is expected. However, the SIgA levels in the saliva increased immediately after the start of this study, which suggested the stress relief effect by the psychosocial intervention.

Van der Pompe et al. (1997) performed a 13-week psychosocial intervention for breast cancer patients and reported the blood concentration of adrenocortical hormone decreased. Our 1-day intervention result also indicated that the adrenocortical hormone levels in the saliva decreased. It has been reported that the free cortisol in the blood transfers into the saliva depending on the blood concentration, and that the adrenocortical hormone levels in the saliva increase especially in response to mental and physical acute stress. This study result indicated that the adrenocortical hormone levels in the saliva decreased as the SIgA level increased and confirmed that the intervention had a stress relief effect and relaxation effect.

This intervention does not aim to provide a relaxation effect but aims to change behavior to self-reward pursuit behavior, which does not accumulate stress. Therefore, a measurement to evaluate the long-term effect is needed.

4.2 Facilitatory effect of stress resilience

Resilience is defined as the “absolutely essential psychological characteristics to stand and overcome adversity and to maintain sound mental activity emotionally, cognitively, and socially” (Mori et al., 2002) and the “universal capacity which allows a person, group or community to prevent, minimize or overcome the damaging effects of adversity” (Grotberg EH, 2003). People with high resilience can rapidly and easily escape from undesirable events and recover from psychological impacts. In addition to the above-mentioned profile, the roles of resilience in daily living have been studied (Oshio, 2002).The concept of resilience varies depending on the researchers. In fact, there are various points of view. We consider resilience as “self-reward oriented behavior that persons use to realize their real feelings, enjoy themselves, live positively, and communicate with family members and others and seek self-satisfaction, as opposed to a behavior of working hard to win rewards from others.” Resilience supports them to increase their self-rewarding behavior.

No improved changes except for the interpersonal dependency were observed in the non-intervention group, while there were significant changes in the intervention group that continued the intervention using SAT therapy, including changes in the self-repression scale, scale of emotion recognition deficit, scale of self-pity, scale of the dissociative identity, scale of problem-solving and post-traumatic stress syndrome. These findings indicated that their mental resilience was improved, that is, they could honestly express themselves, ask for support if necessary without worrying alone, and face problems with self-absorbing thought if needed.

There is a conventional intervention, Simonton therapy, which was developed by Carl Simonton (1978), and it helps patients visualize their immune cells destroying the cancer cells. Simonton clarified that there was a relationship between the optimism level of cancer patients and resistance against cancer. In addition, there were similar reports on the relief of depression and the case of a terminally ill cancer patient who recovered from carcinomatous myelopathy using combined therapy of Simonton therapy and biofeedback, which demonstrated that patients could reestablish their “identity” and control their disease by themselves by imaging

that lymphocytes destroyed the cancer cells. Our group intervention program also uses many images in the process to approach to potential stress, which turns to symptoms and signs in the process to resolve problems. As the 5-year- study by SAT individual therapy of Munakata & Kobayashi (2007) demonstrated, continuous changes of the images may have a big effect on the autonomic nervous system, endocrine system, and immune system in all imageries by group intervention using SAT. .

This intervention program was different from conventional psychosocial interventions including cognitive behavior therapy. The conventional interventions consciously removed cognitive distortions at the beginning to accelerate the modification of emotion expression and behavior modification, while this intervention naturally corrected cognitive distortions using modification of emotion expression. In more detail, this intervention method employed the method of re-scripting facial expression, which “improves the internal representation of parents and guardians” at the beginning to give a sense of security. Such sense of security improved the modification of emotion and enabled the subjects to change their self-cognition. As also seen in the descriptive data on changes and opinions of the psychological index, the transcripts during the intervention process revealed the patients’ emotion and thinking were changed to “I can be myself” and “I can tell them my honest feelings” after the completion of the improvement of images of their parents and guardians. Thus, this intervention clarified the process of their behavior modification, such as “I can frankly express my feelings,” and also might prolong the facilitatory effect of stress resilience by the effective reconstruction of a positive self-image script. Cognition and behavior are decided by their self-image from information based on their experiences and memories. Therefore, if they try to modify their behavior by changing their cognition without changing their past self-image, they will not be able to change anything about their lifestyle. This intervention program visualizes their “authentic being” when they are protected without any conditions and live their own lives. Then, they compare the “authentic being” with the “actual self” and realize the difference, which will enable them to live their lives according to self-reward pursuit model. The biggest factor towards accomplishing the above-mentioned goal might be the complete removal of their past aversive memory and the image work to reconstruct their authentic self during this intervention, which might contribute to the

prolongation of the survival period of cancer survivors.

4.3 Mental health improvement

There were no significant changes in trait anxiety and depression level in the non-intervention group, but they were remarkably improved in the intervention group. The modification of their self-image and behavior to a self-reward pursuit type with high resilience resulted in increase in their positive self-image and decrease in their anxiety, impatience, and depression. They found their future hope and improved their mental health.

The conventional psychosocial interventions for cancer survivors include educational intervention, psychological support, relaxation methods, and cognitive behavior therapies to alleviate anxiety, and these various methods have been studied. Edward et al. (2008) performed a meta-analysis of psychotherapy in breast cancer patients and reported that two cognitive behavior therapies and three types of supportive—existential psychotherapy provided some psychological effects. However, the effects lasted only for a few months and did not prolong their survival period. The supportive—existential psychotherapy is a type of group intervention performed according to a manual with six goals, including the development of a supportive environment, relief of sadness, reconstruction of negative thoughts, improvement of coping skill and problem solving abilities, and encouragement of having a hope. As described above, the psychological intervention used in this study is an original method to achieve self-reward behavior.

Unlike this group intervention using SAT therapy, these interventions need a certain period and frequency and have neither intensive effects nor short-term effects. Cancer patients and cancer survivors fear to express “myself as I am” and accumulate malignant stress because they try to adjust themselves to society first. SAT therapy is a new cognitive behavior therapy to resolve their past unsolved problems caused by codependent attachment, which has been previously learned to survive in the other-rewarding society. The conventional cognitive behavior therapies focus on cognitive distortions, which prioritize removal of their cognitive

distortions and uncomfortable feelings in order for them to think and judge according to their current situations. In order to break out of the cycle of “thinking–emotion–behavior–further thinking,” their extreme pessimistic thinking and depression should be removed. Therefore, these therapies encourage the patients to write out the actual situations in which they experience the anxiety, feelings, and behavior as well as their functional alternative thinking and behavior at that time in order to reconstruct their cognition. Thus, these therapies change the “thinking habit” of malignant stress to adaptive thinking. Despite the modification in thinking and achieving short-term effects, stress will later turn to somatization disorders if those are only theoretical. Therefore, it is essential not only to modify thoughts but also to modify cognition and behavior directly from changes of emotion. This group intervention using SAT therapy will be effective as a new cognitive behavior therapy based on such standpoint.

This intervention is also characterized by a group intervention by a support group. The intervention proposed by Spiegel et al. (1989) as described above was performed in a free talking style to discuss their distress and problems between a few patients as well as a psychiatrist and social workers. Psycho-oncology in Japan has been performed as a “medical intervention” in the medical field according to the diagnosis of an “adjustment disorder” by a doctor and performed to “share their feelings” in the support group in the nursing field. In their study on the use of psychosocial intervention in form of a supportive group to address the problem of cancer with companions, Fawzy et al. (1990) reported that the five-year mortality in the intervention group was one third of that in the control group. The previous studies have reported that mutual support and the establishment of identity are essential in order to overcome cancer. This group intervention using SAT therapy also supports the modification of their life that they live together with others, so that cancer survivors can realize who they are and awaken themselves. Furthermore, cancer survivors who undergo this intervention “share their feelings and understand others” in the same support group and nurture themselves as in the self-reward pursuit type using their empathy and empowerment, which may enable them to achieve the goal even if the intervention period is short.

This study demonstrated the usefulness of SAT therapy in cancer survivors by showing that they could change their behavior to self-reward pursuit behavior and improve resilience and mental health. In the future, practical support using SAT therapy should be performed on a large scale in cancer patient associations and support groups.

4.4 Limitations and future tasks

This study aimed to evaluate the short to moderate term effectiveness of this intervention, but did not evaluate whether immuno-competence and the facilitatory effect of resilience endure or not. The survival benefit and survival rate by this intervention shall for the basis for future research.

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