"CHANGES OR NOT" IS THE QUESTION: THE MEANING OF POSTTRAUMATIC STRESS REACTIONS ONE YEAR AFTER THE TAIWAN CHI-CHI EARTHQUAKE

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ABSTRACT

"Resource gains" and "resource losses", based on the Conservation of Resources Theory, are equally important in trauma recovery. This study was to investigate their influence on the severity of posttraumatic stress reactions and psychosocial adjustment patterns of the residents in two severely damaged townships. Five hundred and fifty six adults (157 males and 399 females) were assessed in terms of objective and subjective threat (of losses), subjective evaluations of changes in life domains and coping resources, and severity of posttraumatic symptoms one year after the Earthquake. The results showed that those who reported "No Change", compared to those were either "better" or "worse", had the least severity of PTSD symptoms. The subjective evaluation of changes in life domains and subjective threat were positively associated with changes in coping resources, but not the severity of PTSD symptoms. Results are discussed from the viewpoint of Cox's Stress Model and Wu's Life-Energy Stress Model, and it is suggested that successful coping might be accompanied by PTSD symptoms. Reconsideration and expansion of the meaning of "changed vs. unchanged" following a traumatic experience is also discussed.

I. INTRODUCTION

Since the Taiwan Chi-Chi Earthquake, post-traumatic stress responses have been the main theme in the health rehabilitation area, in clinical work, and in policy making as well. For example, Soong *et al.* (2000) developed a Postearthquake Questionnaire for Students (PEQS) under DSM-IV and ICD-10 Post Traumatic Stress Disorder (PTSD) criteria, and applied it to estimate traumatic responses of students who remained in the earthquake area and relocated to less-impacted areas about 3 months after the earthquake. Chao and Wu (2000) used the PEQS to screen out those who would be diagnosed as having PTSD among grade 3 to grade 6 students. Cheng *et al.* (2000) developed the Stressful Events Response Questionnaire to detect PTSD at different clinical sites during the period about 9 months after the earthquake, and found that there was a decrease of PTSD rates, ranging from 32.9% (within one month),

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to 21.2% (at 2-3 months), and to 13.3% (at 4-6 months). A group of psychiatrists translated and re-standardized the Davidson Trauma Scale (DTS) into a Chinese version for clinical and research purposes at the end of 2000 (Chen *et al.*, 2000). In addition, Wu *et al.*, (1999) and Wu (2000) proposed to take PTSD as one important criterion for active medical and/or psychological intervention.

However, PTSD is not the whole picture of psychological or psychophysiological responses after trauma (Chen *et al.*, 2000a; McFarlane, 1995; Wu, 2000; Wu, *et al.*, 1999). Chen, *et al.* (2000a), after integrating their research findings and on-site clinical experiences, have pointed out that PTSD was but one of the "products" from the sufferings. The extreme stressors one encountered should be conceptualized as chains of events rather than a single event (Hobfoll *et al.*, 1996). There may be multiple losses, threats of loss, and opportunity for gains in response to an index stressor at the same time. Different courses of loss and gain spirals should be identified and evaluated for the study of coping with extreme stressors. Besides PTSD, there may be many faces of change in traumatic experiences. Chen *et al.* (2000a) conducted a pilot investigation of subjectively estimated changes in physical health, mental health, life-meaningfulness, social relations, and sexual needs three to four months after the 921 Earthquake. Their results showed that about 60% of the afflicted people rated themselves as becoming worse in physical health and mental health, while about 40% rated themselves as becoming more pessimistic. But this was not the case in social relations. More than 30% of them becoming better, while only less than 7% rated their social relations as becoming worse. There was an obvious difference between the subjective rating of health conditions and that of interpersonal relationships.

Both personal health conditions and interpersonal relations are considered as "resources" (Hobfoll, 1988; Hobfoll *et al.*, 1996). Rating of one's personal health condition as "becoming worse" means there were losses in personal resources, and may lead into a loss-spiral. On the other hand, a rating of "becoming better" in interpersonal relations means resources gained, and may lead into a gain-spiral. Yet this kind of subjective rating, other than symptom checking, involves temporal comparison (McFarlane and Alvaro, 2000). Threatened people may be particularly likely to engage in self-enhancing temporal comparison with certain degrees of positive illusion (McFarlane and Alvaro, 2000; Taylor and Armor, 1996), especially in long-term reactions to trauma (Hobfoll *et al.*, 1996). Meanwhile, the individual tends to have a relatively accurate sense of his/her shortcomings derived from the physical and social feedback from the world and his/her own body (Taylor and Armor, 1996). Hence, the results of Chen *et al.* (2000a) should have reflected some true changes in these afflicted persons. Then comes the question of what is the relationship between these subjective ratings of loss and subjective checking on one's post-traumatic symptoms.

Hobfoll *et al.*, (1996) predicted that the degree of loss or threat of loss would positively correlate with severity of posttraumatic symptoms and other psychosomatic or psychiatric symptoms. However, their theory did not look into probable roles that the obtained, retained, or protected resources could play in this theme. It is speculated that, stemming from evolutionary pressures, losses or threats of loss are felt much more keenly than gains or prospects of gain. The resources one possesses are bases from which to obtain, to preserve, or to protect other resources, and finally, to cope against trauma. Thus, Hobfoll's Conservation of Resources Theory (COT) will be more fully relevant to this question if the role of resources obtained, retained, and protected is taken into consideration.

Using possessed resources to obtain, to retain, or to protect other resources requires "efforts". Wu (2000) has reformulated the previous integrative bio-psycho-social stress model (Wu, 1993), and developed a Life Energy Stress Model. The integrative bio-psycho-social stress model was developed through a series of studies (Chang *et al.*, 1985; Cheng and Wu, 1987; Duan and Wu, 1987; Wan and Wu, 1987; Wu and Huang, 1985), which, in turns, guided the design of a health-promoting program (Wu *et al.*, 1991; 1992). After applying the program in clinical setting for about 10 years, Wu (2000) proposed the "Life Energy" concept to include automatized psychological reactions that immediately follow the awareness of a life event, and are accompanied by physiological reactions and emotional reactions.

According to the Life-Energy Stress (LES) Model (Wu, 2000), Life-Energy serves all the activities a person has carried in his/her living. It can mostly be re-gained through good sleep, efficient nutrition intake, adequate exercise, and sufficient rest (or leisure); will be used in various ways of coping; and will be involved in all daily activities (Wu, 1983). If the expenditure outweighs the replenishment of Life-Energy, the person will become vulnerable to being ill, and if the process continues, s/he will finally become ill. Within this line of thinking, a side effect of successful coping (Cox, 1978) is the result of effortful coping without taking enough rest, nutrition, or exercise.

During the coping process against a traumatic event, one's existing resources for effortful retaining,

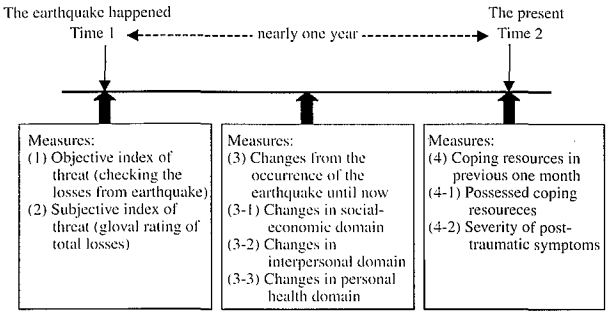

Fig. 1 Time frame for measures in the study

protecting, and obtaining other resources may be exhausted because of sudden losses caused by the disaster. According to the LES model, however, Life-Energy can also be regained through all kinds of human activities and formed into new resources. There may be chances to build up more resources, while, at the same time, the severity of posttraumatic symptoms is increasing.

Therefore, it is hypothesized that the extent of changes in personal health conditions or social relationships may positively correlate to the state of possessed resources. The purpose of this study, then, is to delineate the relationships among ratings of change, coping resources, and severity of posttraumatic symptoms during the post-earthquake coping process. The time frame for measuring these changes is shown in Fig. 1.

II. METHOD

1. Measures

The measures and questionnaires used in the study of Chen *et al.* (2000b) were adapted as the basic framework for the present study. The questionnaires were recoded to assess objective index of threat, subjective index of threat, changes in life domains, coping resources, and severity of posttraumatic symptoms.

(1) Objective index of threat. There are 5 items to record injury to oneself, injuries or deaths of his/her family members, as well as of his/her friends and neighbors. Each item is a 4-point Likert scale, assigning 1 to no injury or death, 2 to mild injury, 3 to moderate injury, and 4 to severe injury or death. The index was produced by summing up the 5 items.

(2) Subjective index of threat. This index asked "in your subjective feeling, how threatening is the 921 Earthquake to your life?" McFarlane and Alvaro (2000) proposed that self-relevant feelings of threat played a causal role in self-enhancing motivation. Therefore, subjective threat will be one of the predictors for changes in life.

(3) Changes in life domains since the occurrence of the earthquakes till now. On-site clinical experience revealed that most of the afflicted people often talked about job and economic issues, interpersonal relationships, and personal health conditions. The life domains after the earthquake were thus divided into three areas, i.e., socio-economic domain, social interpersonal domain, and personal health domain. There were two items about job and financial statuses; four items about relationships with family members, friends, relatives, and neighbors; and three items about physical and mental health statuses. In order to examine the hypothesis, groups for analysis were recoded. The grouping criteria are as follows.

Concerning the socio-economic domain, the subject was categorized into the "becoming worse" (to be abbreviated as "worse" hereafter) group when neither of the two items in the socio-economic domain indicated "becoming better" and at least one item indicated "becoming worse". The subject was categorized into the "becoming better" (to be abbreviated as "better" hereafter) group when neither of the two items in the socio-economic domain indicated "becoming worse" and at least one item indicated "becoming better". The subject was categorized into the "no change" group when both items indicated "no change". Lastly, the subject was categorized into the "mixed with some better and some worse" (to be abbreviated as "mixed" hereafter) group when mixed responses were noted. The same principles for grouping applied to the social-interpersonal domain, the personal health domain, and overall condition (i.e., taking all the three domains together).

(4) Coping resources. There are 22 items designed for this study to measure the lack of personal coping resources in the past month. The score represents the extent of lacking coping resources. Such that, the higher the score, the less coping resources one had in the one month prior to the assessment time.

(5) Severity of posttraumatic symptoms. The Posttraumatic Stress Reaction Index (PTSRI; Chen, 2000a) is 50-item measure assessing PTSD and psychosomatic symptoms. The PTSRI reports good reliability and meaningful factor structure and its psychometric properties have been reported elsewhere (Chen, 2000a and 2000b).

2. Subjects

The sample consisted of 556 adults (157 males and 399 females) living in the disaster area in

Table 1 Sex differences of group sample size under different domains of life

Domains	Groups Sex	Worse	No change	Better	Mixed	Total[a]	χ^2 value
Socio-economic Domain	Male	117 (76.47%)	30 (20.11%)	4 (2.61%)	2 (1.31%)	153	2.62 (N.S.)
	Female	277 (69.95%)	94 (23.74%)	16 (4.04%)	9 (2.23%)	393	
Social-interpersonal Domain	Male	34 (23.77%)	53 (37.06%)	44 (30.77%)	12 (8.39%)	143	5.45 (N.S.)
	Female	64 (17.02%)	159 (42.29%)	104 (27.66%)	49 (13.06%)	376	
Personal health Domain	Male	106 (67.95%)	37 (23.71%)	7 (4.49%)	6 (3.85%)	156	6.74 (N.S.)
	Female	307 (78.12%)	60 (15.27%)	12 (3.05%)	14 (3.56%)	393	
Overall Condition	Male	71 (50.71%)	10 (7.14%)	11 (7.86%)	48 (34.29%)	140	2.32 (N.S.)
	Female	188 (50.81%)	20 (5.41%)	19 (5.14%)	143 (38.65%)	370	

Note. [a]Total numbers varies due to missing cases. N.S.: non-significant at α=.05

Tai-Chung and Nan-Tou Counties of central Taiwan. Their ages ranged from 25 to 63 years old, and males were significantly older than females (42.59±10.19 vs. 40.00±8.35 years, respectively). However, there were no significant differences in education and marriage status between males and females.

3. Statistical Analyses

The prime focus of this paper is mainly on the discussion of the relationship between changes in life domains and coping, rather than exposure effects on PTSD which have been reported elsewhere (Chen, *et al.*, 2000b). Although sex, age, and education have been suggested as risk factors for PTSD in many western samples (e.g., Brewin, Andrews and Valentine, 2000), it is not yet clear if these factors may predict posttraumatic coping as well. Thus, it is important to examine whether there may be a sex effect on group size under each domain of "changes" before further analyses can be performed.

The independence of group classification on each status was first investigated by means of the χ^2-test.

Table 1 shows that, for both males and females, a great portion of people became worse in socio-economic condition (76.47% and 69.95%, respectively) and personal health condition (67.95% and 78.12%, respectively), while less than 5% of the sample became better and another small group (less than 5%) reported mixed changes. In regard to social-interpersonal domain, about 40% of subjects showed "no change", about 30% "better", about 20% "worse", and about 10% "mixed". Yet no sex differences of group sizes under different domains were found.

Differences of subjective and objective threat between sexes were ascertained with ANOVA. The means and standard deviations of ratings on subjective and objective threat, coping resources, and severity of posttraumatic symptoms can be found in Table 2. Although females had significantly less coping resources and endorsed significantly more PTSD symptoms, there was no difference between sexes on either objective or subjective index of threat.

Accordingly, in discussing the relationship between changes in life domains and coping, the following analyses of data via χ^2-test and ANOVA pool up male and female data together.

III. RESULTS

The primary axis of this study is changes in life domains. Data would first be analyzed within each of three life domains separately, then followed by "overall condition". Table 3 presents the means and standard deviations of "objective index of threat", "subjective index of threat", "lack of coping resources", and "severity of posttraumatic symptoms" in different groups under the three sub-conditions and the "overall condition", and the results of ANOVA.

Table 2 Sex differences of objective threat, subjective threat, coping resources, and severity of posttraumatic symptoms

Sex Index	Male	Female	*F* value
Objective Threat	7.73[a] (2.91)[b] (*N*=150)[c]	7.74 (2.58) (*N*=381)	.00
Subjective Threat	2.56 (0.64) (*N*=155)[c]	2.64 (0.56) (*N*=395)	1.81
Lack of Coping Resources	36.84 (8.27) (*N*=153)	38.64 (8.52) (*N*=397)	5.01*
Severity of Posttraumatic Symptoms	38.58 (30.97) (*N*=155)	46.80 (29.70) (*N*=398)	8.40**

Note.a: mean, b: standard deviation, c: number of persons in the cell, *p<.05, **p<.01

1. Socio-economic Domain

The four groups differed on objective threat significantly (F=3.98, p<.01), and post hoc comparisons by Scheffe tests showed that the "mixed" group had significantly more objective threat than the "no change" group and the "better" group. Their subjective threat differed significantly (F=4.19, p<.01). Post hoc comparisons showed the "worse" group had significant more subjective threat than the "no change" group. Their coping resources differed significantly (F=12.23, p<.01). The "better" group had the largest amounts of resources (i.e., represented by least lack of coping resources), while the "worse" group had the least. Post hoc comparisons showed that the "worse" group had less coping resources than the "no change" group and the "better" group. Concerning severity of posttraumatic symptoms, the "worse" group and the "mixed" group took the lead, and the "better" group came in second, followed by the "no change" group (F=14.35, p<.01). Post hoc comparisons showed that significant difference was noted only between the "worse" group and "no change" group.

2. Social-interpersonal Domain

With respect to social-interpersonal conditions, the four groups differed significantly on objective threat (F=8.62, p<.001), subjective threat (F=2.85, p<.05), coping resources (F=15.26, p<.001), and severity of posttraumatic symptoms (F=20.74, p<.001). Post hoc comparisons showed that the "worse" group, the "better" group, and the "mixed" group had significantly higher objective threat than the "no change" group; the "worse" group and the "mixed" group had less coping resources than the "no change" group and the "better" group; the "worse" group and the "mixed" group had higher severity of posttraumatic symptoms than the "no change" group and the "better" group.

3. Personal Health Domain

Concerning personal health conditions, the four groups differed significantly on objective threat (F=6.03, p<.001), subjective threat (F=6.94, p<.001), coping resources (F=14.31, p<.001), and severity of posttraumatic symptoms (F=33.02, p<.001). Post hoc comparisons showed that the "worse" group had significantly more subjective threat and objective threat than the "no change" group; the "worse" group had significantly less coping resources than the other three groups; the "worse" group and the "mixed" group had higher severity of posttraumatic symptoms than the "no change" group.

4. "Overall Condition of Life"

Concerning the overall condition of life, this study showed that the number of persons in the "mixed" group increased greatly, while the "no change" group shrank. The four groups differed significantly on objective threat (F=6.21, p<.001), subjective threat (F=7.63, p<.001), coping resources (F=11.17, p<.001), and severity of posttraumatic symptoms (F=19.32, p<.001). Post hoc comparisons showed that the "worse" group and the "mixed" group had significantly more objective and subjective threat than the "no change" group. The "worse" group possessed significantly less coping resources than the "no change" group and the "better" group, and the "mixed" group had fewer coping resources than the "better" group. The "worse" group and the "mixed" group reported more severity of posttraumatic

Table 3 Scores of objective index of threat, subjective index of threat, coping resources and severity of posttraumatic symptoms and ANOVA results

Domains	indexes / groups	objective threat	subjective threat	lack of coping resources	severity of posttraumatic symptoms
Socio-economic Domain	Worse	7.87[a] (2.70)[b] (*N*=373)[c]	2.67 (0.55) (*N*=389)	39.50 (8.35) (*N*=391)	49.51 (30.61) (*N*=392)
	No change	7.32 (2.52) (*N*=122)	2.50 (0.63) (*N*=124)	34.76 (8.05) (*N*=122)	30.13 (25.28) (*N*=123)
	Better	7.05 (2.22) (*N*=19)	2.35 (0.67) (*N*=20)	33.95(6.04) (*N*=20)	36.35 (25.85) (*N*=20)
	Mixed	9.82 (2.70) (*N*=11)	2.64 (0.50) (*N*=11)	37.27 (8.52) (*N*=11)	48.36 (22.83) (*N*=11)
ANOVA *F* values		3.98**	4.19**	12.23***	14.35***
Social-interpersonal Domain	Worse	8.46 (3.18) (*N*=87)	2.73 (0.49) (*N*=96)	42.33 (8.59) (*N*=97)	56.94 (31.03) (*N*=98)
	No change	7.04 (2.23) (*N*=206)	2.53 (0.63) (*N*=210)	36.79 (8.25) (*N*=210)	35.62 (29.26) (*N*=211)
	Better	7.98 (2.66) (*N*=144)	2.65 (0.55) (*N*=147)	36.10 (8.04) (*N*=146)	41.74 (26.86) (*N*=147)
	Mixed	8.41 (2.98) (*N*=59)	2.64 (0.58) (*N*=61)	40.57 (7.40) (*N*=60)	62.13 (27.93) (*N*=60)
ANOVA: *F* values		8.62***	2.85*	15.26***	20.74***
Personal health Domain	Worse	7.95 (2.75) (*N*=394)	2.67 (0.55) (*N*=408)	39.41 (8.46) (*N*=409)	50.52 (30.15) (*N*=411)
	No change	6.68 (2.06) (*N*=95)	2.38 (0.65) (*N*=97)	34.47 (7.46) (*N*=96)	19.54 (16.44) (*N*=96)
	Better	8.12 (3.00) (*N*=17)	2.53 (0.61) (*N*=19)	32.32 (8.12) (*N*=19)	35.79 (18.56) (*N*=19)
	Mixed	7.95 (2.56) (*N*=20)	2.60 (0.60) (*N*=20)	34.25 (6.53) (*N*=20)	39.90 (27.17) (*N*=20)
ANOVA: *F* values		6.03***	6.94***	14.31***	33.02***
Overall Condition	Worse	7.67 (2.70) (*N*=243)	2.67 (0.55) (*N*=255)	39.37 (8.69) (*N*=258)	46.24 (31.71) (*N*=258)
	No change	6.17 (1.79) (*N*=29)	2.17 (0.70) (*N*=30)	34.50 (7.36) (*N*=30)	16.53 (14.91) (*N*=30)
	Better	6.93 (2.55) (*N*=30)	2.50 (0.63) (*N*=30)	31.07 (6.37) (*N*=30)	20.10 (15.53) (*N*=30)
	Mixed	8.20 (2.73) (*N*=186)	2.65 (0.55) (*N*=190)	37.96 (8.07) (*N*=188)	50.12 (27.79) (*N*=189)
ANOVA: *F* values		6.21***	7.63***	11.17***	19.32***

Note. [a]: mean, [b]: standard deviation, [c]: number of persons in the cell, *p<.05, **p<.01, ***p<.001

symptoms than the other two groups.

IV. DISCUSSION

Summing up the aforementioned results, the findings roughly lead to a pattern of group differences, in that the "better" group together with the "no change" group displayed fewer PTSD symptoms and possessed more coping resources in comparison to the "worse" and "mixed" groups across all domains. While taking a closer examination of the association between coping resources and PTSD symptoms, however, there are interesting trends consistently noted across various domains, despite the fact that

Table 4 Ranks of amount of coping resources and severity of PTSD symptoms across 4 groups under each condition

Domains	indexes / groups	Amount of coping resources	Severity of posttraumatic symptoms
Socio-economic Domain	Worse	4	1
	No change	2	4
	Better	1	3
	Mixed	3	2
Socio-interpersonal Domain	Worse	4	2
	No change	2	4
	Better	1	3
	Mixed	3	1
Personal health Domain	Worse	4	1
	No change	3	4
	Better	1	3
	Mixed	2	2
Overall Condition	Worse	4	2
	No change	2	4
	Better	1	3
	Mixed	3	1

some pairs of group comparisons were not different statistically. As can be seen in Table 4, concerning severity of PTSD symptoms, the first trend is noted under socio-economic and personal health domains, in that the "worse" group reported the most symptoms, followed in order by the "mixed" group, the "better" group, and finally the "no change" group. The second trend is noted under the social-interpersonal domain and overall conditions, in that the "mixed" group reported the most symptoms, followed in order by the "worse" group, the "better" group, and finally the "no change" group. Regarding coping resources, there are also two trends noted. The first trend is shown under socio-economic, social-interpersonal, and overall domains. The "better" group took the lead, followed by the "no change" group, the "mixed" group, and the "worse" group under the socio-economic, socio-interpersonal, and overall conditions. The personal health condition is the exception, in that the "better" group possessed the largest amount of coping resources and the "worse" group the smallest, but the mixed group had more than the "no change" group. This pattern defines the second trend for coping resources.

What draws more attention is that, across all domains, the "better" group seems to possess more coping resources, but at the same time to present more PTSD symptoms in comparison to the "no change" group. As predicted, the outcomes of coping with stress often reflect upon the availability of coping resources across various domains of life. Having more resources, but, at the same time also suffering from more symptoms, which was found in the present study seems to contradict the prediction of a linear relationship between lack of coping resources and negative consequences such as PTSD symptoms drawn from western literature. It is then suggested that, via loss-spiral (Hobfol *et al.*, 1996), the "threats of loss" due to the disaster were still actively influencing the individual and manifested in posttraumatic symptoms.

From the Life-Energy/Resources viewpoints, it could be predicted that coping resources parallel the changes in life domains. This trend, indicated by the fact that the "no change" group had a tendency to be better than the "better" group, may be explained by the model of "side effects of success." That is, successful coping would lower resistance against disease by continuously accumulating fatigue. "Becoming better" might be the result of enormous coping efforts, which, in turn, resulted in a certain amount of fatigue that may be enough to form symptoms. Therefore, symptoms such as PTSD might imply that there were chances for "becoming better" and "cultivating coping resources." That is to say, the meaning of PTSD is not limited to "being ill." Rather, it may also indicate the chances of "coping successfully."

Two other sets of post hoc examinations, i.e.,

sex differences on posttraumatic symptoms and coping as well as the relationship between post-earthquake housing arrangements and posttraumatic coping, indirectly support the Life-Energy/Resource viewpoints. First, similar to the findings in extant literature (e.g., Maes *et al.*, 1998), the present study found that females had significantly less coping resources and endorsed significantly more PTSD symptoms, as shown in Table 2. However, the present study also found that, in comparison to males, females showed no worse on either objective/subjective threat or changes in life domains due to living conditions. In other words, females have been paying more costs, in symptoms, to prevent themselves from becoming worse in living conditions. Nevertheless, females in the present study are indeed tougher in dealing with extraordinary stress such as the 921 Earthquake.

Second, the study found a correspondence between housing rearrangements and posttraumatic responses and coping. Among subgroups in various current dwelling, those who are living in container houses endorsed highest scores on the index of objective, but not subjective, threat, followed by those living in relatives' or rental houses. Those who are staying in their original houses scored the lowest. Similar patterns were noted in terms of lack of coping resources and severity of posttraumatic symptoms. Overall, the findings, albeit preliminary, may be ascribed to the reliability of the sample collected; the pattern is that the more discrepancy in housing rearrangement, the worse posttraumatic coping. The importance of taking collective rehabilitation, such as housing rearrangements and community reconstruction into consideration, should be considered for further research.

It could be argued that the commonly proposed risk factors such as age and education may interfere with response sets so as to confound the aforementioned findings of the present study. Here, one last point should be made as follows. Age was not correlated to objective/subjective threat, coping resources, and severity of posttraumatic symptoms. This result of the present study differs from other studies and may be accounted for by the fact that the subjects recruited are mainly mid-aged adults with limited age range. Significantly more subjects with lower education were found in the "worse" group of each life domain. Education was also found to have significant correlations with severity of posttraumatic symptoms (r=-.18, p<.001) and with coping resources (r= .10, p<.05). After entering education as a covariate, the patterns of differences of PTSD and coping resources under various conditions remain. Thus, the above discussion on plausible curvilinear relationships among changes in life domains, coping resources, and PTSD symptoms should be regarded as specific and valid.

V. CONCLUSION

At about one year after the Earthquake, there was not much improvement of life domains in the findings, when compared to the study undertaken three months after the occurrence (Chen *et al.*, 2000a). The percentages in socio-economic status and in personal health status were both about 70% and less than 5%, for becoming worse and becoming better, respectively. Concerning social interpersonal relations, the percentage of becoming worse was about 20%, and that of becoming better was about 30%. Subjective rating of the changes in life domains paralleled the changes of coping resources, but not the changes of severity of posttraumatic symptoms. The Life Energy Stress Model (Wu, 2000) could be called upon to explain such a relationship pattern among changes in life domains, coping resources, and posttraumatic symptoms, and it is further suggested to expand the meaning of PTSD to cover its occurrence as a "by-product of successful coping."

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論析「變或不變」：集集大地震一年後的創傷後心理社會反應之意義

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摘　要

依據Conservation of Resource Theory的觀點，資源損失與資源獲取對創傷復原歷程具同等的重要性。本研究選取兩受創嚴重鄉鎮的556位成年居民爲受試（男性157位，女性399位），評估地震一年災後資源損益對創傷後壓力反應（PTSD）與心理社會適應的影響。資料包括主客觀的損失威脅、生活變動的主觀評估、因應資源的變動以及創傷後壓力症狀。結果顯現相較於主觀評估生活變動狀況「變好」與「變差」的居民，狀況「不變」者出現較少PTSD的症狀；而生活變動的主觀評估、主觀威脅與因應資源的變動有正相關，但與PTSD症狀則否。最後作者從Cox的壓力模式與吳氏生命活力之壓力模式的觀點，討論成功的因應所可能附帶衍生的症狀代價，並建議正視創傷後的心理社會反應的轉化歷程中「變」與「不變」的意涵之拓展。

關鍵詞：創傷後壓力反應，資源理論，生命活力之壓力模式，地震。