

# 行政院國家科學委員會專題研究計畫 成果報告

總計畫暨子計畫：兒童與青少年震災後心理反應長期追蹤研究( )

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# 行政院國家科學委員會補助專題研究計畫成果報告

災後心理反應歷程與心理處置歷程之長期追蹤研究—

總計畫暨子計畫一：

兒童與青少年震災後心理反應長期追蹤研究(2/5)

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# 行政院國家科學委員會專題研究計畫成果報告

## 災後心理反應歷程與心理處置歷程之長期追蹤研究-子計畫一

### 兒童與青少年震災後心理反應長期追蹤研究

計畫編號：NSC-91-2625-Z-002-030

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#### 中文摘要

本研究係災後心理反應歷程長期追蹤研究，其目的為探索 921 震災後重建區之兒童與青少年的災後心理反應。調查的目標地區為台中縣東勢鎮、南投縣埔里鎮及竹山鎮、嘉義縣大林鎮及民雄鄉、以及台南縣白河鎮，研究對象則包括小學四、五、六年級與國中一、二、三年級的男女學生 (N=4480)。

「震災曝露指標 (EEIY; Earthquake Exposure Index for Youths)」與「災後症候群指標 (UCLA-PTSD Index)」為主要的研究變項。研究資料初步分析結果顯示：「創傷曝露程度」與災後長期心理反應的嚴重性呈正相關；粗估的 PTSD 診斷之流行率亦隨「年級」與「性別」而有差異。據此初步結果來看，本項追蹤研究的確值得繼續追蹤下去，以期能獲得更完整的兒童與青少年之災後心理反應狀況。

**關鍵字：**震災後心理反應；創傷曝露程度；長期追蹤研究；兒童與青少年

#### ABSTRACT

This study, as a part of a longitudinal prospective project, aims to investigate the range and severity of post-traumatic stress reactions displayed by children and adolescents residing near the epicenter, three years after the Taiwan 921 Earthquake and to examine the relations of these symptoms to developmental stages and objective features of trauma exposure. Earthquake Exposure Index for Youths and Child Posttraumatic Stress Disorder Reaction Index were administered to 4480 children and adolescents from two heavily impacted townships near the epicenter and three highly threaten townships. Severity of posttraumatic stress reactions was found to vary by a “dose effect” of earthquake exposure. Variation in the prevalence of PTSD symptoms and cases were found across age and gender groups. It will be thus important to continue a longitudinal project with periodic screenings as

well as relevant intervention programs.

**Key Words:** posttraumatic stress reaction, Chi-Chi Earthquake, exposure effect, children and adolescents

## INTRODUCTION

The devastating 1999 Taiwan Chi-Chi Earthquake struck the whole island country at near midnight of September 21, 1999, and especially hit both densely populated farms and the rugged rural mountain regions of central Taiwan, leaving a surprisingly high toll of deaths, injuries, and damage. Approximately 2,494 people lost their lives and over eleven thousand got injured. More than 106,159 houses and a great number of schools were either completely destroyed or damaged. Particularly distressed by the trauma were the children and adolescents of these regions. They have not only been stunned by the fateful events such as personal and/or family injury, witnessing death of family, friends, and neighbors, as well as damages and collapses of houses, but have also been experiencing unfortunate adversities following the earthquake such as being “school-less” due to collapse of their schools, relocation and/or separation from family, and undesirable living conditions.

Research on children’s and adolescents’ posttraumatic responses and PTSD has been less abundant and less systematic than research on adult survivors. Nevertheless, it has been documented to date that children and adolescents may experience full range of posttraumatic stress symptoms (e.g., Pynoos, Goenjian, & Tashjian, 1993). The level of

trauma exposure appears to be strongly predictive to severity and course of posttraumatic stress reactions in children and adolescents (e.g., Green, 1991; Lonigan, Shannon, Taylor, Finch, & Sallee, 1994; Pynoos, Steinberg, & Goenjian, 1996). Also, age and gender may yield variable effects on risk for PTSD symptoms and PYSD cases (e.g., Green, Korol, Grace, et al., 1991; Korol, Green, & Gleser, 1999; Shaw, Applegate, & Schorr, 1996).

Similar to adults’ PTSD, the common posttraumatic reactions to disaster in western children and adolescents reported by existent studies include: 1) sleep problems such as insomnia, nightmares, fear of being alone in the dark and sleeping alone, and sleepwalking; 2) loss of capacity to learn, impaired concentration, and memory impairment; 3) intrusive images and thoughts triggered by trauma-related environment and often associated with intense anxiety; 4) repeating trauma-related play and games; 5) panic attacks; 6) fear of trauma reminders; 7) separation anxiety; 8) hypervigilance to dangers; decreased self-efficacy and sense of insecurity; 9) loss of derived pleasure from regular activities; 10) anger, irritability, and aggressive behaviors; and 11) depression, guilt and hopelessness (Orlee, 1993).

The profiles of symptom presentation appeared somewhat different in Taiwanese youths during a short period after the Earthquake (i.e., Chao & Wu, 2000; Chen, Lin, Wu, & Tseng, 2002; Soong, Lee, et al., 2000). These existing studies of Taiwanese youths

were all conducted around three months to one year after the earthquake. Yet to be answered is the question whether or not the symptom manifestations of children and adolescents sustain over a longer period of time.

Lacking previous research on chronic post-disaster psychological reactions of youths in Taiwan constitutes a prime motive for the current study. In this paper, the authors primarily present a large-scale investigation, conducted three year after the 921 Earthquake, inspecting the range and severity of chronic post-traumatic stress reactions displayed by children and adolescents residing near the epicenter so as to plausibly give a database for future research and intervention plan in Taiwan.

## METHOD

### *Subjects:*

In present study, we have collected a large-sample data, nearly amounted to four thousand four hundred and eighty adolescents from 4<sup>th</sup> to 9<sup>th</sup> grade of fifteen elementary and junior high schools located in Tung-hsih township of Tai-chung County, Pu-li township and Jhu-shan township of Nan-tou County, Da-lin township and Min-shong village of Chia-yi County, and Bai-he township of Tai-nan County after the third anniversary of the 921 Earthquake.

The present paper only reports data of children and adolescents from the most severely damaged areas near the epicenter, i.e., Tung-hsih township and Pu-li township. Their characteristics are listed in Table 1.

**Table 1. Subject Characteristics**

	Elementary		Junior High		Whole	
	N	%	N	%	N	%
<b>Sex</b>						
Male	656	52.2%	601	47.8%	1257	52.5%
Female	607	53.4%	530	46.6%	1137	47.5%
Total	1263	52.8%	1131	47.2%	2394	100%
<b>Location</b>						
Tung-Hsih	592	51.6%	555	48.4%	1147	47.9%
Pu-Li	671	53.8%	576	46.2%	1247	52.1%
Total	1263	52.8%	1131	47.2%	2394	100%

### *Measures:*

1. ***UCLA PTSD Index for Adolescent, Taiwan version.*** The self-report UCLA PTSD Index for DSM-IV, Revision 1, Adolescent Version (Pynoos, et al., 1996), oncludes:

- A) Past Trauma Experience Survey (PTES): consisting of 13 items to evaluate the incidence of past trauma experiences, including earthquake, traffic accidents, war, fighting, gun-shot, and so on. It was rated as 0-*NO* or 1-*YES*.
- B) Checklist of PTSD Symptoms (CPTSD): consisting of 20 items to assess posttraumatic stress symptoms rated on a 5-point Likert scale ranging from 0-*None* to 4-*Most of the time*. The authors conducted psychometric examinations of the scale and reported elsewhere (Lin, 2001; Wu, Chen, & Tseng, 2000). The CPTSD, by principal component factor analysis with obliminal rotation, yields two meaningful factors, i.e., *Reexperiencing/avoidance symptoms* and

numbness/maladaptive symptoms. The internal consistency Cronbach's  $\alpha$  were .91, .88, and .82, for the total scale, factor of reexperiencing/avoidance symptoms, and factor of numbness/maladaptive symptoms, respectively.

2. **Earthquake Exposure Index for Youths (EEIY).** The self-report 10-item EEIY was modified from the Earthquake Exposure Index (Chen, Lin, Hung, & Tseng, 2000; Chen, et al., 2002) with additional youth-relevant items to assess the extent of exposure to the earthquake.

**Procedures:**

The data were collected during November and December of 2002, around 3 years after of the

921 Earthquake. With the support from the school principals and teachers and after a passive consent procedure, the self-report measures were given to the students in their usual classrooms. All responses were guaranteed as anonymous.

**RESULTS:**

**1. Exposure Characteristics of the sample**

Overall, there were about 6% of students still living separately with their family, about 1.3% currently living in container house, and about less than 1% studying in container classroom. There are about 94% of students currently living with their parents and/or families, and about half of students have a new and rebuilt school. (see Table 2)

**Table 2. Exposure Characteristics of Subjects**

	Elementary Students (N=2295)		Junior High Students (N=1957)		Whole Sample (N=4252)	
	N	%	N	%	N	%
<b><u>Separation from family?</u></b>						
Never	1870	81.5%	1638	83.7%	3508	82.5%
Once separated, but have reunited	297	12.9%	190	9.7%	487	11.5%
Still separated from family	128	5.6%	129	6.6%	257	6.0%
<b><u>Current dwelling?</u></b>						
Original house	1704	70.7%	1498	74.8%	3202	72.5%
Rebuilt house	256	10.6%	199	9.9%	455	10.3%
Container house	40	1.7%	18	0.9%	58	1.3%
Relative's house	86	3.6%	71	3.5%	157	3.6%
New rental house	268	11.1%	181	9.0%	449	10.2%
New house	37	1.5%	14	0.7%	51	1.2%
Others	19	0.8%	23	1.1%	42	1.0%
<b><u>Current School Classroom?</u></b>						
Original school	917	38.0	1284	64.3	2201	49.9
Container classroom	26	1.1	6	0.3	32	0.7
Rebuilt school	1465	60.7	705	35.3	2170	49.2
Others	6	0.2	1	0.1	7	0.2

## 2. Age and Gender Effects for Posttraumatic Stress Reactions

Means and standard deviations for PTSD total and subscales by age and gender groups are listed in Table 3. The summary of ANOVA results are presented as well. The results indicate that PTSD total yielded a significant main effect for age. The reexperiencing/avoidance subscale yielded significant main effects for age and gender. The numbness/maladaptive subscale yielded a significant main effect for age.

**Table 3. Summary of ANOVA Results of PTSD Symptoms by Age and Gender**

	Elementary Students		Junior High Students		ANOVA
	Mean	S.D.	Mean	S.D.	
<b>PTSD Ttal</b>					
Male	23.39	16.34	21.76	14.06	A**
Female	23.84	15.39	22.90	13.31	
<b>Reexperiencing/avoidance symptoms</b>					
Male	13.60	9.27	12.55	8.07	A**,S**
Female	14.18	8.92	13.56	7.99	
<b>Numbness/maladaptive symptoms</b>					
Male	8.34	6.93	7.42	5.87	A***
Female	8.18	6.55	7.68	5.41	

Note. \* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

A is main effect for age, S is main effect for gender, and AS means interaction of age and gender.

### Conclusion:

Consistent with previous studies (e.g., Chen, et al., 2002; Lonigan, et al., 1994; McFarlane, 1987; Shore, et al., 1986; Pynoos, et al., 1996), severity of posttraumatic stress reactions was also found to carry a “dose

effect” of earthquake exposure in this study. Furthermore, existing literature is not yet conclusive about age and gender effects on the vulnerability of children and adolescents following a traumatic event. Variation in the prevalence of PTSD symptoms was found across age and gender groups in this study.

PTSD prevalence rates and symptoms of each cluster vary across age and gender groups. Younger male adolescents may call more professional attention to their vulnerability to PTSD diagnosis. Symptoms on the cluster B (reexperiencing) and D (hypervigilance) may be more liable over time and thus more susceptible to change, both naturally and with professional aids. Finally, given that age and gender show variable effects on developing post-traumatic symptoms, it may suggest a need to implement a broad disaster recovery project with periodic screenings as well as age-specific and gender-appropriate mental health programs.

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