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Relocation Stress, Coping, and Sense of Control Among Resettlers Resulting from China's Three Gorges Dam Project

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Abstract The involuntary relocation of people for development purposes has become prevalent across the world in recent decades. Depression is one of the documented negative outcomes of involuntary relocation among resettlers. Viewing the affected population simply as passive victims, past studies have largely ignored the coping strategies employed by individual resettlers in dealing with stress they experienced in the relocation process. Focusing on Three Gorges Project-induced relocation in China, this study examines coping strategies employed by resettlers using panel data collected before and after relocation. We found that emotion-focused coping was more effective than problem-focused coping in combating relocation-related depression. Unsuccessful problem-focused coping was found to elevate, rather than reduce depression. Emotion-focused coping reduces depression not only directly but also indirectly by restoring resettlers' sense of control. This study contributes to the literature by identifying coping strategies, as well as their mechanisms, that are effective in combating relocation-induced distress.

Keywords Relocation stress · Coping · Sense of control · Three gorges project

1 Introduction

Each year, millions of people worldwide are uprooted and relocated to make way for development projects such as dams, airports, highways (World Bank 1996). The documented relocation outcomes have been overwhelmingly negative (Cernea 1997), with elevation in depression being one of the most frequently reported negative outcomes (Billig et al. 2006; Hwang et al. 2007; McKelvey et al. 1993; Scudder and Elizabeth 1982; Tartakovsky 2002; Xi 2007).

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The displacement process is very stressful to resettlers not only because it disrupts their normal life but also because it is often imposed on resettlers by a powerful entity such as government, a situation that would increase the level of distress among resettlers by weakening their sense of control (Hwang et al. 2007). Although there are many things actors involved in the involuntary relocation process can do to mitigate harmful effects, the relocation literature has focused mainly on relocation policies and the actions of planners (Cernea 1997). Little attention has been paid to what individual resettlers can do for themselves. The social psychological insight that individuals are active agents who can shape their own circumstances has been largely overlooked (Thoits 1994, 2006). As a result, we know very little about which coping strategies resettlers can turn to and how effective different strategies are in dealing with problems resulting from project-induced forced relocation.

This paper focuses on the 1.27 million resettlers who have relocated by the world's largest dam project, the Three-Gorges Project (TGP). We attempt to answer the following questions: What are the coping strategies the TGP resettlers have applied to actively cope with stresses associated with the involuntary relocation? Among the coping strategies they have used, which ones are more effective than others and why? This paper contributes to the population displacement literature by exploring the role of agency in managing relocation-induced stress among resettlers. It also contributes to the stress process literature by hypothesizing why certain coping strategies should be more effective than others in combating relocation-induced distress.

2 The TGP Relocation as a Stressor

In 1994, China started the TGP on the Yangtze river for the purposes of flood control, generation of electricity, and improved navigation (Lei 1998; Tao 1994; Wang 2002). From 1992 to 2008, about 1.27 million Chinese who lived below an elevation of 175 meters in the mid section of the Yangtze valley have been relocated (SCGPCCEO 2009). The scale of relocation is unrivaled by similar projects (Cernea 1993). The impact of forced relocation resulting from the project is expected to be tremendous.

Evidence from past relocation efforts in China and elsewhere have shown that project-induced resettlement is usually associated with long-lasting negative effects (Cernea 1997; Jing 2000). Most resettlements around the world have sent the livelihoods of the displaced into a downward economic trajectory (McCully 1996). Many farmers become landless and homeless, and urban workers become jobless. Aside from their economic impact, relocation processes also create tension in family relationships and tear apart resettlers' social networks (Cernea 1997). The extant empirical studies focusing on Three Gorges resettlers have documented many negative relocation outcomes (Heggelund 2004; Li and Rees 2000; Liu and Lei 1999; Qi 1998; Xi and Feng 2001; Yie and Lei 2000). For example, a survey of the first group of migrants who were relocated between 1992 and 1994 revealed that about 67 percent of the migrants experienced an income decrease of various degrees (Yie and Lei 2000). In another study, Liu and Lei (1999) found that 80.5 percent of their respondents felt dissatisfied with their financial situation at the relocated places compared to their pre-relocation life, and 29.2 percent felt marginalized socially. Cases of landlessness, joblessness, and homelessness have also been reported by less systematic observations (Human Rights Watch/Asia 1995; Jing 2000; Wu 1998).

High depression levels among the TGP resettlers have also been documented by empirical studies even before actual relocation takes place (Hwang et al. 2007; Xi 2007).

Interestingly, not all resettlers who have gone through the same relocation process have become victims of depression and there was a wide variation in level of depression among resettlers (Hwang et al. 2007; Xi 2007). Although there are many explanations for the observed variation (Pearlin 1989), one of the most carefully examined explanations focuses on individual variations in how they cope with life exigencies. In this paper, we focus on resettlers' coping strategies as a means adopted by them to mitigate the harmful impact of relocation.

3 Coping

According to one dominant view of human behaviors, individuals are agents who make active decisions about their own lives instead of passive victims letting their lives be determined by external forces (Blumer 1969; Mead 1934). When individuals face challenges imposed upon them by powerful forces of either internal or external origin, the agents actively react to such forces in ways aimed to minimize harms and to protect their own well-being (Lazarus and Folkman 1984; Thoits 1994, 2006). Such active reactions on the part of an actor are generally referred to as coping. Following Lazarus and Folkman (1984: 141), coping refers to "cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources".

Coping literature suggests two major types of coping that can reduce stress: problem-focused coping and emotion-focused coping (Ek et al. 2008; Lazarus and Folkman 1984; Thoits 1995). Problem-focused coping are actions aimed at managing the stressful situation or seeking solutions to problems encountered in life. One example is solving conflicts through negotiations (Pearlin and Schooler 1978). This type of coping is more likely when problems are perceived to be controllable. Actors are more likely to initiate problem-focused action when they believe that something constructive can be done on their part to manage and alter a problem (Plexico et al. 2009).

Successful problem-focused coping enables actors to make a stressful life circumstance less stressful and to reaffirm their sense of control, both of which are beneficial to mental health (Turner and William 1992; Thoits 1994). Successful problem-solving actions have been reported to boost mental well-being (Turner and William 1992; Thoits 1994). However, active problem-solving efforts do not necessarily result in desirable outcomes. When failed, such problem-solving attempts can damage rather than benefit the actor's mental well-being (Coyne and Geraldine 1991; Thoits 1994).

Although problem-focused coping enables an actor to directly rectify an adverse circumstance (Heckhausen and Richard 1995), there are times when an adverse situation is out of an individual's control or is impervious to problem solving. Active ameliorative coping would be ineffective under such conditions (Folkman 1984; Heckhausen and Richard 1995; Park and Folkman 1997). Under these circumstances, individual actors may find it more practical to regain emotional homeostasis by controlling the meaning of the stressors instead of trying to change them (Park and Folkman 1997; Pearlin and Schooler 1978; Thoits 1995).

Examples of emotion-focused coping abound. One such example is viewing failures in life as beneficial components of a growth process (Park and Folkman 1997). This kind of defensive denial has been found to be associated with positive adjustment (Holahan and Moos 1987). People are also known to avert a sense of relative deprivation by choosing as their reference group those who are in worse situations compared to themselves (Hwang et al. 2007; Park and Folkman 1997; Pearlin and Schooler 1978). Other strategies to

emotionally cope with a stressor include down playing the personal significance of the stressor or passive resignation to the stressor (Pearlin and Schooler 1978). Porter and Steers (1973) suggest that lowering expectation can be an effective strategy of emotion-focused coping to avoid unmet expectation and frustration. In sum, emotion-focused coping encompasses many different forms. It is among the most commonly used coping strategies when dealing with uncontrollable situations (Pearlin and Schooler 1978).

In general, problem-focused coping strategies have been found to be more effective than emotion-focused ones in psychological adjustment (Dukes and Holland 2003; Heckhausen and Richard 1995). However, problem-focused coping can damage rather than benefit the mental well-being of the actor when it fails to resolve the problem (Coyne and Geraldine 1991; Thoits 1994). On the other hand, although emotion-focused coping has been found to reduce stress in the short term (Hwang et al. 2007), it simply postpones the problems for later (Davey et al. 1995). Thus, emotion-focused coping is generally used when problem-solving efforts fail and its soothing effects might be temporary (Heckhausen and Richard 1995; Park and Folkman 1997; Thoits 2006).

Because the TGP relocation is the result of a planned political decision enforced by the state, resettlers have little control on the relocation process. In addition to its coerced nature, the process is irreversible as the areas they vacate will be permanently submerged by a man-made reservoir. The situation these resettlers are facing is one out of their own control.

Although the central government of China has adopted a new and much praised relocation policy which addresses some of the past blunders in China's numerous relocation efforts (Heggelund 2004; Jing 2000), there are unanticipated challenges in implementing it due to the unprecedented scale of the TGP-induced relocation. As a result, a large proportion of those who have moved were disappointed about their post-relocation circumstances (Heggelund 2004; Jing 2000; Li and Rees 2000; Liu and Lei 1999). Moreover, there is a lack of effective channels which allow dissatisfied resettlers to vent their grievance or to negotiate with local officials who carried out the relocation mission for a fairer treatment (Tian 2009; Wei 1999; Ying 2001). On the contrary, resettlers who appealed for better compensation and those who dared to voice their grievances are often labeled as troublemakers. And their appeals are often ignored or suppressed by the local officials (Ying 2001; Tian 2009; Jing 2000). Although appealing to central government directly is often more effective, reaching high-ranking officials has been proven more difficult as layers of bureaucracy creates formidable barriers. News of local officials who arrested and jailed resettlers in order to stop them from reaching the higher-level government agencies abound (Ying 2001).

Clearly, the resettlers in China's Three Gorges are facing a situation that is beyond their control. Previous studies suggested that problem-focused coping is generally ineffective when dealing with uncontrollable circumstances. Unsuccessful problem-solving efforts are not only ineffective in mitigating stress, but can have the opposite effect because failed efforts often harm an actor's self-concept and sense of control. When resettlers perceive that they are facing a conundrum that is unchangeable by their own actions, they are more likely to address the problem by one form or another of emotion-focused coping. For example, some TGP resettlers glorified their personal sacrifices by emphasizing the dam's collective benefits for the region and the nation; others justified their sufferings as worthwhile because the dam would promise a better future for the younger generation (Xi et al. 2007). Another emotion-focused coping strategy is comparing oneself with an inferior reference group, a strategy which has been adopted by TGP resettlers to cope with relocation stress (Hwang et al. 2007).

4 Coping and Sense of Control

Coping and psychosocial resources are considered two different types of mediators linking stressors and mental distress in the stress process literature (Pearlin 1989). While coping represents an active response to stressors, psychosocial resources insulate individuals from the harm of stressors. One psychosocial resource which has been given much attention is sense of control. It has not only been demonstrated to reduce distress (Kessler et al. 1988; Mirowsky and Ross 1990; Pearlin et al. 1981; Rodin 1986; Rosenfield 1989; Thoits 1995; Turner and Lloyd 1999), but has also been considered to be one of the most important personal resources because it influences one's ability to manage life's challenges (Turner 1988). Traumatic events or powerful external forces which disrupt individuals' lives however, can weaken one's sense of control (Park and Folkman 1997).

Research shows that it is natural for individuals to attempt to restore their sense of control when it is weakened by powerful events (Heckhausen and Richard 1995; Park and Folkman 1997; Thompson et al. 1993; Thoits 1994). Both problem-focused coping and emotion-focused coping have been found useful in boosting a person's sense of control. Sometimes, simply taking problem-focused action would empower people and strengthen their sense of control (Thoits 1994). Because problem-solving outcomes signal one's competence, successful problem-solving should be a stronger booster of sense of control. Unsuccessful problem-solving attempts, on the other hand, remind actors of their inability and incompetence, which harms their sense of control (Heckhausen and Richard 1995; Seligman 1975; Thoits 1994).

Emotion focused coping, such as shifting ones' focus from things that cannot be controlled to things that might, should be beneficial to one's sense of control. Attributing the cause of an uncontrollable event to God or powerful others is one such example (Park and Folkman 1997). Other examples include making a downward social comparison to give the actor a sense of controllability (Heckhausen and Richard 1995). Thus, different forms of coping can be seen as alternative strategies by which individuals in stressful situations restore their sense of control. Because sense of control protects people's mental health, the coping strategies which can better enhance a person's sense of control should also be a more effective strategy in protecting his/her mental well-being. This discussion, together with our preceding characterization of the Three Gorges population relocation, lead us to predict that emotion-focused coping would be a more effective strategy than problem-focused coping in reducing the level of relocation-induced depression among the Three Gorges resettlers.

Although deliberate actions taken by people in stressful situations have been known to reduce distress, past studies of population relocation in China's Three Gorges have focused mainly on government behavior with little attention to what individual resettlers can do on their own behalf. We highlight coping as a potential way to fight relocation-induced stress in this study. Specifically, we would test the hypotheses that given the nature of the Three Gorges population relocation discussed earlier, emotion-focused coping should be more effective in reducing relocation stress among resettlers than problem-focused coping. Emotion focused coping would protect resettlers from mental distress not only directly but also indirectly by enhancing their sense of control. Problem-solving coping, on the other hand, is unlikely to be effective because the Chinese state suppresses grassroots' actions which challenge authorities. As such, such efforts might have the counterproductive effect of elevating depression by dampening one's sense of control.

5 Data and Methods

Data used in this study come from a prospective panel study including a pre-relocation, and a post-relocation, survey spaced 3 years apart. The TGP relocation provides a natural experiment-like research condition for relocation studies. The construction of the dam and the reservoir requires the relocation of all those who are in the way on a non-selective basis. This allows us to measure relocation consequences free of confounding selectivity. In addition, the TGP migration as a scheduled event permits us to conduct pre- and post-relocation surveys. As a result, we can assess changes of mental distress from pre- to post-relocation using prospective rather than retrospective measures.

The original study consists of 975 designated migrants and 555 non-migrants recruited from five communities—three rural and two urban communities—randomly selected from two strata of communities in the Wanxian Relocation and Development Region (WRDR) where 80% of designated movers resided (Weng 1999). We selected households from the selected communities by conducting censuses in three small communities and systematic sampling in the two larger ones. Face-to-face interviews with a household member aged 16 years or older were conducted in late 2002 and early 2003 by 29 sociology graduate students from two Chinese universities. The survey had a response rate of 99%. A follow-up survey was conducted in early 2006. We successfully traced and interviewed 1,056 subjects, with a success rate of about 70 percent. Among those who were successfully traced, 350 respondents were non-migrants, 286 were designated migrants but hadn't moved,[1] and 420 were designated migrants who had moved. This study focused on 420 resettlers whom we were able to trace successfully. The exclusion of non-migrants was necessary because relocation related coping was not relevant to them. The designated migrants who hadn't moved by the time of the follow-up survey were also excluded for the same reason.

To address possible biases that might result from the attrition, we conducted a sensitivity analysis by regressing a dummy dependent variable, which indicates whether a respondent captured in wave 1 was missed in wave 2, on six socio-demographic variables (migration status, gender, age, urban/rural residence, education, household income) measured at time 1 using a linear probability model. The results (not shown) indicated that only two of these factors (i.e., migration status and urban/rural residence) have a significant effect on attrition, with migrants and urban residents being more likely to be missed in the follow-up survey. To correct the possible implications of attrition, we computed the *hazard rate* of attrition, which is equal to the predicted probability of exclusion, minus 1, and included the hazard rate as a selection bias correction factor in our main analysis (Beck 1983).

5.1 Outcome Measure

Our relocation outcome of interest is depression, which is indicated by the 20-item CES-D scale (Radloff 1977). While mental distress manifests itself in many forms, depression symptoms are the most common ones (Turner and Lloyd 1999; Kessler et al. 1994). The CES-D scale is a survey-based measure of depression which has known psychometric attributes and well-established reliability and validity (Vega and Ruben 1991). The scale asks respondents if they have experienced any depressive symptoms from a list of 20

[1] Because the timing of relocation was determined by altitude of the location, those yet-to-be moved resettlers generally resided in a location with higher elevations.

during the past week. The same scale was used in both pre-migration ($\alpha = .87$) and post-migration survey ($\alpha = .89$). Although cross-cultural application of the CES-D has aroused concerns in the past, empirical evidence shows that the scale is appropriate for samples with different cultural backgrounds (Beiser 1999; Lai 1995; Lin 1989; Noh and Avison 1996; Vega and Ruben 1991). To capture the amount of depression elevated by the involuntary relocation, we focus on *changes in depression* from time 1 to time 2 as our dependent variable in the analysis. When subtracting pre-relocation depression scores from post-relocation depression scores, each individual serves as his or her own control, an effective way to rule out pre-relocation variation across respondents as a factor of their post-relocation differences (Allison 1990, 2005; Firebaugh and Frank 1994).

5.2 Coping

Problem-focused coping will be captured by two indicators: *Bargaining for more compensation and seeking relocation-related information.* Bargaining for more compensation was measured at time 2 by asking the respondents if they had ever bargained/appealed with local officials for more compensation. Responses were coded 1 for yes; 0 for no. *Seeking information* related to relocation was measured at time 2. We asked respondents if they have sought information related to (1) types of compensation they were qualified to receive; (2) levels of compensation; (3) working and living conditions at various resettlement destinations and (4) experiences of past resettlers. Responses were coded 1 for yes, 0 for no for each item. The sum of the 4 items yields a quantitative measure of seeking information.

Emotion-focused coping was measured using three indicators: *positive comparison, compliance, and expecting the worst*. Positive comparison (Pearlin 1989) is a subjective evaluation by the respondent that he or she is better off relative to others he or she knows. We used a four-item scale to measure re-settler's downward positive comparison: "Compared to those who you know, would you say that you are (a) much worse (b) somewhat worse (c) about the same (d) somewhat better, or (e) much better in terms of (1) income; (2) occupation; (3) social prestige; and (4) social connections (*guanxi*)?" Responses to the four questions were summed to form a scale with scores ranging from -4 to 20. The scale had a Cronbach's alpha of 0.79 and 0.81 for the first and second survey, respectively. *Changes in positive comparison* from time 1 to time 2 was used in the analysis. *Compliance* was measured at time 2 by the question: "Do you think that you have an obligation to comply with the government's relocation order?" Responses were coded 1 for yes, and 0 for no. Finally, we considered *expecting the worst* as a strategy for emotion-focused coping. It was measured by asking respondents before relocation whether or not they expected (1) less than adequate compensation; (2) the worsening of their economic condition; (3) the inability of the government to keep its promises; (4) harm to their family; (5) little or no benefit to their family; (6) no benefit to the region. For each question, responses were coded 1 for yes, and 0 for no. The sum of the 6 items yielded a count measure.

5.3 Sense of Control

Sense of control was measured at both waves 1 and 2 using Pearlin and Schooler's (1978) seven-item mastery scale. The first- and second-wave Cronbach's α for the mastery scale were 0.74 and 0.78, respectively. We used *changes in sense of control* from time 1 to time 2 in the analysis.

In addition to sense of control as a coping resource, we also include the *changes in social support* from time 1 to time 2 as a control variable. We measured social support using Lin et al.'s (1999) scale of perceived routine support. The ten-item scale measures social support subjectively perceived by resettlers. The first- and second-wave Cronbach's α of the scale were 0.83 and 0.88, respectively.

Several socio-demographic variables were used as controls. They include *gender* (1 for female and 0 for male); *education* measured in years of school completed at time 1; *age* measured in years at time 1. We also controlled for respondent's residence (1 for urban and 0 for rural) given the well documented divide between rural and urban China (Bian and John 1996. Finally, we controlled for *time since relocation* because of its possible association with both our dependent and independent variables.

Regression analyses were used to test the effects of problem-focused coping and emotion-focused coping on depression. To test the mediating role of sense of control, we followed the conventional method suggested by Baron and David (1986). We used a "difference model" (Firebaugh and Frank 1994) in our regression analysis.[2] One major advantage of a difference model over other alternatives commonly used to analyze panel data is that exogenous variables which affect depression but do not vary from time 1 to time 2 need not be included in the model (Firebaugh 2008). This feature enables researchers to specify models more economically while greatly reducing specification errors. Allison (1994) also points out that in non-experimental data, the change-score estimator is nearly always preferable for estimating the effects of events because it automatically controls for all constant, unobserved differences between individuals, regardless of whether or not those differences are associated with the likelihood of event occurrence.[3]

6 Results

Table 1 reports the descriptive statistics of our sample and our dependent variable. The mean pre-relocation depression (CES-D) score was 21.94, and the post-relocation score was 26.25, a 4.31 point increase. The difference was statistically significant. In the depression literature, a CES-D score of 16 or above has been considered as clinically depressed in Western society (Radloff 1977). Compared to this standard, TGP resettlers were suffering a high level of distress even before the relocation took place (Hwang et al. 2007). The involuntary relocation further elevated resettlers' depression level by 20 percent. To rule out the possibility that the observed over-time changes in depression might actually be coursed by some other macro-level conditions or historical events in China during the study period, we conducted a sensitivity analysis comparing over-time changes in depression among resettlers (4.31; $p < .0001$), non-movers (1.02; $p = 0.18$), and designated movers who have yet to be moved (0.56; $p = 0.52$). Non-movers and those who have yet to be moved did not report a significant increase in depressive symptoms during

[2] Because some variables were only relevant either at time 1 or at time 2, not every variable in the model was measured as a difference score. However, difference scores were used whenever available because of their methodological advantages (Allison 1990, 1994).

[3] We need to point out that the difference model is not useful for estimating the effects of observed time invariant variables. Assuming the effects of time-invariant variables, such as gender, age, education, are stable between time 1 and time 2, they dropped off the model when taking the differences from time 1 to time 2. This is not a problem of this study, however, because we focused on changes and how individuals cope with changes. Age is treated as time-invariant because the change is a constant (3 years) for every respondent.

Table 1 Means and proportions at pre- and post-relocation for dependent variable and demographic variables ($n = 420$)

	Pre-relocation		Post-relocation		Changes
	Mean/proportion	SD	Mean/proportion	SD	
Dependent variable					
Depression	21.94	(10.25)	26.25	(10.21)	4.31***
Demographic variables and controls					
Age at time 1	46.17	(13.41)			
Female	0.50	(0.50)			
Education	6.44	(3.89)			
Urban residents at time 1	0.39	(0.49)			
Time since relocation	22.14	(11.77)			

*** $p < .001$

the study period. The difference between the movers and others was highly significant. The sensitivity analysis lent support to the interpretation of changes in depression from time 1 to time 2 as depression induced by relocation.

Fifty percent of our respondents are female, and the sample has an average age of 46 years. The average education level was 6.4 years. The apparent overrepresentation of older and less educated respondents reflects the reality that the region is one of China's major exporters of migrant workers—a special population that typically are younger and more educated than those who are left behind (Solinger 1999). About 39% of the respondents were urban residents and 61% are rural residents at time 1. The amount of time an average resettler has lived in their new home is 22 months.

Table 2 reports descriptive statistics for the coping and resource variables used in the analysis. With regard to problem-focused coping, 40% of the respondents had attempted to bargain with or to appeal to local officials for more compensation. Although our preliminary analyses indicated that 90 percent of the respondents believed that the compensation they received was inadequate, a majority of them did not fight for their interest. This is consistent with our expectation that when resettlers perceive that any such efforts would be futile, they are less likely to even try.

It is also uncommon for these resettlers to actively seek information related to relocation. About 37% had tried to get information on types and levels of compensation available. Forty-four percent of the respondents had tried to get information related to work and living conditions at relocation places and experiences of past resettlers. Forty-five percent of respondents had never sought any of the aforementioned information. In other words, close to half of our respondents passively relied on the government's arrangement instead of actively doing something that could potentially benefit them.

With regard to emotion-focused coping, a majority of resettlers (87.86) expected the worst to result from the relocation in at least one of the six listed aspects of their livelihood as a way to preempt disappointment resulting from unmet expectations (Porter and Steers 1973).[4] When asked to compare themselves with people they know, resettlers were less

[4] In another study on the Three Gorges resettlers using the same sample, we found that about two thirds of respondents also expected some benefits from the relocation. This revealed that resettlers' perception of the relocation was mixed. Many expected benefits at one aspect and at the same time planning for the worst for another aspect of their post-relocation livelihood.

Table 2 Descriptive statistics for pre- and post-relocation measures for coping and resource ($n = 420$)

	Pre-relocation		Post-relocation		Range	Changes	% Used
	Mean/ proportion	SD	Mean/ proportion	SD			
Coping: problem-focused							
Bargaining for more compensation			0.40	(0.49)	0–1		40.00
Seeking information			1.63	(1.69)	0–4		
Compensation types							*37.11*
Compensation levels							*37.11*
Working and living conditions at resettlement destinations							*44.31*
Experiences of past resettlers							*44.69*
Any one of the above							55.09
Coping: emotion-focused							
Expecting the worst	2.83	(1.89)			0–6		87.86
Positive comparison	10.64	(2.90)	10.28	(2.37)	3–17	−0.36*	34.29
Compliance			0.96	(0.20)	0–1		95.95
Resources							
Sense of control	21.40	(4.78)	19.98	(4.60)	11–32	−1.42***	
Perceived social support	32.77	(0.75)	32.31	(0.82)	5–40	−0.46	

*** $p < .001$; * $p < .05$

positive after relocation than they were before relocation. Finally, almost all respondents coped with the relocation by passively complying with the government's relocation order (96%). With regard to protective resources, the forced relocation significantly weakened resettlers' sense of control, as expected. There was no significant change in perceived social support from time 1 to time 2.

Table 3 provides an answer to the question: which coping strategies are more effective in reducing distress? Three of the five coping measures in Model 1 significantly affected depression. Among the two problem-focused coping variables, only bargaining for more compensation is statistically significant. Ironically, bargaining for more compensation elevated rather than reduced depression. A logical explanation for the counterintuitive finding is because 94 percent of those who have tried this mode of coping were disappointed by the futility of their efforts (results from our preliminary analysis, not shown in the tables). Although the majority of the respondents (60%) didn't bargain for more compensation, those who did ended up getting more depressed.

Among the three emotion-focused coping variables, expecting the worst and positive comparison were both statistically significant. In preliminary analysis, we found that those who planned for the worst before relocation also were more likely to take other coping measures to avoid the worst outcomes. They were more likely to bargain for more compensation and seek relocation-related information. It seemed that mental preparation for the bad relocation outcomes significantly reduced depression. Our preliminary analysis also indicated that compliant resettlers were less depressed than those who resisted the relocation order. They were more likely to acquiesce with the government's propaganda about the project's benefits for the country (Li et al. 2001). However, the protective effects

Table 3 OLS regression analysis of TGP relocation-related depression using difference model ($n = 420$)

	Model 1		Model 2		Model 3	
	Coef.	Beta	Coef.	Beta	Coef.	Beta
Intercept	15.44*		9.4		12.36†	
Coping: problem-focused						
Bargaining for more compensation	3.32**	0.14	2.12*	0.09	2.09*	0.09
Seeking information	−0.11	−0.02	0.10	0.01	0.15	0.02
Coping: emotion-focused						
Changes in positive comparison	−0.98***	−0.26	−0.57***	−0.15	−0.58***	−0.15
Compliance	−4.63	−0.07	−4.82†	−0.08	−4.94†	−0.08
Expecting the worst	−1.29***	−0.19	−0.88***	−0.13	−0.95**	−0.14
Sense of control						
Changes in sense of control			−0.86***	−0.44	−0.82***	−0.43
Control variables						
Changes in social support					−0.04	−0.03
Time since relocation					−0.05	−0.05
Hazard	6.65		0.66		4.01	
R^2	0.13		0.31		0.32	

*** $p < .001$; ** $p < .01$; * $p < .05$; † $p < .10$

of compliance became marginally significant ($p = 0.11$) after controlling for other coping variables. Among those variables that are significant, positive comparison was the most effective coping followed by expecting the worst in terms of standardized measures. Although we included the hazard rate as an attrition bias correction factor in the analysis, it was not significant. The five coping variables explained about 13 percent of the variation in relocation-related depression.

Adding changes in sense of control into the model (Model 2) increased the R^2 from .13 to .31. The protective effect of sense of control was highly significant. Comparing regression coefficients of three significant coping variables in the two models indicated a substantial decrease in their effects: 36.1% reduction for bargaining for more compensation, 41.8% for general positive comparison and 31.8% for expecting for the worst reduction. Of all the significant predictors of depression, sense of control was the strongest one. Controlling for social support and time since relocation in model 3 didn't change the story.[5]

To test the mediating hypothesis, we further examined how coping affects sense of control. The results are reported in Table 4. All three significant predictors of depression we identified in Table 3 also affected sense of control significantly. As expected, bargaining for more compensation hurt resettlers' sense of control because such efforts were almost always futile. On the other hand, the sense of control improved for those resettlers who resorted to positive comparison and those who expected the worst because of the presumed mastery-restoring function of these coping strategies. Controlling for changes in social support and time since relocation didn't change the story. An increase in social support was associated with increased sense of control. The longer the resettlers have adapted to the new life, the more restoration in their sense of control.

[5] Socio-demographic variables such as gender, age, and education did not shown up because they were differenced out form the model (Allison 2005).

Table 4 OLS regression analysis of changes in sense of control using difference model ($n = 420$)

	Model 1		Model 2	
	Coef.	Beta	Coef.	Beta
Intercept	−7.38*		−11.18**	
Coping: problem-focused				
Bargaining for more compensation	−1.25*	−0.10	−1.07†	−0.08
Seeking information	0.20	0.07	0.27	0.07
Coping: emotion-focused				
Changes in positive comparison	0.48***	0.25	0.38***	0.20
Compliance	−0.11	−0.01	−0.28	−0.01
Expecting the worst	0.53**	0.15	0.47**	0.13
Control variables				
Changes in social support			0.06*	0.10
Time since relocation			0.08**	0.15
Hazard	−7.16		−10.09*	
R^2	0.10		0.13	

*** $p < .001$; ** $p < .01$; * $p < .05$; † $p < .10$

Table 4 established the link between coping and sense of control. The link between sense of control and depression was examined in Table 3. The noticeable reduction in the effects of coping on depression after controlling for changes in sense of control (41.8% for positive comparison; 31.8% for expecting the worst; 36.1% for bargaining for more compensation) suggested that much of the effects of coping, no matter if they were mitigating or elevating, were mediated by sense of control (Baron and David 1986). However, the fact that these coping variables remained significant even after controlling for sense of control also supports an interpretation of direct coping effect.

7 Conclusion and Discussion

Although a project-induced relocation is the result of a political decision which is planned and implemented by a state, human agency is still a critical factor that should not be ignored. This study focused on coping strategies resettlers in China's TGP used to combat relocation stress. Our analysis indicated that the TGP resettlers used both problem-focused and emotion-focused coping strategies. While emotion-focused coping strategies were effective in reducing depression, problem-focused coping had a counterproductive effect. Although some resettlers resorted to bargaining to negotiate for a better relocation outcome, such efforts often proved useless. Thus, rather than ameliorating level of distress, bargaining elevated depression by hurting resettlers' sense of control. We also found that frustrated resettlers often turned to emotion-focused coping as an alternative. Such ego-boosting efforts such as downward comparison, lowering expectations, and taking a compliant stance on the other hand, turned out to be more effective in lowering relocation-induced distress by helping respondents to regain their sense of control.

It has been reported that sense of control affects the capability of coping (Aspinwall and Shelley 1997; Maddi 2002; Peterson 2000). Individuals with higher sense of control are more likely to exercise agency (Thoits 1994, 2006). And at the same time, they also are

less likely to be hurt by life exigencies because of the protective function of sense of control. Sense of control, therefore, might work like a self-selection mechanism preceding both coping and mental distress[6] (Thoits 2006). Using change scores in the analysis, we controlled for the variation in pre-relocation sense of control and ruled out related spurious causal effects.

The generalizability of our conclusions, however, is circumscribed by several features of this study. First, our survey instrument only includes a very limited number of coping methods resettlers might potentially have used. Therefore, we may have overlooked coping methods that escaped our attention. Secondly, although relationships among variables such as coping strategies, psychological resources, and distress can potentially be reciprocal and dynamic, we did not explore such possibilities. Thus, we were not able to prove that the assumed time orders among these variables were indeed correct.

Despite these limitations, the findings of this study are consistent with theoretical expectations and our assertion about the importance of agency in combating depression is unlikely to be challenged by a different research design. Our findings regarding the futility of problem-focused coping as a means to combat stress-arousing situations and its counterproductive effects in the unique political setting is important not only to researchers of depression but also to those who plan to do behavioral research in China.

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[6] It is possible that individuals with a greater sense of control are more likely to act to change their circumstances, which in turn reduced their depression. We didn't consider this causal mechanism in the analysis because this paper focused on the relationship between coping and distress instead of the possible interplays between coping and sense of control.

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