3 Risk information sharing

An empirical study on risk perception and depressive symptoms among those displaced by the Three Gorges Project

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Introduction

In the past few decades, there has been a rapid increase in both the number and scale of developmental projects such as dams, highways, and seaports in the developing world. While aiming to improve the infrastructure in the region, they often necessitate the relocation of a large number of people on or near the site of the projects. More often than not, development-induced displacement and resettlement (DIDR) causes temporary or even long-term economic impoverishment of the relocatees and tears apart their social networks (Cernea, 2009; Scudder, 2009). Efforts around the world to minimize such negative effects have emphasized adequate pre-relocation risk evaluation since the awareness of risks is the first step to prevent their realization in a planned process such as DIDR (Cernea, 2000). Inadequate risk perception of planners has been identified as the key reason for past failure in most relocation projects (Cernea, 1996).

DIDR literature largely focuses on planners' evaluation and prevention of risks, mainly, but not exclusively, based on Cernea's Impoverishment Risks and Reconstruction (IRR) model. To date, however, not much attention has been paid to the risk perception of individual relocatees. While risk evaluation on the part of planners shapes relocation policies, risk perception of relocatees affects their actual experiences of the relocation and resettlement process. Theory suggests that adequate risk perception would prepare individuals better for the coming life changes and facilitate adjustment (Slovic, 1987). Failing to fully recognize the risks on the other side would leave individuals unguarded from the hidden dangers (Slovic and Peters, 2006); regardless relocation officials around the world seldom convey risk information to the relocatees or engage them in the policy-making process (Cernea, 1996).

Using the case of the population resettlement induced by the Three Gorges Project (TGP) in China, this study aims to examine how individual relocatees' risk perception affects their relocation outcome, and particularly its impacts on their mental health. This study speaks to a critical tension in DIDR that although planners are equipped with tools for risk evaluation, affected people have been constantly excluded from this information and thus have been poorly aware of the potential risks. The study would also contribute to the relocation literature by empirically testing the prediction of the risk perception theory that states relocatees' pre-relocation risk perception is beneficial to their relocation outcome.

Background

In 1994, China began the construction of the TGP, the world's largest hydroelectric project located in the mid-section of China's Yangtze River. When completed in 2009, the TGP generated a reservoir of about 1,045 km^2 in a mountainous area. As a result, between 1992 and 2008, 1.27 million people, who lived less than 175 meters above sea level, were relocated (SCGPCCEO, 2009).

Past relocation efforts in China and around the world have led to startling negative outcomes (Billig et al., 2006). In the 1990s, recognizing the catastrophic relocation outcomes as a global pattern across developmental projects, the World Bank commissioned a study from which an IRR model emerged as a guideline for resettlement planners to diagnose, predict, and prevent relocation risks (Cernea, 1997). The basic idea of the IRR model is that catastrophic relocation results are avoidable if potential relocation risks are carefully evaluated ahead of time and counteractive measures are employed to prevent them. Based on global evidence, the IRR model identifies eight commonly found, interrelated relocation risks: landlessness, joblessness, homelessness, marginalization, morbidity, food insecurity, loss of access to common property, and social disarticulation (Cernea, 1997).

Although the IRR model was not explicitly referenced, the TGP planners followed a similar logic to avoid many risks evident in China's past relocation experiences (Heggelund, 2004). The Chinese government adopted a new development-oriented relocation policy (State Council, 1991), which mandated the state to build infrastructure and create conditions for the re-establishment and development of relocatees' livelihood in the post-relocation phase (Duan and Steil, 2003). For example, the State Council has earmarked 40 billion Yuan (US$4.8 billion) investment for the resettlement of the TGP-affected people, which accounts for about 45 percent of the total cost for the whole project (Wang, 2002). Resettlement areas were allowed to "share benefits" of the dam project by receiving a portion of the profits earned from power generation as development funds (State Council, 2001; Cernea, 2009). Farmers were promised to receive new land comparable to that of their former land or otherwise a non-farm job would be arranged for them. The TGP resettlement policy was praised by the World Bank as a model for other developing countries (Bartolome et al., 2000) and planners of the TGP confidently asserted that the resettlement was a development opportunity for the relocated (Wang, 2002).

However, the planned risk-mitigating policies generally assume ideal circumstances whereas they often do not operate as expected in the complex real world (Clarke, 2008; de Wet, 2009). This was true for the TGP relocation in that many mitigating efforts turned out to be ineffective and there were risks that had not even been identified. The submerging of mostly fertile farmland down in the basins forced farmers to move uphill and farm on steep infertile slopes, which

led to serious soil run-off and deterioration within the environment. The rising water level caused unexpected landslides, making many places uninhabitable (BBC Chinese Web, 2010). Since 1979, China's economic system had undergone a profound transformation from a planned economy to a market-driven one. Consequently, the government failed to estimate the number of non-farm jobs needed in the region for farmers who have been ousted from their lands and many displaced individuals became landless and jobless, and were forced to survive on meager government allowances (BBC Chinese Web, 2010). In addition, there were many other documented problems such as delays in delivering compensation, improper usage or outright embezzlement of relocation funds, and poor coordination among many layers of local bureaucracies (Tanner, 2005). Such problems effectively hindered the government's efforts to mitigate impoverishment risks.

It has been argued that when institutions have formally evaluated risks and adopted mitigating measures in their planning process, these measures can form a sense of security that may actually be false (Clarke, 2008). The TGP relocation planners developed such sense of security, which was then conveyed to relocatees through intensive propaganda (Heggelund, 2004). Risks and uncertainties were not well discussed and warning messages were not conveyed to the affected population (Wei, 1999; Li et al., 2001). The overwhelming excitement around development-oriented relocation was consistent with the relocatees' hope for a better life. As a result, TGP relocatees were found repeatedly in previous pre-relocation studies to hold a very positive attitude toward the project and relocation (Li, 1996; Ding, 1998). Many relocatees did not pre-perceive any risks and held high expectations of post-relocation life (Li et al., 2001).

Risk perception and the TGP relocation

Risk perception, or the subjective perception of potential risks, is considered fundamental to the survival of human beings as risks can be averted only when they are perceived in advance (Slovic, 1987). Empirical studies in the fields of health behavior, traffic accidents, financial investments, and environmental hazards have demonstrated that increased risk perception prompts both decreased risk-taking behavior and increased risk-reduction efforts and risk-mitigation measures (Slovic et al., 1981; Brewer et al., 2007; Vidrine et al., 2007; McGee et al., 2009). With respect to DIDR, it is believed that an adequate risk perception facilitates an anticipatory socialization and prepares relocatees for the upcoming life changes (Scudder and Colson, 1982). Moreover, when properly mobilized, relocatees can contribute to a successful resettlement not only by taking energetic actions in reconstructing their own livelihood (Cernea, 1997), but also by exploring and negotiating alternatives in relocation arrangement when the original one does not work out (de Wet, 2006). In this way, the relocation process becomes more flexible and adapts to the changing social, economic, and ecological environment (de Wet, 2006).

However, in reality, planners seldom provide adequate information on potential risks to relocatees (Goodland, 2004). Populations to be relocated are usually considered as obstacles to developmental projects rather than participants who

can make great contribution to the success of these projects (Li et al., 2001) and should actually benefit from the project as much as others. To gain their cooperation in moving out of the affected area, government officials tend to exaggerate the potential benefits while only briefly mentioning potential risks (Xi and Hwang, 2011). Officials usually withhold risk information, arguing that exposing relocatees to risk information would only increase their resistance to the relocation plan. Past studies usually focus on planners' evaluation of relocation risks, leaving individual relocatees' perception of relocation risks and its effects on their relocation outcomes largely unstudied.

Research question and hypotheses

Recognizing the gap, this study aims to empirically examine the relationship between relocatees' risk perception and relocation outcome, with a particular focus on mental health. As mental distress is associated with wide ranging social consequences, including impaired performance in many different social roles, it has been considered as an important indicator of relocation outcome (Porter and Haslam, 2005).

With its emphasis on policy making, the relocation literature has not yet developed substantive discussions on the mechanisms in which individual relocatees exercise their agency to improve their relocation and resettlement outcome. The stress process model, which has been frequently used by sociologists and social psychologists to study mental health issues, provides great insights into understanding how individual relocatees manage their circumstances and mitigate relocation-related risks upon perception. Substantiated by numerous empirical evidences, the stress process model proposes that social and psychological resources such as social support, sense of control, and self-esteem are protective resources that individuals often draw upon to battle life challenges (Thoits, 2006). These resources would cushion individuals from harsh situations. They would also intervene in the causal link between a stressor and mental distress (Lin and Ensel, 1989).

A key insight from the stress process model is that resources and coping could be mobilized only when the situation is perceived as challenging (Lazarus and Folkman, 1984). Thus, a lack of risk perception among relocatees may lead to fewer intervention efforts and when faced with unprepared challenges, frustrated relocatees are more likely to respond with depression. On the contrary, adequate risk perception at a pre-relocation stage may lead affected people to mobilize resources and evoke coping efforts that eventually reduce the stressfulness of the actual relocation. Guided by risk perception theories and the stress process model, we hypothesize that the TGP relocatees who perceive little or no risks would suffer more from relocation-induced distress. Risk perception is postulated to affect relocatees' mental health both directly and indirectly. A process is anticipated whereby high risk perception triggers relocatees to make mitigating efforts to combat the risks by mobilizing social and personal resources and therefore preempts or reduces resettlement-related stress.

Research methods: data collection and analysis

Data

Data used in this study come from a prospective panel study involving both pre-relocation and post-relocation interviews conducted three years apart. The original study consists of 975 designated relocatees and 555 non-movers recruited from five communities (clusters) randomly selected from Wanxian Relocation and Development Region (WRDR) which was formerly a part of the Sichuan Province where 80 percent of designated migrants resided (Weng, 1999). First, we randomly selected three rural and two urban communities from two strata of communities in the region. Second, we selected households from the selected communities by conducting censuses in three small communities and utilizing systematic sampling in the two larger ones. Face-to-face interviews were conducted with a household member aged 16 years or older in late 2002 and early 2003 by 29 sociology graduate students from two Chinese universities. A follow-up survey was conducted in early 2006, in which we successfully traced and interviewed 1,056 subjects—a success rate of about 70 percent. Among those who were successfully traced, 420 had been relocated, 286 had not yet moved, and 350 were non-movers whose houses were above the future water line.

This study did not use the whole sample of the original study, but rather focused on the 420 relocated respondents to whom relocation outcome and coping measures were relevant. Among them, 50 percent were female. Thirty-nine percent of the respondents were urban residents and 61 percent were rural residents. A typical sample respondent was 46 years old with a little more than six years of education. Finally, the relocatees have been relocated for an average time of 22 months (cf. range from 1 to 36 months).

To address possible biases that might result from the attrition, we conducted a sensitivity analysis and found that urban residents were more likely to be missed in the follow-up survey. To correct the possible implications of the attrition, we computed the hazard rate of attrition, which was equal to the predicted probability of exclusion, minus one (Beck, 1983), and included the hazard rate as *an attrition correction factor* in our main analysis.

Measurement

Depressive symptom was measured by the 20-item CES-D scale (Radloff, 1977). The scale asked respondents whether they had experienced any depressive symptoms from a list of 20 items during the past week. The same scale was used in both pre-migration (the reliability coefficient $\alpha = .87$, indicating high internal consistency among the items) and post-migration surveys ($\alpha = .89$). We focused on changes in depressive symptoms from time one to time two as our dependent variable in regression analysis. Subtracting the pre-relocation CES-D scores from the post-relocation CES-D scores, each respondent served as his/her own control and thus automatically ruled out the pre-existing differences in CES-D among respondents. It thus captured the amount of depressive symptoms elevated by the forced relocation.

To rule out the possibility that the observed over-time changes in depressive symptoms might actually be caused by some other macro-level conditions or historical events in China during the three-year study period, we conducted a sensitivity analysis comparing over-time changes in depressive symptoms among relocatees, non-movers, and designated movers who were yet to be moved. Only relocatees reported a significant elevation of depressive symptoms during the study period (4.31; $p<.0001$), while non-movers (1.02; $p=0.18$) and those who were yet to be moved (0.56; $p=0.52$) did not report increased depressive symptoms. The difference between the movers and others was statistically significant. The sensitivity analysis lent support to interpreting changes in depressive symptoms from time one to time two as induced by relocation.

Risk perception was measured during the *pre-relocation* survey by asking respondents whether or not they had perceived the following relocation-related risks: (1) property loss; (2) income loss; (3) forced to convert to a new livelihood; (4) worsening of housing conditions; (5) severing ties with relatives; (6) inability to get along with new neighbors; and (7) other risks. Responses were coded 1 for yes, and 0 for no and the sum of the seven items yielded a count measure.

Social support was measured by asking respondents whether or not they had talked to or contacted any of the following individuals with whom they do not share a residence: (1) parents; (2) adult children; (3) siblings; (4) other relatives; (5) good friends; (6) neighbors; (7) colleagues; (8) local cadres; and (9) other significant others during the past 30 days. The sum of the nine items yielded a count measure. In this study, we focused on changes of social connection from time one to time two to measure social support mobilized by perceived risks.

Sense of control was measured by Pearlin's (1989) mastery scale. The first- and second-wave reliability coefficients for the mastery scale were 0.74 and 0.78, respectively. *Self-esteem* was measured by the well-known scale developed by Rosenberg (1965). The first- and second-wave reliability coefficients for this scale were 0.77 and 0.78, respectively. As in the case of social support, we focused on changes in these psychological resources from time one to time two.

Finally, we used a positive comparison scale (Pearlin, 1989) to capture the effects of *positive coping*. Respondents were asked: "Compared to those whom 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 reliability coefficient of 0.79 and 0.81 respectively for the first and second waves, respectively. The difference between the time one and time two measures was used in the analysis.

Analytic strategy

The panel data were analyzed in this study by a difference regression model in which change scores were used whenever available. Using difference scores, the model focuses on the within-individual variations over time and automatically

controls for pre-existing, cross-individual differences in measured variables and unmeasured time-invariant variables (Allison, 2005). This feature enables researchers to specify models more economically while greatly reducing specification errors. For example, many stable personality traits such as optimism and pessimism might be associated with both the levels of risk perception and depressive symptoms (David et al., 2006). They were differenced out of the model and thus controlled for automatically. Therefore, the change score estimator is nearly always preferable in non-experimental studies (Allison, 2005).

Results

Table 3.1 reports descriptive statistics of key variables measured from pre- and post-relocation surveys. Based on observations among Western populations, the mental health literature has identified a CES-D score of 16 as the cut-off point for a clinically significant level of depressive symptoms (Radloff, 1977). If this holds for the Chinese population, our sample on average had a very high level of depressive symptoms even before the relocation took place. The stress associated with the anticipation of an impending relocation might explain the high pre-relocation CES-D score (Hwang et al., 2007). Moreover, at the time of our pre-relocation survey, the Three Gorges area has already undergone great changes. This includes the construction of the dam, the preparation work for the reservoir, and the fact that many residents whose houses were at the lower grounds were moving or had already moved out. The changes in respondents' living environment along with the anticipation of their own relocation would both contribute to the high levels of depressive symptoms reported at the pre-relocation survey. While the anticipation of an impending relocation could be stressful, the relocation itself further elevated the average CES-D score significantly. There was a 4.3 increase in mean CES-D score from the pre- to post-relocation survey. On the other hand, the respondents, on average, reported less than 1 risk, which was surprisingly low. While there was no significant change in social support from the pre- to post-relocation survey, the changes in psychological resources were significant and negative. It seemed that the relocation took tolls on respondents' sense of control, self-esteem, and their capability to use positive coping to balance their emotion.

Breaking down the whole sample into two risk perception groups, there were 200 respondents (47 percent) who perceived one or more relocation-related risks and 220 respondents (53 percent) who failed to perceive any relocation-related risk before the relocation. Table 3.2 compares descriptive statistics between two risk perception groups regarding the changes in the dependent and independent variables from time one to time two. Although both groups demonstrated an increase in their symptoms of depression from time one to time two, the average amount of increase for the no risk perception group (6.21) was much larger than the corresponding measure for the group that perceived some risks (2.34). The difference between the two change scores was highly significant.

Table 3.1 Means and proportions at pre- and post-relocation survey for key variables (n=420)

	Pre-relocation		*Post-relocation*			
	Mean/proportion	*SD*	*Mean/proportion*	*SD*	*Changes*	
Depressive symptom	21.94	(10.25)	26.25	(10.21)	4.31	***
Risk perception	0.90	(1.11)				
Social support	3.55	(1.43)	3.69	(1.58)	0.14	
Sense of control	21.40	(4.78)	19.98	(4.60)	−1.42	***
Self-esteem	35.45	(5.27)	34.78	(4.51)	−0.67	*
Positive coping	10.64	(2.90)	10.28	(2.37)	−0.36	*
Time since relocation			22.14	(11.77)		

Note: *** p<.001; * p<.05.

Table 3.2 Comparing changes in key indicators before and after relocation

Changes in key indicators before and after relocation	*Respondents who have initially perceived some risks (n=200)*		*Respondents who have not perceived any risks (n=220)*			
	Mean	*SD*	*Mean*	*SD*	*Differences*	
Changes in depressive symptoms	2.34	(11.47)	6.21	(11.83)	−3.87	***
Changes in social support	0.19	(2.02)	0.09	(1.96)	0.10	
Changes in sense of control	−0.73	(6.23)	−2.06	(5.91)	1.33	*
Changes in self-esteem	−0.35	(5.73)	−0.99	(6.16)	0.64	
Changes in positive coping	0.03	(3.19)	−0.70	(3.08)	0.73	*

Note: *** p<.001; * p<.05.

As predicted by the risk perception theory and the stress process model, Table 3.2 indicates that risk perception did result in respondents mobilizing resources and coping. The two risk perception groups had different change scores on resources and coping measures. Although the forced relocation process damaged relocatees' sense of control and self-esteem in general, vigilant relocatees were affected to a much lesser degree. This is consistent with the stress process literature, which claims that individuals can restore their sense of control when facing a life stressor by actively managing their situation and initiating mitigation efforts (Thoits, 1994). Finally, the no risk perception group experienced a decrease in positive coping while those who did anticipate risks reported an increase, which indicated that vigilant relocatees were more active in managing their emotions. These results supported our hypothesis that the lack of risk perception is associated with higher levels of relocation-related depressive symptoms while risk perception enables relocatees to activate or restore more protective resources and evoke more coping.

Table 3.3 presents the results of a regression analysis using the difference model. Model 1 focuses on differences in change scores of depressive symptoms across levels of risk perception. The regression coefficient indicates that for each additional risk perceived before the relocation takes place, there was a 1.79 point decrease in the elevation of depressive symptoms during the study period. Although we included an attrition bias correction factor in the analysis (Beck, 1983), it was not significant. In other words, there was no evidence to suggest that the attrition of respondents caused bias in the model.

Table 3.3 OLS regression analysis of TGP relocation-related depressive symptoms using difference model (n=420)

	Model 1			*Model 2*		
	Coef.		*Beta*	*Coef.*		*Beta*
Risk perception	−1.79	***	−0.17	−1.16	*	−0.11
Changes in social support				−0.66	*	−0.11
Changes in sense of control				−0.82	***	−0.43
Changes in self-esteem				−0.20	*	−0.10
Changes in positive coping				−0.54	***	−0.14
Time since relocation				−0.08		−0.08
Constant	10.22	**		7.78	**	
Attrition correction factor	−7.64			−3.68		
Adjust R^2	0.03			0.33		

Note: *** p<.001; ** p<.01; * p<.05.

To test the mediation hypothesis, we added change scores in resources and coping into the model. The mediation hypothesis would be supported if the coefficients associated with risk perception observed earlier were reduced when changes in resources and coping were controlled (Baron and Kenny, 1986). Model 2 shows that although the effect of risk perception was still significant, the controlling reduced its magnitude from −1.79 to −1.16 (a 35 percent reduction). This indicates that about 35 percent of the protective effect of risk perception on depressive symptoms functioned through its effect on resources and coping (Baron and Kenny, 1986). Consistent with previous studies, social support, sense of control, self-esteem, and positive comparison were effective factors that protect relocatees from suffering relocation-related depressive symptoms (Pearlin, 1989). Although simple, Model 2 was efficient because it automatically controlled for all measured or unmeasured time-invariant variables such as gender, age, education, and many stable personality traits that were associated with both risk perception and depressive symptoms. In sensitivity analysis, we also controlled for changes in household income and changes in negative life events experienced within 12 months prior to each survey. Controlling for these variables did not bring noticeable changes to the results reported above.

Relocatees whose pre-relocation depression was at maximal/minimal level could only experience a decrease/increase in post-relocation measure even without the effect of risk perception. The ceiling effect might bias the results because perceived risk might elevate the anticipatory stress observed at the pre-relocation survey. To account for the ceiling/flooring effects, we conducted two sensitivity analyses. In the first sensitivity analysis, we controlled for pre-relocation depressive symptoms. In the second one, we deleted respondents whose pre-relocation depressive symptoms levels were among the top or the bottom 5 percent. Both analyses confirmed the reported beneficial effects of risk perception.

Conclusions and discussions

Using data from a prospective panel study on a sample of the TGP-induced relocatees, this paper was devoted to understanding the role of pre-relocation risk perception in relocatees' mental health experiences. We found that risk perception at the pre-relocation stage helped to reduce depressive symptoms of relocatees by enticing them to mobilize protective recourses and coping mechanisms.

Several limitations curb the conclusions that can be drawn from this paper. For example, we did not have a wide variety of coping/mitigation measures. In supplemental analyses, while we did include other variables tapping into the mitigation efforts, such as seeking for relocation-related information and bargaining for more compensation, none of them had a significant effect on depressive symptoms. Despite these limitations, the findings of the paper are generally consistent with theoretical expectations and suggest that failure to perceive potential risks before relocation has damaging consequences on relocation outcome. Although the TGP planners strived to improve relocation outcomes, our study indicates that risk evaluation and mitigation by planners and government alone could

not guarantee a successful psychological adjustment after the relocation. This shows that risk perception is not only a procedural step that should remain in the realm of planners but is indeed a vital tool for the relocatees to cope with project uncertainties.

Excluding individual relocatees from risk information undermines their mitigation efforts and exposes them to unexpected difficulties without adequate preparation. The latter, in turn, may lead to worsening relocation outcomes. Based on our findings, we argue that the transparency of risk information is an indispensable component of a successful relocation program. Relocatees should have access to risk information and be able to participate in the planning and replanning process so that they can fully exercise their agency to mitigate possible risks. This bottom-up planning, however, requires a strong political will from the top echelons of the government agency and intensive work in the field to establish mechanisms through which risk information can be shared by all social actors involved and for joint decision making.

References

Allison, P. D., 2005. *Fixed Effects Regression Methods for Longitudinal Data Using SAS*. Cary, NC: SAS Institute.

Baron, R. M. and Kenny, D. A., 1986. The Moderator–Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations. *Journal of Personality and Social Psychology*, 61(6), pp. 1173–1182.

Bartolome, L. J., de Wet, C., Mander, H. and Nagraj, V. K., 2000. *Displacement, Resettlement, Rehabilitation, Reparation and Development. Thematic Review 1.3 prepared as input into the World Commission on Dams*. Available at: www.dams.org [Accessed July 12, 2010].

BBC Chinese Web, 2010. Three Gorges Project Re-settlers 'Increases 30,000'. Available at: www.bbc.co.uk/zhongwen/trad/lg/china/2010/01/100121_dam_relocation.shtml?s [Accessed July 12, 2010].

Beck, R. A., 1983. An Introduction to Sample Selection Bias in Sociological Data. *American Sociological Review*, 48, pp. 386–398.

Billig, M., Kohn, R. and Levav, I., 2006. Anticipatory Stress in the Population Facing Forced Removal from the Gaza Strip. *Journal of Nervous and Mental Disease*, 194, pp. 195–200.

Brewer, Noel T., Chapman, G. B., Gibbons, F., Gerrard, M. and McCaul, K. D., 2007. Meta-Analysis of the Relationship between Risk Perception and Health Behavior: The Example of Vaccination. *Health Psychology*, 26, pp. 136–145.

Cernea, M. M., 1996. Understanding and Preventing Impoverishment from Displacement: Reflections on the State of Knowledge. In: C. McDowell, ed. *Understanding Impoverishment*, Providence, RI: Berghahn, pp. 13–32.

Cernea, M. M., 1997. The Risks and Reconstruction Model for Resettling Displaced Populations. *World Development*, 25, pp. 1569–1587.

Cernea, M. M., 2000. Risks, Safeguards, and Reconstruction: A Model for Population Displacement and Resettlement. In: M. M. Cernea and C. McDowell, eds. *Risks and Reconstruction: Experiences of Resettlers and Refugees*. Washington, DC: World Bank, pp. 1–50.

Cernea, M. M., 2009. Financing for Development: Benefit-Sharing Mechanisms in Population Resettlement. In: A. Oliver-Smith, ed. *Development & Dispossession*, Santa Fe, NM: School for Advanced Research Press, pp. 49–76.

Clarke, L., 2008. Thinking about Worst-Case Thinking. *Sociological Inquiry*, 78, pp. 154–161.

David, D., Montgomery, G. H., and Bovbjerg, D. H., 2006. Relations Between Coping Responses and Optimism-Pessimism in Predicting Anticipatory Psychological Distress in Surgical Breast Cancer Patients. *Personality & Individual Differences*, 40, pp. 203–213.

de Wet, C., 2006. Risk, Complexity, and Local Initiative in Forced Resettlement Outcomes. In: C. de Wet, ed. *Development-Induced Displacement: Problems, Policies, and People*. Oxford and New York: Berghahn, pp. 180–202.

de Wet, C., 2009. Does Development Displace Ethic? The Challenge of Forced Resettlement. In: A. Oliver-Smith, ed. *Development & Dispossession*, Santa Fe, NM: School for Advanced Research Press, pp. 77–96.

Ding, Q., 1998. What are the Three Gorges Resettlers Thinking? In: Q. Dai, ed. *The River Dragon Has Come!* Armonk, NY: M. E. Sharpe, pp. 70–89.

Duan, Y. and Steil, S., 2003. China Three Gorges Project Resettlement: Policy, Planning and Implementation. *Journal of Refugee Studies*, 16, pp. 422–443.

Goodland, R., 2004. Free, Prior and Informed Consent and the World Bank Group. *Sustainable Development Law and Policy*, Summer issue, pp. 66–75.

Heggelund, G., 2004. *Environment and Resettlement Politics in China*. Burlington, VT: Ashgate Publishing Company.

Hwang, S., Xi, J., Cao, Y., Feng, X., and Qiao, X., 2007. Anticipation of Migration and Psychological Stress and the Three Gorges Dam Project, China. *Social Science and Medicine*, 65, pp. 1012–1024.

Lazarus, R. S. and Folkman, S., 1984. *Stress, Appraisal, and Coping*. New York: Springer.

Li, H., Waley, P. and Rees, P., 2001. Reservoir Resettlement in China: Past Experience and the Three Gorges Dam. *The Geographic Journal*, 167, pp. 195–212.

Li, J., 1996. Survey and Policy Study on Attitude of Three Gorges Rural Migrants. *Social Science Research*, 96(2). Available at: www.chinariver.org/big5/articles/leekk.html [Accessed June 30, 2010].

Lin, N., Ye, X. and Ensel, W. M., 1999. Social Support and Depressed Mood: A Structural Analysis. *Journal of Health and Social Behavior*, 40, pp. 344–359.

McGee, T. K., McFarlane, B. and Varghese, J., 2009. An Example of the Influence of Hazard Experience on Wildfire Risk Perceptions and Adoption of Mitigation Measures. *Society and Natural Resources*, 22, pp. 308–323.

Pearlin, L. I., 1989. The Sociological Study of Stress. *Journal of Health and Social Behavior*, 30, pp. 241–256.

Porter, M. and Haslam, N., 2005. Predisplacement and Postdisplacement Factors Associated with Mental Health of Refugees and Internally Displaced Persons: A Meta-Analysis. *Journal of American Medical Association*, 294, pp. 602–612.

Radloff, L. S., 1977. The CES-D Scale: A Self-Report Depression Scale for Research in the General Population. *Applied Psychological Measurement*, 1, pp. 385–401.

Rosenberg, M., 1965. *Society and the Adolescent Self-Image*. Princeton, NJ: Princeton University Press.

Scudder, T., 2009. Resettlement Theory and the Kariba Case: An Anthropology of Resettlement. In: A. Oliver-Smith, ed. *Development & Dispossession*. Santa Fe, NM: School for Advanced Research Press, pp. 25–48.

Scudder, T. and Colson, E., 1982. From Welfare to Development: A Conceptual Framework for the Analysis of Dislocated People. In: A. Hansen and A. Oliver-Smith, eds. *Involuntary Migration and Resettlement*. Boulder, CO: Westview Press, pp. 267–287.

Slovic, P., 1987. Perception of Risk. *Science, New Series*, 4799, pp. 280–285.

Slovic, P., Fischhoff, B., Lichtenstein, S., and Roe, F. T. C., 1981. Perceived Risk: Psychological Factors and Social Implications. *Proceedings of the Royal Society of London. Series A, Mathematical and Physical Sciences*, 376, pp. 17–34.

Slovic, P. and Peters, E., 2006. Risk Perception and Affect. *Current Directions in Psychological Science*, 15, pp. 322–325.

State Council (No. 74:3), 1991. *Regulations on the Compensation for Land Acquisition and Resettlement of the Construction of Large and Medium-Sized Water Conservancy and Hydroelectric Projects*. Decree of the State Council of PRC.

State Council (No. 299:1), 2001. *The Regulation on Changjiang Three Gorges Project Resettlement*. Decree of the State Council of PRC.

State Council Gorges Project Construction Committee Executive Office (SCGPCCEO), 2009. *The Three Gorges Projects has Relocated 1.27 million people, Resettlement Task is Basically Completed*. In Chinese. Available at: www.3g.gov.cn/xxxq.ycs?GUID=3114 [Accessed June 8, 2010].

Tanner, L., 2005. *Broken Promises and Loss of Trust: The Corruption Stemming from the Use of the Development Resettlement Policy at the Three Gorges Dam Site*. Contemporary Topics in Forced Migration, Working Paper 3. San Diego: Forced Migration Laboratory, Center for Comparative Immigration Studies, University of California.

Thoits, P. A., 1994. Stressors and Problem-Solving: The Individual as Psychological Activist. *Journal of Health and Social Behavior*, 35, pp. 143–160.

Thoits, P. A., 2006. Personal Agency in the Stress Process. *Journal of Health and Social Behavior*, 35, pp. 143–160.

Vidrine, F. I., Simmons, V. N. and Brandon, T. H., 2007. Construction of Smoking-Relevant Risk Perceptions Among College Students: The Influence of Need for Cognition and Message Content. *Journal of Applied Social Psychology*, 37, pp. 91–114.

Wang, J., 2002. Three Gorges Project: The Largest Water Conservancy Project in the World. *Public Administration and Development*, 22, pp. 369–375.

Wei, Y., 1999. Major Problems and Hidden Troubles in the Relocation of the Three-Gorges Project: Yunyang County, Chongqing City (in Chinese). *Strategy and Management*, 16, pp. 11–12.

Weng, L., 1999. *Environmental Monitoring and its Management of the Three Gorges Project*. Paper present at the Third Annual Seminar on Environmental Issues in China, Wuhan.

Xi, J. and Hwang, S., 2011. Relocation Stress, Coping, and Sense of Control among Resettlers Resulting from China's Three Gorges Dam Project. *Social Indicators Research*, 104, pp. 507–522.