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Unmet Expectations and Symptoms of Depression among the Three Gorges Project Resettlers

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Abstract

To successfully resettle 1.27 million Chinese for the construction of the Three Gorges Project (TGP), the Chinese government employed a new re-resettlement policy which emphasizes infrastructural development of the resettlement sites to assure resettlers a sustainable livelihood following resettlement. Unfortunately, many benefits the policy promised have not materialized. As a result, many resettlers have suffered an increase in depressive symptoms associated with unmet expectations. Using panel data collected before and after relocation from a sample of Three Gorges resettlers, we found that a high proportion of resettlers reported unmet expectations which were significantly associated with an increase in depressive symptoms. Our findings indicate that undeliverable promises can backfire and further aggravate the harm inflicted on the displaced caused by the project-induced displacement. From the perspective of resettlers, a sound coping strategy to minimize the harm caused by the displacement on their mental wellbeing is to expect for the worst.

Keywords

unmet expectations; depression; the Three Gorges Project; project-induced relocation

Introduction

While previous research on project-induced displacement has unanimously painted population displacement as a stressful process that has led to widespread depression among the displaced (Hwang et al. 2007,2010;Scudder & Colson 1982), there has been very little theoretical development in explaining the connection. Past studies have focused on identifying the negative social and economic consequences often associated with population displacement as explanations of elevated mental distress among the displaced (Scudder & Colson 1982,Scudder 2009), the possibility that the increase could actually be a result of undeliverable benefits promised to the displaced by planners of projects in order to earn their compliance has been entirely overlooked. Building on past studies in diverse fields (Crosby 1976; Dannefer 2000; Irving and Montes 2009; Nelson and Sutton 1999; Philips 1998; Taris et al 2006;Walker and Mann 1987) that unmet expectations are conducive to

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depression, this study tests the hypothesis that unmet expectations are expected to increase depressive symptoms among those who are displaced by developmental projects.

A recent estimate indicates that about 15 million people around the world are displaced each year (Oliver-Smith 2009) to make way for developmental projects such as dam building, urban development, and highway construction. In 1994, China started to build the world's largest dam project—the Three Gorges Project (TGP). From 1992 to 2008, about 1.27 million residents have been relocated for this project alone (SCGPCCEO 2009). In order to successfully resettle the people who are displaced by the TGP, China's central government employed a new relocation policy known as “development-oriented relocation.” (Wang 2002) The policy deviates from past relocation strategies by mandating the state to provide the displaced with living conditions that would facilitate long-term settlement. Thus, in addition to providing the displaced with adequate monetary compensation for their losses, the state must provide them with farm lands, jobs, and houses that are at least comparable to the ones they lost. In other words, the state is responsible for building an infrastructure that is essential for sustainable development. The ultimate goal of the policy is to promise resettlers a better life after the relocation (McDonald et al 2008). This policy has been praised by the World Bank as a model for resettlement efforts in developing countries (Bartolome et al. 2000). It also cultivated a high expectation among those who would be relocated (Heggelund 2004). Despite the good intentions of the new policy, evidence shows that many of the promised benefits have not been realized. For example, impoverishment prevailed in many resettled communities (McDonald et al 2008; Hao and Feng 2005; Heggelund 2004; Hwang et al 2010; Li and Rees 2000; Li et al 2001; Pi and Lin 2003; Qi 1998; Su and Xu 2005; Xi and Feng 2001; Yie and Lei 2000), joblessness, landlessness, and homelessness among resettlers are also well-documented (BBC Chinese Web 2010; Xiong 2000).

What do unmet expectations of post-relocation life portend for the mental wellbeing of the TGP resettlers? Relative deprivation theory claims that when individuals' expected desirable things to which they believe they are rightfully entitled and these expectations have fallen through, they may feel deprived and suffer subsequent mental distresses (Walker and Pettigrew 1984; Walker and Mann 1987). For example, when an anticipated promotion does not occur, or when rewards promised by an employer have fallen flat, individuals are likely to display psychological distresses (Gurr 1970; Nelson and Scutton 1999; Wheaton 1994). Similarly, we expect an increase in depressive symptoms among Three Gorges' resettlers following relocation when the government failed to deliver the promised benefits. Although there are studies which have pointed out that unrealistic expectations held by TGP resettlers are problematic (e.g. Feng and Wang 2004; Heggelund 2004; Su and Xu 2005), there has been no empirical evaluation of the consequences of unmet expectations for the resettlers. In this study, we ask whether unmet expectations about post-relocation lives are associated with symptoms of depression among TGP resettlers. This study would contribute to the relocation literature by empirically evaluating the presumed negative effects of unrealistic expectations, a problem that has been largely ignored so far in existing assessment of impact of the TGP.

Background

Relocation has long been seen as a stressful life event because it entails tremendous social and economic costs but with uncertain benefits (e.g., Magwaza 1994; Ben-Sira 1997; Lev-Wiesel 1998). Involuntary resettlers are often victims of powerful external forces over which they have little or no control (Cernea, 1993), a condition that is particularly prone to distress (Pearlin, 1989). The link between relocation stress and emotional distress has been well established by involuntary relocation studies, such as refugee studies (e.g. Porter & Haslam,

2001). The negative mental health impact of project-induced involuntary relocation has also been well-established (Hwang et al. 2007, 2010; Scudder & Colson 1982). Unlike refugees who are often driven out by traumatic events such as natural disasters or political conflicts, project-induced relocatees are usually forced to move by the power of state through a planned process. For project-induced relocatees, relocation stress comes from anticipating a forced relocation, traumatic moving process, and from demanding post-relocation adjustment (Xi 2007; Scudder & Colson 1982).

After 60 years of debates, investigations, and planning, the construction of the TGP was approved in 1992 by the national Congress of China and formally launched in 1994 on the Yangtze River—the third longest river in the world. Completed in 2009, the TGP has the greatest hydropower generating capacity and has been recognized as one of the top renewable energy projects in the world (People's Daily Online 2009). Because the TGP created a reservoir about the size of the Lake Superior in a populated area, the number of people who have been relocated to make way for the TGP was unprecedented. Among the 1.27 million resettlers, about 40 percent were rural residents, more than one thirds of them had to move afar because of the land limitation in the Three Gorges area (China News Week 2009). Although some long-distance resettlers moved with their co-villagers, a large majority of them were divided into smaller units at the receiving area because of limitation of farmland and accommodation challenges (Guo and Wang 2010; Hwang et al 2007). The reservoir has totally or partially submerged 12 cities and 114 townships. By 2009, all the affected urban residents had moved to corresponding new cities and towns constructed on higher ground near the old sites (SCGPCCEO 2009).

For a long time, populations to be relocated for development projects have been seen by planners as an obstacle (Cernea 1997; Li et al 2001; Jing 2000) or a nuisance (Heggelund 2004) in China and in other developing countries. The major task of resettlement was to move people out of the affected area with little concern for the restoration of their livelihood after relocation (Cernea 1997; Duan and Steil 2003; Li et al 2001; Jing 2000). Although resettlers were usually paid a lump-sum monetary compensation, it was often not adequate to recoup their losses (Cernea 2009; Heggelund 2004; Jing 2000). Therefore, although development programs usually aim to boost the economic development of a region, they also bring unintentional negative impact to the displaced (Cernea 1997). In 1980s, the World Bank suggested a policy which moved beyond compensation and emphasized restoration and development of the livelihood of the displaced population (Brand 2001). The policy stressed that project-induced resettlement “should be conceived and executed as a development program, providing sufficient opportunities to assist resettlers in their efforts to improve their former living standards and earning capacity.” (Cernea 1993:17) The TGP was among the first to adopt a development-oriented resettlement policy (World Bank 2000). It mandated the state to build an infrastructure and create conditions for the establishment and development of resettlers' livelihood in the post-relocation phase (Heggelund 2004; Jing 2000). To achieve the goal, the State Council earmarked 40 billion-yuan (\$4.8 billion) for resettlement, which accounted for 45% of the total budget for the project (Wang 2002). Farmers were promised new lands comparable to their former lands or a factory job would be arranged for them. Private and state-owned enterprises were enticed with low interest loans to invest in the resettlement areas to help create manufacturing and service jobs. The state also promised that once the project is completed, a portion of the profits from power generation would be allocated for development funds to promote the local economy in the reservoir region (State Council 2001). Moreover, many preferential treatments were accorded enterprises which facilitate long-term development of the resettlement areas (Wang 2002). Officials described the new policy as “blood-creating assistance”, in contrast to “blood-giving assistance” of the past which relied merely on monetary compensation (Meng 1997).

Unfortunately, the policy makers failed to anticipate many practical challenges which emerged when the policy was implemented (De Vet 2009). For example, providing farm lands of equal quality to farmers who lost their lands as a result of relocation was easier said than done. The lands they lost were mostly fertile farmlands down in the basins (Heggelund 2004), but the replacements were infertile rocky slopes located on steep hills which were prompt to erosion (Li et al 2001). The rising water level also brought with it many unanticipated landslides and made many places uninhabitable (BBC Chinese Web 2010; People's Daily Online 2010). Although the government promised to provide factory jobs to farmers who lost their farm lands, the likelihood that ousted farmers would be absorbed by non-farm industries was slim not only because they generally lacked skills and qualifications (Jing 2000), but also because factory jobs were scarce in this region and many existing enterprises were operating at a loss (Jing 2000; Li 1998; Li et al 2001; Tao 1994; Wei 1999; Zhu 1996).

In anticipation of the TGP, the central government has withheld investment to the area for decades. As a result, the Three Gorges area has long been underdeveloped (Wei 1999). For example, in 1998, a few years into the construction of the TGP, the GDP per capita for Wanxian Relocation and Development Region (WRDR) was less than half of that for the nation as a whole and was about one fourth of that of costal region (Ouyang and Jiang 2002). Although the central government has had some success in bringing in some enterprises to the region during the early days of the TGP, over two-thirds of them have left or claimed bankruptcy by 2009 when relocation completed (SCGPCCEO 2009), producing a large number of laid-off workers. Although the influx of resettlement funds has greatly improved the basic infrastructure of the region, especially in the cities (Qi 2002; Wang and Gong 2003), the hollowness in many non-agricultural industries in the region has become a well-recognized problem (Chun 2010; Den 2007). Many scholars have also worried about the adequacy of sustainable funds for the long term economic development once earmarked construction funds diminishes after the completion of the TGP (Chun 2010). Creating adequate conditions for the development of resettlers' livelihood is again easier said than done. In addition, there were many other documented problems such as delays in delivering compensation, improper use or outright embezzlement of relocation funds, and inefficiency resulting from poor coordination among many layers of governmental bureaucracies (Chun 2010; Heggelund 2004; Huang 1998; Jing 2000; Tanner 2005).

Clearly, although the new policy represents a major progress in project-induced population resettlement (Tang 2002, Cernea 2009), the TGP relocation is not as promising as the government wanted the resettlers to believe. Like another project in China employing a similar resettlement policy (i.e., the Xiaolangdi project on the Yellow River), post-relocation impoverishment remains a prevailing problem, although to a lesser degree compared to earlier efforts (Webber and McDonald 2003; Duan and Steil 2003; Heggelund 2004). Empirical research has repeatedly shown that many of those who were displaced in the TGP have suffered decreases in income (Cheng 2003; McDonald et al 2008; Hao and Feng 2005; Heggelund 2004; Hwang et al 2010; Li and Rees 2000; Li et al 2001; Pi and Lin 2003; Qi 1998; Su and Xu 2005; Xi and Feng 2001; Yie and Lei 2000), as well as social isolation, and maladjustment (Feng 2006; Liu and Lei 1999) following relocation. Cases of landlessness, joblessness, and homelessness have also been reported by less systematic observations (BBC Chinese Web 2010; Human Rights Watch/Asia. 1995; New York Times 1999; Wu 1998). In sum, although the new relocation policy has been widely praised (Bartolome et al. 2000; Cernea 2009; Heggelund 2004), many of its promised benefits have yet to be realized.

The new policy and the accompanying government's propaganda exaggerating the project's benefits while downplaying its associated risks have instilled a false hope for a better future among the displaced reported widely in research conducted both prior to and after relocation

(Ding 1998; Heggelund 2004; Hao and Feng 2005; Jim and Yang 2006; Li 1996; Li 2000; Li et al 2001; Li and Rees 2000; Liu and Lei 1999; Pi and Lin 2003; Zuo 1997). On the other hand, many resettlers were unable to foresee risks accompanying the relocation (Li et al 2001; Xi et al 2007).

Theories and Hypotheses

Sociologists and psychologists have long been concerned with the implications of unrealized expectations. Several theories predict that unrealized expectations will negatively affect mental health. Porter and Steers (1973), for example, maintained that while realistic expectations of future life prepare people for coming life changes and facilitates adjustment, unrealistic expectations, on the other hand, lead to subsequent adjustment problems and distresses (Nelson and Scutton 1999). Unrealized expectations have also been conceptualized as a deprivation of desirable things to which one feels entitled (Crosby 1976; Reynolds and Baird 2010; Walker and Mann 1987). When reality is perceived as worse than expected, the gap between the expected and actual outcomes can affect mental health negatively (Walker and Mann 1987; Walker and Pettigrew 1984).

Although early applications of relative deprivation theory have focused on deprivation resulting from intergroup comparisons, recent research found that the feeling of deprivation can also result from within group comparisons or even intra-personal comparisons such as comparisons between ones' expectations and attainments (Walker and Pettigrew 1984). For example, unexpected personal deprivations can result from failure to obtain an expected promotion or the infidelity of a spouse (Gurr 1970). Thus, deprivation can originate from personal/egoistic deprivation as well as group/fraternalistic deprivation (Runciman 1966). While discrepancies "between the position of one's own group and some other more privileged groups" motivate individuals to protest or rebel (Gurr 1970), egoistic/personal relative deprivation, which reflects discrepancies "between personal expectations and attainments (Walker and Mann 1987:275)," are more likely to trigger emotional distress or depression (Crosby 1976; Walker and Mann 1987).

Egoistic relative deprivation theory has been considered as a useful tool to understand consequences of unmet expectations (Reynolds and Baird 2010). Theorists of egoistic relative deprivation maintain that when individuals feel that they are entitled to a reward, status, or benefit and they expect them to happen later in life, they are likely to feel deprived and distressed when such expected outcomes fail to materialize (Walker and Mann 1987).

The negative mental health effect of unmet expectations has been confirmed in empirical studies across different research fields. For example, Carr (1997) noted that unachieved career ambitions predict mental distress. The literature on work and organizational psychology repeatedly documented that when employer's promised benefits or rewards are not delivered, dissatisfied employees are likely to withdraw (Irving and Montes 2009; Philips 1998; Taris et al 2006; Wanous et al 1992). In migration literature, migrants' unmet expectations about new life have been identified as sources of mental stress (Berry 1997) and are correlated with low quality of life after migration (Zhang et al 2009). A recent study by Reynolds and Baird (2010) advanced the hypothesis that there is a causal association between unmet educational aspiration and symptoms of depression.

One way to avoid the undesirable consequences of unmet expectations is to maintain one's expectation at a realistic level. Students of work and organizational psychology has informed us that being able to meet the expectations is a critical condition for a successful work adjustment for new hires (Irving and Montes 2009; Porter and Steers 1973; Taris et al 2006). Thus, although organizations are tempted to attract applicants by offering inducements, it is important that they should lower new employees' expectations to avoid

negative effects associated with unmet expectations (Porter and Steers 1973). Experimental studies (Weitz 1956; Youngberg 1963) have found that when individuals were provided with both positive and negative information such as difficulties in the new environment, they adjusted their expectations to more realistic levels which are more easily met, resulting in better adjustment outcomes (Weitz 1956; Youngberg 1963). On the contrary, information focused only on benefits would result in high expectations which are more likely to be unattainable (Porter and Steers 1973; Weitz 1956; Youngberg 1963).

These same principles learned in other settings should be applicable to project-induced resettlers. Populations to be relocated usually would go through an anticipatory period before relocation actually takes place. A realistic expectation of post-relocation life would mentally prepare resettlers for the coming events and a result of “anticipatory socialization” (Merton 1968). On the contrary, resettlers who feel they are entitled to a better life after relocation as promised by government authority are likely to be disappointed when the promises are not delivered. Relocation experts emphasize that planners should carefully evaluate possible benefits and risks in advance and honestly convey them to the resettlers to avoid unrealistic expectations of post-relocation life (Cernea 1997).

The planners of the TGP did make an effort to inform and engage resettlers about the benefits and risks associated with the resettlement. The official relocation plan, for example, stipulates that resettlers should be involved in assessing inundation losses and be allowed to have a say in choosing the model and destination of relocation. Although not explicitly forewarning the resettlers of the risks and challenges ahead, the government propaganda called for resettlers’ sacrifices for the interest of collective benefits. However, many factors have curtailed the effectiveness of the communication between government and resettlers. First, the long tradition of central planning has limited not only the capability but also the enthusiasm for resettlers to actively involve in the decision making process (Cheng 2004; Chun 2010; Guo and Wang 2010). Second, the TGP resettlement is a politically sensitive issue in China. Discussion of negative side of the TGP and its relocation is suppressed and those who dared to touch the taboo are often penalized (Li et al 2001; Su and Xu 2005; Wei 1999; Ying 2001). Third, there is a built-in incentive for local officials overseeing the relocation to exaggerate the benefits of the relocation so that they can accomplish the task because their promotion is at stake (Cheng 2003, 2004; Liu and Lei 1999; Wei 1999). Finally, the Chinese media, largely a mouthpiece of government policy, report only successful relocation stories. Such reporting is likely to further inflate the high expectation of many resettlers (Pi and Lin 2003).

In addition, the overwhelming excitement about the potential benefits of the development-oriented relocation among the resettlers could also have resulted from the relocatees’ hope for a better life. Because life in the Three Gorges area is miserable relative to China’s more developed coastal regions, any changes in the life gives relocatees a glimpse of hope for a better future (Cheng 2003; Feng and Wang 2004; Heggelund 2004; Liu 2002; Liu and Lei 1999; Pi and Lin 2003; Su and Xu 2005; Wang and Zhou 2001). This new dimension of relative deprivation is likely to make resettlers particularly vulnerable to a fantasized future and the negative consequences associated with disappointments.

Because project-induced relocation is known to be stressful, previous studies of its negative mental health outcome have focused on demanding social, economic, and cultural adjustments as well as adverse life changes during and after relocation as the primary causes of elevated depression among the displaced (Berry 1997; Cernea 1997; Hwang et al. 2007, 2010; Scudder and Colson 1982). The extent to which such elevation might also have been partially a result of unmet expectations as suggested by relative deprivation theory has not been examined. It is possible that differences in mental health between those who encounter

adverse life changes versus those who do not may also be due to the feeling of deprivation of an expected better life. Even for resettlers who did experience some improvement in their post-relocation life compared to their pre-relocation life, they might still feel frustrated if their expectation is higher than what they have actually attained. This study tests the hypothesis that unmet expectations have a harmful impact on resettlers' mental health above and beyond the effects of other relocation-induced stressors commonly included in past studies. Controlling for migration-induced adverse changes, adjustment difficulties, social psychological resources and coping, factors which are considered causal in past studies of project-induced migration (Cernea 1997; Hwang et al. 2007, 2010; Scudder and Colson 1982), we expect resettlers who experienced more unmet expectations would see a greater increase in depressive symptoms.

Data and Methods

Data used in this study came from a prospective panel study involving a pre-migration and a post-migration survey spaced three years apart. The TGP migration provided a natural experiment-like research condition for migration studies. The construction of the dam and the reservoir required the relocation of all those who were in the way on a non-selective basis. This allowed us to measure migration consequences free of confounding selectivity. In addition, the TGP migration as a scheduled event permitted us to conduct pre- and post-migration surveys. As a result, we could gather information about expectations in a pre-migration survey and ascertain whether or not such expectations have been realized in a post-migration survey. The prospective research design enables us to measure unmet expectations accurately without depending on resettlers' memories which are expected to be distorted by their relocation experiences.

The pre-migration sample consists of 975 designated migrants and 555 non-migrants recruited from three rural and two urban residential communities randomly selected from Wanxian Relocation and Development Region (WRDR) which was formerly a part of the Sichuan Province where 80% of Chinese designated for displacement resided (Weng 1999)¹. Face-to-face interviews 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 high rate typical of face-to-face interviews in China (Feng 2007). A follow-up survey was conducted in early 2006, in which we successfully traced and interviewed 1056 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 had not moved ², and 420 were designated migrants who had moved. This study focused on 420 resettlers whom we were able to trace successfully. The exclusion of 350 non-migrants is necessary because relocation-related depressive symptoms and unmet expectations are concepts that are relevant only to designated migrants who have been resettled. The 286 designated migrants

¹Our sampling took place in two stages. We first randomly selected three rural and two urban communities from two strata of communities in the WRDR. The five clusters include 15 rural villages and five urban residential neighborhoods. The final selection of respondents was not random because of several reasons. First, the ongoing relocation process made it impossible to get a complete sampling frame. Second, although tried to obtain a list of resettlers from local officials, the political sensitivity of the TGP resettlement prevented the officials to co-operate with us. When the pre-relocation survey was conducted in December 2002 and January 2003, we found that many of the resettlers in selected areas have already moved. We ended up conducting census of the remaining resettlers in the 15 rural villages and systematic sampling in the five urban neighborhoods. Because our sample was not random in strict sense, and the number of units selected at the first stage was not large, we conducted sensitivity analysis to detect possible biases. We compared the demographic profile of our sampled households with 2000 census for Chongqing Municipality as a proxy of our study population because of the availability of statistics (Chongqing Statistical Year Book 2004, Table # 3-6). The comparison indicated that our sample closely mirrored the population in terms of age, sex, nationality, educational compositions, and average family size.

²Because the timing of relocation was determined by altitude of the locations, those yet-to-be moved resettlers generally resided in location with higher elevations.

who had not moved by the time of the follow-up survey were also excluded for the same reason.

Half of our respondents are female and the sample as a whole have an average age of 46 years and an average education attainment of 6.4 years. About 39% of the respondents were urban residents and 61% were rural residents at time 1. Resettlers in our sample have been relocated for an average time of 22 months.

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

Outcome Measure

Our relocation outcome of interest was depressive symptoms, which was indicated by the 20-item CES-D scale (Radloff 1977). While mental distress manifests itself in many forms, depressive symptoms are the most common ones (Turner and Lloyd 1999). The CES-D scale is a survey-based measure of depressive symptoms which has known psychometric attributes and well-established reliability and validity (Vega and Rumbaut 1991). The scale asks respondents if they have experienced any depressive symptoms from a list of 20 during the past week. The same scale was used in both the pre-migration ($\alpha = .87$) and the post-migration ($\alpha = .89$) survey. Although cross-cultural applications of the CES-D have aroused concerns in the past, empirical evidence shows that the scale is appropriate for samples with different cultural backgrounds (Beiser 2005; Lai 1995; Lin 1989; Vega and Rumbaut 1991). To capture the amount of depressive symptoms induced by forced relocation, we relied on *changes in depressive symptoms* from time 1 to time 2 as our dependent variable in the analysis. When subtracting pre-relocation CES-D score from post-relocation CES-D score, each individual served as his or her own control, an effective way to rule out pre-relocation variation across respondents (e.g. anticipatory stress) as a factor of their post-relocation differences (Allison 1990; Firebaugh 2008)³.

Unmet expectations

In the pre-relocation survey, respondents were asked whether or not they expect (1) improved financial condition after relocation, (2) adequate compensation, (3) receiving benefits promised by government, (4) improved housing, (5) no TGP-induced cost to their family, and (6) no personal sacrifice to the TGP. The post-migration survey asked respondents whether each of these expectations was met. For each question, a score of 1 was assigned to the respondents if s/he answered “yes” to the pre-migration survey and “no” to the post-migration survey, and 0 otherwise. The sum of the six items yielded a measure of

³To 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 sensitivity analysis comparing over-time changes in depressive symptoms among resettlers, non-movers, and designated movers who have yet to be moved. While resettlers suffered a significant increase in depressive symptoms from time 1 to time 2 (4.32, $p < .0001$), the non-migrants and those designated migrants who have yet to be moved did not report significant increases in their symptoms of depression (1.02, $p = 0.18$; and 0.56, $p = 0.52$ respectively). The findings lent credence to viewing changes in depressive symptoms among resettlers as relocation-induced rather than an artifact of unspecified macro-social changes.

unmet expectations which was used in regression analysis to estimate the effect of each additional unit of increase in unmet expectations on changes in depressive symptoms.

Control variables

Because increases in depressive symptoms could result from other factors known to affect depression, it is therefore necessary to control for them. *Relocation-induced adverse life changes* was measured in the post-relocation survey by asking resettlers to identify any negative changes they had actually experienced from the forced relocation from a list which included (1) income loss, (2) worsening of housing conditions, (3) worsening work/job environment, (4) incidences of domestic conflicts, and (5) worsening relationship with neighbors. For each question, responses were coded 1 for yes, and 0 for no. A count measure was created by summing all 5 items to indicate number of adverse life changes.

Adjustment difficulties was measured in the post-relocation survey by a set of questions asking respondents if they (1) have difficulties communicating with members of the receiving community; (2) feel that they are treated unfriendly by host community as outsiders; (3) have difficulties to integrate into the host community because of the unfamiliar customs; (4) feel that they have been assigned a worse job or inferior farmland because of their migrant status; and (5) have experienced significant changes in work schedule or regulations. For each question, responses were coded 1 for yes, and 0 for no. A count measure was created by summing all 5 items to indicate number of adjustment difficulties.

Not all displaced will be affected equally because of differential distribution of protective social and psychological resources. We control for these variables accordingly. Social support was measured by asking respondents whether or not, during the last 30 days, they had talked to or contacted with any of the following people with whom they did not share a residence: (1) parents; (2) adult children; (3) siblings; (4) other relatives; (5) good friends; (6) neighbors; (7) colleagues; (8) cadres; and (9) others? For each question, responses were coded 1 for yes, and 0 for no. The sum of the 9 items yielded a count measure which indicated magnitude of social connections. *Changes in social support* from time 1 to time 2 was used in the analysis.

Sense of control was measured at both wave 1 and wave 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. *Changes in sense of control* from time 1 to time 2 was used in the analysis.

In addition, individuals who can efficiently cope with their life problems also suffer less distress (Pearlin 1989). Positive comparison (Pearlin 1989) was measured by a four-item scale: "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 wave, respectively. *Changes in positive comparison* from time 1 to time 2 was used in the analysis. Finally, we also controlled for *time since relocation* because of its possible associations with both our dependent and independent variables.

Regression analyses were used to test the effects of unmet expectations on depressive symptoms. We used "the difference model" for our regression analysis in which difference scores were used whenever possible⁴. Using difference scores, the model focused on the within individual variations and automatically controlled for preexisting across-individual differences in measured variables and unmeasured time-invariant variables (Allison 1994).

Therefore, the difference model has a major advantage over other alternatives commonly used to analyze panel data (Firebaugh and Beck 1994: 636-37): exogenous variables which affect depressive symptoms, but do not vary from time 1 to time 2 need not be included in the model⁵. 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, unmeasured differences between individuals, regardless of whether or not those differences are associated with the likelihood of event occurrence.

Results

Table 1 reports the descriptive statistics of our sample, dependent variable, and independent variables in analysis. The mean pre-relocation CES-D score was 21.94, and the post-relocation score was 26.25, an increase of 4.32 points (a 20% increase) on average. The difference was statistically significant using t test. In depression literature, a CES-D score of 16 or above is considered clinically depressed in Western society (Radloff 1977). Compared to this standard, TGP resettlers suffered a very high level of distress even before the relocation took place.

The average number of unmet expectations experienced by TGP resettlers was 1.24 (range 0-5). With regard to relocation-induced life changes, the average TGP resettler experienced 1.14 adverse changes (range 0-4). The mean number of adjustment difficulties was 0.55 (range 0-5). There was no significant change in social support from time 1 to time 2. However, the average sense of control was reduced by 1.42 points during the period, a statistically significant decrease. There was also a significant drop in average positive comparison score following relocation.

Table 2 provides detailed descriptive analyses of the six items which constitute the unmet expectation scale. Column 1 shows the percentages of respondents who had a specific expectation at time 1; column 2 reports the percentages of those whose expectation was unmet at time 2 given they had a specific expectation at time 1. Although the percentages of resettlers who held a particular expectation were not very high, about 74% of the total sample had expected at least one of the listed expectations. However, the percentages of people who had a certain expectation at time 1 but were unable to realize it at time 2 were quite high (ranging from 65% for those who expected receiving government benefits to 94% for those who expected improved financial situation).

Table 3 reports the mental health impacts of unmet expectations by comparing the changes in depressive symptoms from time 1 to time 2 for three groups: (1) those who did not have the expectation at time 1; (2) those who had the expectation at time 1 and the expectation was met at time 2; and (3) those who had the expectation at time 1 but the expectation was unmet at time 2. It was obvious that the group with unmet expectations suffered greatest increase in depressive symptoms from time 1 to time 2. Because the numbers of those who did meet their expectations were small, we combined them with those who did not have

⁴Because some variables were only relevant either at time 1 or at time 2, not every variable in the model was measured by a difference score. However, difference scores were used whenever available (Allison 1990).

⁵We need to point out that the difference model is not useful for estimating the effects of observed time invariant variables such as gender, age, rural/urban residency, and education. Assuming the effects of time-invariant variables to be stable between time 1 and time 2, they dropped off the model when taking the differences from time 1 to time 2 (Firebaugh 2008). This assumption was confirmed to be reasonable by sensitivity analyses in which these time-constant variables were added into the model and their coefficients were non-significant (Allison 2005). Age was treated as time-invariant because the change is a constant (3 years) for every respondent. Rural/urban residency was also treated as time-invariant because only 19 respondents in our sample have changed from rural to urban residency or vice versa during the study period.

expectations when making between-group comparisons for each of the six items. With one exception, the group with unmet expectations shows significantly greater increases in depressive symptoms than its counterpart made up of those who either did not have an expectation or the expectation was fulfilled.

Table 4 reports results from the difference model analyzing relocation-related depressive symptoms⁶. Two difference models were estimated to test our hypothesis that unmet expectations have a harmful impact on resettlers' mental health above and beyond the effects of other relocation-induced stressors such as adverse life changes and demanding adjustment. In Model 1, we included adverse life changes, adjustment difficulties, social and psychological resources, coping, and time since relocation as independent variables to explain the variation in the changes of depressive symptoms from time 1 to time 2. As expected, adverse life changes and adjustment difficulties were responsible for a significant increase in depressive symptoms following relocation. On the contrary, resources and coping protected resettlers from relocation-induced depressive symptoms.

To test our main hypothesis that unmet expectations affect depressive symptoms above and beyond factors that are well known in the literature, we then added unmet expectations into the model (Model 2). As expected, unmet expectations had a significant harmful effect on depressive symptoms even after controlling for adverse life changes, social and psychological resources, coping, time since relocation, and unmeasured time constant variables⁷. Depressive symptoms increased by 1.46 units for each additional unmet expectation. Comparing standardized coefficients of unmet expectations and the other two relocation-induced stressors, unmet expectations stood out as a stronger predictor of depressive symptoms. Adding unmet expectations into the model increased the R^2 by three percent. Clearly, unmet expectations played an irreplaceable role in accounting for the increase in depressive symptoms among the Three Gorges resettlers that was not explained by factors that were commonly included in previous analyses (Berry 1997; Cernea 1997; Hwang et al. 2007, 2010; Scudder and Colson 1982)⁸.

Conclusion and Discussion

Although the TGP relocation employed a promising new policy which emphasized the establishment and development of resettlers in their post-relocation life, many of the promised benefits have yet to be delivered. When government propaganda emphasizes the potential benefits and local relocation officials hide the potential risks from the resettlers, they instill an unrealistic expectation among the resettlers. Our findings indicated that undeliverable promises can backfire and aggravate the harm inflicted on the resettlers by the displacement. From the perspective of resettlers, a sound coping strategy to minimize the harm caused by the displacement on their mental wellbeing is to expect for the worst.

⁶Time constant independent variables such as age, gender, education, and rural/urban residency were differenced out of the model. Their effects were not estimated.

⁷Although one can suggest that the expectations at time 1 may be indicative of underlying mental health because persons with positive mental health might be more likely to hold positive expectations for the future (Taylor 1989). Measuring depressive symptoms in change score mitigates such possibility because the change score is unlikely to affect expectations measured at time 1. Literature also suggests that the mere presence of expectations at time 1 may be consequential on mental health (Carr 1997). We detected significant harmful effects of the mere presence of expectations at time 1 in our sensitivity analysis not reported here. However, because a very large proportion of those who had expectations at time 1 also reported that their expectations were unmet at time 2 (see Table 3), we suspected that the detected effect for time 1 measure of expectations overlapped with the effect of unmet expectations. Our suspicions were confirmed by the finding that the effect of time 1 expectations was wiped out after unmet expectations were added to the model.

⁸Because of the well recognized buffering role of social and psychological resources in mental health research, it makes sense to suggest that the impact of unmet expectations may be contingent on these resources. We conducted sensitivity analysis by adding several interaction terms into the model to test the moderation hypothesis. However, none of the interaction terms was significant statistically.

Our results also support the policy guidelines recommended by the World Bank for project-induced relocation that resettlers should have access to all necessary information including potential harms prior to granting permission to a project (Goodland 2004). Although informing resettlers of the negative outcomes associated with relocation may increase resistance to the project and add challenges to the relocation effort (Cernea 1997), it is the right thing to do because hiding them from the resettlers is not only immoral but is also harmful to their mental wellbeing⁹.

It has been recognized that the overall relocation outcome for the TGP relocation is better than previous relocation practices guided by old policy. The World Bank actually considers the TGP relocation among the best compared to relocation outcomes in other developing countries (Heggelund 2004). Our additional analyses also detected noticeable improvements in a few aspects of resettlers' livelihood. For example, there was increased number of households living in brick/stone/concrete houses and less households living in wood/mud houses after relocation. More households reported gaining access to running waters after relocation than before. The average amount of farmlands held by rural resettlers has actually increased after relocation. However, many resettlers still find that many areas of their post-relocation life circumstances fell short of their expectations. And our study found a clear association between unmet expectations and depressive symptoms.

However, it is reasonable to suggest that the increase in depressive symptoms may actually be a short-term phenomenon that will go away as time goes by. For example, some benefits may take more than a few years to materialize. We also expect resettlers to recalibrate their expectations in light of the new reality and thus eliminate unmet expectations as a source of distress (Reynolds and Baird 2010). As we have learned from assimilation theories and immigrants studies, resettlers are expected to make better adjustments to their new community the longer they stay there. Because the relocation was just completed a few years ago, it is impossible for us to test this hypothesis. We need longitudinal data collected periodically to detect the dynamic relationship between expectation and depression. Due to the limitations of our data, the current study can focus only on the short-term relationship.

Although the relocation for the TGP as initially planned has been completed, it is estimated that another 300,000 people living near the reservoir area would have to relocate because of unexpected environmental problems resulting from initial relocation (People's Daily Online 2010). This would include a large number of those who have just moved up from the submerged basin. At the same time, the ongoing massive South-to-North Water Diversion project, which aims to divert water from Yangzi River to relieve the water shortage in Beijing, is relocating 440,000 people who are in the way (SCSTNWDO 2009). Thus, our findings regarding the clear association between unmet expectations and symptoms of depression are educational not only to planners of future relocations in China and elsewhere, but particularly useful for those who are responsible for the re-relocation of the 300,000 resettlers in the Three Gorges region and the 440,000 resettlers induced by the Water Diversion project.

⁹Project-induced population displacement programs are often controversial and politically charged. Although our conclusions are based on empirical data, interpretations of the results are nevertheless subject to the political views of individual readers and writers.

Appendix

Appendix:

Correlations between Dependent and Independent Variables (n=420)

	2	3	4	5	6	7	8	9	10	11
Changes in Depressive Symptoms (1)	0.26 ***	0.19 ***	0.23 ***	-0.50 ***	-0.14 **	-0.29 ***	-0.05	-0.05	-0.05	-0.09
Unmet Expectations (2)		0.00	0.18 ***	-0.20 ***	-0.08 +	-0.15 **	-0.03	-0.06	-0.19 ***	-0.28
Adverse Life Changes(3)			0.20 ***	-0.13 **	-0.03	-0.13 **	-0.02	0.13 **	0.04	0.19 *
Adjustment Difficulties (4)				-0.16 **	-0.02	-0.18 ***	-0.07	0.00	-0.09 +	-0.23
Changes in Sense of Control (5)					0.02	0.26 ***	-0.05	0.01	0.05	0.16 *
Changes in Social Support(6)						0.08	-0.06	0.09 *	0.05	-0.03
Changes in Positive Comparison (7)							0.07	0.11 *	0.02	0.05
Age at Time 1 (8)								-0.05	-0.40 ***	0.19 *
Gender (9)									-0.06	0.00
Education (10)										0.07
Urban Residency at Time 1 (11)										
Time Since Relocation (12)										

Note: Two-tailed t-test;

p<.001;

**

p<.01;

*

p<.05;

+

p<.10.

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Table 1
Means and Proportions at Pre- and Post-relocation Survey for Dependent and Independent Variables (n=420)

	Pre-relocation			Post-relocation		
	Mean/Proportion	SD	Range	Mean/Proportion	SD	Range
Depressive Symptoms	21.94	(10.25)	1-52	26.25	(10.21)	0-52
Unmet Expectations				1.24	(1.14)	0-5
Adverse Life Changes				1.14	(0.93)	0-4
Adjustment Difficulties				0.55	(0.99)	0-5
Social Support	3.55	(1.43)	0-7	3.69	(1.58)	0-8
Sense of Control	21.40	(4.78)	11-32	19.98	(4.60)	8-35
Positive Comparison	10.64	(2.90)	3-17	10.28	(2.37)	1-17
Time Since Relocation				22.14	(11.77)	0-36

Note: Two-tailed t-test;

p<.001;

*
p<.05.

Table 2

Descriptive Statistics for Unmet Expectations (n=420)

	Had an expectation at T1	Expectation unmet at T2, given had the expectation at T1
Expectations		
<i>Improved financial condition</i>	<i>19.29</i>	<i>93.80</i>
<i>Adequate compensation</i>	<i>11.19</i>	<i>91.49</i>
<i>Improved housing</i>	<i>12.38</i>	<i>80.77</i>
<i>Receiving benefits promised by government</i>	<i>20.24</i>	<i>64.71</i>
<i>No TGP-induced cost to family</i>	<i>41.90</i>	<i>90.91</i>
<i>No personal sacrifice</i>	<i>42.14</i>	<i>77.40</i>
<i>At least one of the above</i>	<i>74.29</i>	

Table 3

Mean Changes in Depressive Symptoms from Time 1 To Time 2 for Expectation Groups (n=420)

	Not Expected at T1	Expected at T1, met at T2	Expected at T1, unmet at T2	t^a
Expectations				
<i>Improved financial condition</i>	3.58 (11.65) 339	-3.00 (10.63) 5	8.36 (11.79) 76	3.29 **
<i>Adequate compensation</i>	4.09 (11.78) 373	7.5 (8.66) 4	6.44 (12.30) 43	1.22
<i>Improved housing</i>	4.02 (11.71) 368	2.7 (9.07) 10	7.79 (12.89) 42	1.99 *
<i>Receiving benefits promised by government</i>	4.14 (11.73) 334	2.10 (11.75) 30	6.98 (12.13) 55	1.77 +
<i>No TGP-induced cost to family</i>	2.64 (11.32) 244	1.87 (7.70) 16	7.26 (12.35) 160	4.00 ***
<i>No personal sacrifice</i>	3.69 (11.99) 243	0.87 (10.85) 40	6.58 (11.43) 137	2.69 **

Note: Two-tailed t-test;

p<.001;**
p<.01;*
p<.05;+
p<.10.

Numbers in parentheses are standard deviations. Numbers immediately beneath the parentheses are counts.

^aTwo-tailed t-test between those who experienced an unmet expectation vs. the others.

Table 4

OLS Regression Analysis of TGP Relocation-Induced Depressive Symptoms Using Difference Model (n=420)

	Model 1		Model 2	
	Coef.	Beta	Coef.	Beta
Unmet Expectations			1.46 **	0.14
Adverse Life Changes	1.30 *	0.10	1.40 *	0.11
Adjustment Difficulties	1.39 **	0.12	1.31 *	0.11
Changes in Social Support	-0.71 ***	-0.12	-0.65 **	-0.11
Changes in Sense of Control	-0.86 ***	-0.45	-0.81 ***	-0.42
Changes in Positive Coping	-0.50 **	-0.13	-0.46 **	-0.12
Time Since Relocation	-0.04	-0.04	-0.04	-0.04
Intercept	4.83 +		0.71	
Attrition Correction Factor	-6.27	-0.05	-1.92	-0.02
Adjust R ²	0.33		0.36	

Note: Two-tailed t-test;

p<.001;

**
p<.01;

*
p<.05;

+
p<.10.