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The Impact of Natural Disaster on Absenteeism, Job Satisfaction, and Job Performance of Survival Employees: An Empirical Study of the Survivors in Wenchuan Earthquake

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Abstract Natural disasters cause serious damage to businesses in the stricken areas and greatly affect survivors' psychology and behaviors. Based on data from 206 survival employees in 33 affected firms in Wenchuan Earthquake, this study analyzes the impact of natural disaster on absenteeism, job satisfaction, and job performance of survival employees. Results indicate that after the earthquake, survival employees' absenteeism and job satisfaction (including intrinsic, extrinsic, and general job satisfaction) decrease significantly, but their task performance, contextual performance, and overall job performance improve significantly. Employees' learning and innovative performance have no significant change in comparison with that before the earthquake. The authors thus suggest that the affected businesses need to communicate with the survival employees actively, focus more on job security, compensation and working conditions, in order to maintain these employees' job satisfaction. In addition, enterprises outside the affected areas should give priority to the recruitment of the survival employees given the same conditions, because it is beneficial to both the employing enterprises and the reconstruction of affected areas.

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1 Introduction

According to the statistics of the International Federation of Red Cross and Red Crescent Societies, 7 766 catastrophes were reported from 1967 to 1991, resulted in more than 7 million deaths all over the world (Tobin and Montz, 1997). There are over one million survivors from various natural disasters every year. A number of studies have showed that natural disasters (e.g., earthquake, flood, and draught) impose negative impacts on survivors' mental health (Zhang et al., 1998, 1999; Wang et al., 2005). Do natural disasters influence survivors' organizational behavior? If the answer is yes, what kind of influence? Qualitative studies suggested that companies should adjust their positions, rearrange working hours, apply employee assistance program (EAP), or hire outside experts to help survival employees to eliminate the negative psychological effects of natural disasters (Wang, 2008), and consequently reduce the negative influence on these employees' work behavior. However, despite these practical suggestions, there is little empirical investigation on the influence of natural disasters on survival employees.

According to a report of the Ministry of Civil Affairs of China, till 12 p.m., September 25th, 2008, 69 227 people were dead, 374 643 people were injured, and 17 923 people were missing in the Wenchuan Earthquake¹ (happened May 12th, 2008). Per Xu, Ma and Duan (2008), private enterprises in Sichuan Province suffered a loss of about 200 billion yuan in the earthquake, amounting to more than 50% of the total losses of Sichuan enterprises in the disaster. More than 3 000 employees from private enterprises lost their lives, more than 10 000 employees were injured. Till July 13th, 2008, the number of private enterprises affected by the earthquake in Sichuan reached 20 585 (Xu and Duan, 2008).

Reconstruction is a huge and systematic project. Rapid recovery of economic production will contribute to social stability and economic development. In accordance to the *Guide on Post-Wenchuan Earthquake's Reconstruction by the State Council*, the post-disaster reconstruction of affected enterprises shall be "based on self reliance and partly supported by foreign aid." Most of the employees in the earthquake-stricken areas are survivors. When they return to work, are there any significant changes in their absenteeism, job satisfaction and job performance in comparison with that of before the earthquake? Analysis of

¹ Data obtained from the official website of the State Council Information Office at <http://www.scio.gov.cn/zt2009/dzzqx/01/04/200905/t304560.htm> (*Relief progress on September 25th, 2009*).

these changes is the theoretical basis of survival employee management, and therefore is vital to the management of the survival employees in the post-disaster reconstruction of affected enterprises. Meanwhile, this study provides important historical data for the organizational behavior research of survival employees. Since there are no prior studies analyzing the impact of natural disaster on survival employees' attitudes and behaviors at work, the present study is the first to conduct this exploratory analysis through studying some fundamental and important organizational behavior indicators, namely employee absenteeism, job satisfaction, and job performance. In particular, individual job performance is an essential element to achieve organizational performance (Sun and Jiao, 2002). Thus, in the present study, we investigate the survival employees in affected companies of Wenchuan Earthquake and analyze the changes of survival employees' absenteeism, job satisfaction, and job performance before and after the earthquake. We expect our investigation will bring some useful ideas for the management of the survival employees in post-disaster reconstruction and also provide new theoretical and empirical evidence in the research of survivors' organizational behavior.

2 Theory and Hypotheses

2.1 Absenteeism

Absence occurs when one decides to allocate his/her time to activities that compete with scheduled work so as to maximize his/her personal utility (Chelius, 1981). Previous studies have agreed that absenteeism does not have a simple antecedent (Johns, 1997). Based on the review of prior absenteeism literature, Harrison and Martocchio (1998) identified five causes of absenteeism, namely personality, demographic characteristics, job-related attitudes, social context, and decision-making mechanisms.² Researchers also found that, regardless of the changes of time and contexts, personality traits lead the moderate stability of absenteeism (Porter and Steers, 1973; Hogan and Hogan, 1989; Harrison and Price, 1993). About demographic characteristics, prior studies have indicated that tenures and absenteeism are negatively correlated (Nicholson, Brown and Chadwick-Jones, 1977).³

² The five categories of absence' origins are organized in time order. Personality and demographic characteristics are long-term origins; work-related attitudes and social context are mid-term origins; decision-making mechanisms are short-term origins (Harrison and Martocchio, 1998).

³ Due to the fact that personality and demographic characteristics of the survival employees did not have a great change before and after the earthquake, thus, this paper does not discuss the change of these two factors' effects on survival employees' absenteeism before and after the earthquake.

Although studies have indicated that compared to job attitudes, employees' previous absenteeism is a better predictor for their future absenteeism (Breaugh, 1981; Ivancevich, 1985), a large number of studies have suggested that work-related attitudes also have impact on employees' absenteeism. For example, Cohen and Golan (2007) found that job satisfaction is negatively correlated with absenteeism; Cheloha and Farr (1980) found that the relationship between absenteeism and job satisfaction is mediated by job involvement. Punnett, Greenidge and Ramsey (2007) also suggested that work-related attitudes would have an impact on absenteeism of staff. In the earthquake, lots of survival employees lost their relatives, friends or other belongings, which make them be afraid of losing what they possess currently. In the aspect of work, they would also cherish their current job more and reduce their absences accordingly.

Johns and Nicholson (1982) proposed that social situation or context had a strong impact on the absence through "absence culture."⁴ Martocchio (1994) also indicated that, in addition to demographic characteristics and general work attitude, "absence culture" also can explain the variations of absence. Nicholson and Johns (1985: 398) asserted that two factors (long-term and mid-term) shaped "absence culture": (a) "the values and beliefs of the larger society and its subcultures," and (b) "the unique set of beliefs that are shared by virtue of membership in a particular organization or subunit." At the social level, for example, serious illness is considered as an acceptable reason for absence in most cultures (Rushmore and Youngblood, 1979). At the organizational level, the norms about absence legitimacy change with new job characteristics, such as new job demands and control systems (Miners, Moore, Champoux and Martocchio, 1995).

From the perspective of social context about natural disasters, after the earthquake, the whole society mobilized forces for post-disaster reconstruction rapidly, especially for the reconstruction of affected enterprises. Accordingly, absence tends to be harder to be accepted than that of before the earthquake. First, at the social level, after the earthquake, social values raise higher requirements for the legitimacy of absence. Fewer reasons for the absence could be accepted. Second, at the organizational level, to expedite the reconstruction, job requirements for survival employees from affected enterprises became higher, which leaves less room for unjustified absence. After the earthquake, the social and organizational contexts lead the absence culture of affected enterprises to have a higher standard for absence legitimacy, thus, survival employee's

⁴ Absence culture is defined as "the set of shared understandings about absence legitimacy and the established "custom and practice" of employee absence behavior and its control" (Johns and Nicholson, 1982: 136).

absenteeism would decrease after the earthquake.

From the perspective of decision-making mechanism (economics), employees are assumed to make work attendance decisions to maximize their utilities given finite time and money (Ehrenberg and Smith, 2008). According to economic models, individuals would take as many fully paid absence days in a given period as allowed or not penalized by their employer (Harrison and Martocchio, 1998). After the earthquake, since that the affected enterprises tried to recover themselves as soon as possible, they provided fewer paid absence days, and survival employees would also reduce absence in order to maximize their utilities. Furthermore, new emerging jobs each month in Sichuan Province decreased from tens of thousands before the earthquake to zero after the earthquake (Chen and Hu, 2009). Meanwhile, in urban areas of Sichuan Province, the total number of unemployed was around 0.7 million before the earthquake and the number climbed to 0.37 million after the quake. Possible reasons might include: (1) There were few job opportunities provided after the quake; (2) some survived enterprises had to lay off surplus employees to save more money for reconstruction (Xu, Ma and Duan, 2008). Thus, survival employees will reduce their absence behavior after the earthquake to avoid being fired. Based on the above arguments of work-related attitudes, social context, decision-making mechanisms, we put forward the following hypothesis:

H1 Compared to that before the earthquake, survival employees' absenteeism will decrease significantly after the earthquake.

2.2 Job Satisfaction

Job satisfaction is defined as "a positive feeling about one's job resulting from an evaluation of its characteristics" (Robbins and Judge, 2007: 79). Many studies have found that age, gender, marriage, tenure, education, and other demographic characteristics correlated with job satisfaction (e.g., Kalleberg and Loscocco, 1983; Lee and Wilbur, 1985). Hunt and Saul (1975) indicated that age, tenure and job satisfaction are positively correlated. With further research, job satisfaction has been conceptualized as the global construct and multifaceted construct (Hirschfeld, 2000), which contains intrinsic job satisfaction (i.e., the nature of job tasks themselves and how people feel about the work they do) and extrinsic job satisfaction (i.e., aspects of work that have little to do with the job tasks or work itself, such as pay) (Spector, 1997). Weiss, Dawis, England and Lofquist (1967) suggested that intrinsic job satisfaction was reflected by 12 facets, namely activity, independence, variety, social status, moral values, security, social service, authority, ability utilization, creativity, responsibility and achievement; and extrinsic job satisfaction by 6 facets, namely supervision-human relations, supervision-technical, company policies and practices, compensation,

advancement, and recognition. Together, intrinsic, extrinsic job satisfaction and two other aspects (co-workers, working conditions) constitute general job satisfaction.

We take the Wenchuan Earthquake as an example to analyze how the disaster effected job satisfaction. First, the earthquake caused substantial damage of facilities and casualties in disaster-affected areas. The survivors generally associated earthquakes with death, panic, fear, tension, and insecurity (Li, Fan, Jia, Wang and Hao, 2009). Xu and Liu (2009) suggested that the earthquake not only severely damaged the property, but also seriously hurt survivors in terms of psychological security. It is logical to expect that this insecure atmosphere has negative impacts on survival employees' job satisfaction. Furthermore, for several months after the earthquake, the vast majority of the stricken enterprises suspended their business. Before reconstruction of infrastructure, many people were temporarily unable to restart their work (Chen and Hu, 2009), which easily led survival employees perceive that enterprises could not provide a stable employment relationships. Meanwhile, other internal and external referents' (e.g., colleagues and friends) retention with low salary would led survival employees perceive their job as unstable. These factors will reduce survival employee's job satisfaction for job stability after the earthquake; which will further reduce their intrinsic job satisfaction given no improvement in other aspects of job satisfaction.

Secondly, after the earthquake, affected enterprises would cut down expenditure in all aspects to restore and maintain business. One of the actions is to reduce employees' wages. While job task is no less than before, fewer wages would reduce survival employee's job satisfaction about compensation after the earthquake. Then it would further reduce their extrinsic job satisfaction given no improvement of other aspects of job satisfaction.

In addition, damages to enterprises, particularly to their buildings, have a great negative impact on the working conditions of post-disaster enterprises. Xu and Duan (2008) found that, the direct losses caused by the earthquake (including buildings and equipment losses) of private enterprises amounted to 130 to 150 billion Yuan, the indirect loss (including suspension of production, loss of human resources, consumers and investors' confidence) ranged from 150 to 170 billion yuan. Worse working environment would reduce survival employee's job satisfaction on working conditions after the earthquake. In summary, decrease in security, compensation, and working conditions job satisfaction would lead to decrease in survival employees' general job satisfaction. Based on the above arguments, we put forward the following hypothesis:

H2 Compared to that before the earthquake, survival employees' intrinsic job satisfaction, extrinsic job satisfaction and general job satisfaction decrease

significantly after the earthquake.

2.3 Job Performance

Job performance includes both the outcomes of the work and the critical behaviors in the process of achieving outcomes (Du and Ba, 2007). A number of studies have proposed different multi-dimensional performance models, such as eight-factor model of job performance proposed by Campbell (1990). Borman and Motowidlo (1993) further divided performance into two dimensions: task performance and contextual performance. The content of task performance vary as job position changes, while the content of contextual performance is similar in different positions, which can be well predicted by one's personality (Borman and Motowidlo, 1997). Sun and Jiao (2002) categorized job performance of the supervisors into three groups: task performance, personal characteristic performance and interpersonal performance. Furthermore, based on the analysis of 1 453 samples, Han, Liao and Long (2007) showed that job performance can be divided into four separate structures: technical core (task performance), citizenship climate (contextual performance), learning process (learning performance) and innovative behavior (innovative performance). Task performance refers to the outcomes or behaviors of employees which contribute to the objectives of the organization through technical core in accordance with the instructions and responsibility in the job description. Contextual performance refers to the behaviors or processes of employees that indirectly contribute to the objectives of the organization through the support to the work's social, organizational, and psychological background. Learning performance indicates behaviors or processes of employees that they obtain useful information from their or other past experience or internal circulating knowledge of the organization. It contributes to the objectives of the organization through change of self-cognition, improving learning skills and other related capacities. Innovative performance refers to the behaviors or processes of employees that they shift the focus of knowledge (innovation) in the process of knowledge sharing and transferring so as to obtain competitive advantage, maintain core competencies, gain sustainable growth power (Han, Liao, and Long, 2007).

Lifton (1968) pointed out that the survivors would "save", "transfer", and "sublimate" the special experience of revival as dauntless courage and indomitable perseverance to adventure, break through and achieve unconventional targets with extraordinary power (Xiao, 2006). In addition, this particular energy comes mainly from "guilt over survival priority"⁵ and "modes

⁵ Facing the death of relatives and close friends, survivors would have a strong sense of guilt (Lifton, 1968; Xiao, 2006).

of symbolic immortality”⁶ (Lifton, 1968). Guilt over survival priority would have a positive effect on the survivors, which would make the survivors show more persistence and courage to survive from death in the severer circumstances (Xiao, 2006). Under the influence of this “positive effect,” although post-disaster work environment became worse, survival employees contribute more to the objectives of the organization through core technology in accordance to the instructions and responsibility in the job description. At the same time, the whole society is driving all possible forces to reconstruct disaster-stricken region, especially affected enterprises. The power for rebuilding homes and businesses would inspire employees to work harder. Thus, survival employees’ task performance would be improved after the earthquake. In addition, the “guilt over survival priority” would make survival employees more willing to help the people around, and contribute to the objectives of the organization through the support to the employee’s social, organizational, and psychological background. Furthermore, reconstruction of enterprises needs employees to cooperate closer with each other than before. Thus, survival employees’ contextual performance would be improved after the earthquake. Han, Liao and Long (2007) suggested that motivation of learning and organizational support for continuous learning influenced learning performance. However, this extraordinary energy would not change survival employees’ cognition of learning and motivation. In addition, after the earthquake, affected firms can not provide enough support for survival employees’ continuous learning. Thus, survival employees’ learning performance would not be improved after the earthquake. Meanwhile, innovative performance refers to idea generation, promotion, and realization (Janssen and Van Yperen, 2004). After the earthquake, although survivors have more persistence and courage, this extraordinary energy wouldn’t change their cognition of the importance of continuous shifting the focus of knowledge, idea generation and so on. In other words, survival employees’ innovative performance would not be improved after the earthquake. In summary, given learning performance and innovative performance have no change after the earthquake, improvement of task performance and contextual performance would lead to the improvement of survival employees’ overall job performance. Based on the above argument, we put forward the following hypothesis:

H3 Compared to that before the earthquake, survival employees’ task performance and contextual performance will be significantly improved, but learning and innovative performance will have no significant change, and overall

⁶ Based on the “individual self-assumption of eternal existence,” people hate dying subconsciously, however, no one may go beyond the natural limitations to achieve the desire. Thus, in order to beyond the limitations, individuals seek to achieve it through collective continuous existence. In short, although the “body” is doomed, the “spirit” can last forever (Xiao, 2006).

performance will be significantly improved after the earthquake.

3 Methods

3.1 Procedure and Sample

The sample of this study consists of survival employees of affected enterprises in Dujiangyan, Wenchuan, and Mao County. We selected survival employees of affected enterprises in the above three regions mainly based on the following two considerations. First, Dujiangyan, Wenchuan, and Mao County were damaged severely in the earthquake, and thus samples from these areas are more typical. Second, as a comparatively developed region, enterprises in Dujiangyan (one of the firstly “opened-up” areas to foreign trade in Sichuan Province) had more affected enterprises in different industries. Thus, samples from these cities could well reflect survival employees’ situation in the affected enterprises of the affected areas.

In April 2009, we went to the affected regions and interviewed 69 affected enterprises, survival employees from 33 affected enterprises (27 in Dujiangyan; 4 in Wenchuan; and 2 in Mao County) filled out the questionnaires. These enterprises were from 10 industries, including manufacturing, construction and others.

Sampling procedures were as follows. First, the authors explained the present study’s purposes, requirements and confidential rules to HR managers of these affected enterprises. Second, HR officials helped distribute the questionnaires to respondents, by which survival employees themselves evaluated their organizational behaviors before and after the earthquake. Most of the questionnaires were returned on the spot, and a small part of the questionnaires was returned on the next day. Meanwhile, in the sampling process, we conducted informal interviews with HR managers and survival employees to investigate their deeper thought on their jobs which would help to explain the results of our study accurately and reasonably. It is worthwhile to notice that we compared survival employees’ organizational behavior three months before the earthquake and the recent three months after the earthquake in this study. Thus, the affected enterprises for the sampling need to resume production before January 2nd, 2009, and the survival employees need to work in the current affected enterprises 3 months before Wenchuan Earthquake (February 18th, 2008).⁷

In this study, 250 questionnaires were distributed, 235 were returned. Among them, 206 were valid questionnaires, representing a valid response rate of

⁷ This paper chose February 18th, 2008, rather than February 12th, as the starting day, mainly on account of the Spring Festival Holiday in China. Meanwhile, based on the standard above, in our survey, the tenure of our respondents needs to exceed 1.2 years.

87.66%. Table 1 presents the sample profile. The average tenure of all samples was over 1.2 years, which guaranteed that the data could be used to compare the survival employees' organizational behaviors three months before the earthquake and three months after the earthquake. Meanwhile, 94.17% of the respondents received senior high school or higher education, which guaranteed that they could fully understand the content of the questionnaire and express themselves accurately.

Table 1 Demographic Characteristics of the Respondents

Variables	Attributes	Percentage (%)	Variables	Attributes	Percentage (%)
Gender	Female	56.3	Age	18–30	50.5
	Male	43.7		31–40	34.5
Tenure	< 1.2	0.0		41–50	11.2
	1.2–5	72.3		51–60	3.4
	5–10	18.0		61–70	0.5
	10–15	5.8		Education	Junior high school or lower
	≥15	3.9	Polytechnic or senior high school		42.7
Job category	Technical	34.5	Undergraduate college		48.5
	Non-technical	65.5	Graduate college	2.9	

3.2 Measurement

Considering the unique condition of our respondents, we tried our utmost to avoid using sensitive and provocative words in our questionnaires and interviews. To ensure the validity and reliability of the measurement scales, we adopted the authoritative measurement tools recommended in prior literature or in top journals both at home and abroad. Before the formal investigation, we conducted the pilot test among 15 students in a business school to collect possible suggestions on the length, clarity and measures of our questionnaire. The questions in the questionnaire were then modified to make them brief and accurate.

Absenteeism. In the measurement of absenteeism, due to severe discreteness, skew and kurtosis of low base absenteeism (Hammer and Landau, 1981), researchers often analyze absences in convenient or arbitrarily longer time (Mitra, Jenkins and Gupta, 1992). Taking omnifarious considerations, this study chose respondents' absenteeism during the time period from February 18th, 2008 to May 10th, 2008 (nearly 3 months, 83 days) as the time window for before the

earthquake; and chose respondents' absenteeism during the time period from January 2nd, 2009 to April 3rd, 2009 (excluding Spring Festival, nearly 3 months, 83 days) as the time window for absenteeism after the earthquake. The earthquake caused archival data of employees' absenteeism lost in most of affected companies, therefore, this study asked respondents to report the days of absence before and after the earthquake from their memories.

Job satisfaction. We chose the short-form of Minnesota satisfaction questionnaire (MSQ) developed by Weiss et al. (1967) to measure job satisfaction based on the following reasons. First, although the single global rating approach and the summation of job facet approach are essentially valid (Wanous, Reichers and Hudy, 1997), the summation of job facets approach also can show the satisfaction in specific working elements, which helped managers find the problems accurately (Lu, Shi and Yang, 2001). Second, need satisfaction questionnaire (NSQ) developed by Porter (1961) are used primarily at the managerial level, while the job satisfaction scale developed by Chinese scholars Lu et al. (2001) contains 65 questions, which is a little lengthy for our study and may lead to impatience and excessive errors of the respondents. Short-form MSQ includes three subscales and a total of 20 items, which respectively measured 20 aspects of job satisfaction: activity, independence, variety, social status, supervision-human relations, supervision-technical, moral values, security, social service, authority, ability utilization, company policies and practices, compensation, advancement, responsibility, creativity, working conditions, co-workers, recognition and achievement. Among them, 12 items (e.g., activity) measure intrinsic job satisfaction; 6 items (e.g., supervision-human relations) measure extrinsic job satisfaction; and all of these 20 items measure general job satisfaction. Respondents were asked to estimate their levels of agreement with these 20 items through a five-point Likert-type scale (1 = "strongly disagree," to 5 = "strongly agree"). In this study, for the measurement before the earthquake, intrinsic job satisfaction, extrinsic job satisfaction and general job satisfaction scales' Cronbach's α were 0.855, 0.800, and 0.906, respectively; for the measurement after the earthquake, intrinsic job satisfaction, extrinsic job satisfaction and general job satisfaction scales' Cronbach's α were 0.842, 0.795, and 0.895, respectively.

Job performance. We assessed employee' job performance through Han, Liao and Long's (2007) job performance scale, which includes four dimensions and 39 items. Among the items, item1-14 measure contextual performance, item 15-24 measure task performance, item 25-32 measure innovative performance, and item 33-39 measure learning performance. Respondents were asked to indicate how often they performed these behaviors or achieved these outcomes (1 = never, 5 = always). In this study, for the measurement before the earthquake, the Cronbach's α of four dimensions scale were 0.886, 0.757, 0.900, and 0.870,

respectively; for the measurement after the earthquake, the Cronbach's α of four dimensions scale were 0.885, 0.556, 0.906, and 0.867, respectively. Except that task performance scale's (after the earthquake) Cronbach's α was a little low (0.556), the other dimension scales' (before and after the earthquake) Cronbach's α were all, as expected, higher than 0.7. It is worthwhile to notice that this study adopted staff self-evaluation method to assess employees' performance because of its accuracy and feasibility. First, despite of self-serving bias in self-evaluation (Bretz, Milkovich and Read, 1992), self-evaluation is consistent with self-management and empowerment, which helps to reduce employees' resistance to performance evaluation. Meanwhile, self-evaluation is more suitable for developmental rather than evaluative purposes (Robbins and Judge, 2007) and this study's results of performance evaluation did not influence employees' interests (e.g., wages, rewards) negatively. Thus, survival employees could report truthfully on their job performances. Second, in a vast majority of enterprises, junior employees' performances are evaluated by their immediate supervisor (Latham and Wexley, 1981). However, it is difficult for supervisors to find small psychological and behavioral changes of survival subordinates. And this method is also very inconvenient for data collection. Third, the 360-degree evaluation required the feedback of internal and external "customers" which is also difficult to operate.

It should be noted that, since we could not get the exact ratings of survival employees' job satisfaction and job performance before the earthquake, we measured them through their memories. Although the current attitudes of survival employees would affect their judgments of their job satisfaction and job performance before the earthquake, we argued that such effects would not affect their comparisons before and after the earthquake. Thus, we argued it is reasonable to measure job satisfaction and job performance before the earthquake through survival employees' memories.

Average wage. Survival employees were asked to report their average wage during the three months before the earthquake and that during the recent three months after the earthquake. Despite some of the survival employees may not report their real wages in the sake of privacy, it was logical to expect that the relative level of the average wage before and after the earthquake was accurate and the data would not affect our conclusions.

Perceived working conditions. In this study, we set the working conditions before the earthquake as 3, perceived working conditions after the earthquake were measured by the question "If you take all factors into account, how do you think about the working conditions of your company now (after the earthquake)?" where 3 indicated that the working conditions were as the same as that before the earthquake; 4 and 5 respectively indicated that the working conditions after the earthquake were a little better or much better than that before

the earthquake; 1 and 2 respectively indicated the work condition after the earthquake were much worse or a little worse than that before the earthquake.

4 Results

4.1 Descriptive Analysis

Means and standard deviations of study variables are presented in Table 2. The mean of survival employees' average wage was 1 730.587 yuan before the earthquake and 1 525.180 yuan after the earthquake. Compared to that of before the earthquake, the mean of the average wage after the earthquake was reduced by 205.407 yuan, decreasing by 11.9%. The mean of perceived working conditions after the earthquake was 2.413, which was lower than that of before the earthquake. About their organizational behavior, the mean of absenteeism was 0.023 in the three months before the earthquake, while it was 0.007 in the recent three months after the earthquake, decreasing by about 70%. The mean of survival employees' intrinsic job satisfaction, extrinsic job satisfaction, and general job satisfaction was 3.642, 3.532, and 3.631, respectively before the earthquake and 3.600, 3.422, and 3.546, respectively after the earthquake. The mean of survival employees' intrinsic, extrinsic job satisfaction, and general job satisfaction all decreased after the earthquake, while the mean of extrinsic job satisfaction had the largest decline (decreased by about 3.1%). The mean of survival employees' contextual performance, task performance, innovative performance, learning performance and overall job performance was 3.800,

Table 2 Means, Standard Deviation of Study Variables before and after the Earthquake

Variables	Before the earthquake		After the earthquake		
	Mean	S.D.	Mean	S.D.	
Average wage (yuan/month)	1 730.587	937.123	1 525.180	907.614	
Perceived working conditions	3.000	—	2.413	1.002	
Absenteeism	0.023	0.331	0.007	0.161	
Job satisfaction	Intrinsic job satisfaction	3.642	0.472	3.600	0.470
	Extrinsic job satisfaction	3.532	0.618	3.422	0.608
	General job satisfaction	3.631	0.477	3.546	0.467
Job performance	Contextual performance	3.800	0.572	3.868	0.561
	Task performance	3.715	0.504	3.819	0.567
	Innovative performance	3.175	0.747	3.200	0.768
	Learning performance	3.781	0.692	3.800	0.702
	Overall job performance	3.647	0.499	3.706	0.516

3.715, 3.175, 3.781, and 3.647, respectively before the earthquake, and 3.868, 3.819, 3.200, 3.800, and 3.706, respectively after the earthquake. The mean of survival employees' contextual performance, task performance, innovative performance, learning performance and overall job performance all increased after the earthquake, while the mean of task performance had the largest increase of 3%; while the mean of learning performance had the smallest increase.

Table 3 presents the frequency of perceived working conditions after the earthquake, as compared to that of before the earthquake. A total of 75 people perceived that the working conditions of affected enterprises after the earthquake a little worse than that of before the earthquake, accounting for the largest proportion of 36.4%, while 40 people (19.4%) perceived that their enterprises' working conditions after the earthquake much worse than that before the earthquake. Meanwhile, only 4 people perceived that working conditions after the earthquake much better than that of before the earthquake. The employees who perceived the working conditions after the earthquake were the same as or a little better than that of before the earthquake accounted for 29.6% and 12.6%, respectively. We also found that many affected enterprises were located in the temporary prefabricated houses, which explained why 55.8% of the survival employees perceived that the working conditions after the earthquake were a little, or much worse than that before the earthquake. It is to be noted that the survival employees perceived that the working conditions after the earthquake much worse than that of before the earthquake were less than 1/5. Possible explanation might be twofold: First, thanks to self-help and outside aid, most of the affected enterprises resumed their business and improved their working conditions shortly after the earthquake; second, the living conditions of survival employees' life were severely damaged in the quake, which lowered their requirements of working conditions and further affected their perception on working conditions after the earthquake. Meanwhile, 44.2% of survival employees perceived that working conditions after the earthquake was as the same as or better than that of before the earthquake, which indicated that the post-earthquake reconstruction of affected enterprises were in good progress. The present study also found that most of the survival employees who perceived that the working conditions after the earthquake better than that of before the earthquake were from the enterprises with newly-built offices. Thus, in a sense, the earthquake partly helped update business facilities in affected enterprises. While, it is worth noting that only 1.9% of the survival employees perceived that the working conditions after the earthquake much better than that of before the earthquake. Most of enterprises lost most of their assets in the earthquake. There was little possibility for them to invest sufficient funds for the improvement of post-disaster business facilities. Xu and Duan (2008) found that all affected enterprises lacked reconstruction funds, with 92% of them were in desperate

need of external investment. From the above analysis, our findings turned out to be consistent with Xu and Duan’s (2008).

Table 3 Frequency Statistics of Perceived Working Conditions after the Earthquake (Compared to that of before the Earthquake)

Perceived working conditions after the earthquake	Frequency	Percentage (%)	Cumulative percentage (%)
1	40	19.4	19.4
2	75	36.4	55.8
3	61	29.6	85.4
4	26	12.6	98.1
5	4	1.9	100.0
Total	206	100.0	100.0

4.2 Hypotheses Testing

Table 4, 5 and 6 show the results of paired samples *T*-test of studied variables.

Table 4 Paired Samples *T*-test of Absenteeism, Job Satisfaction and Job Performance

Variables	Paired differences (after-before the earthquake)	
Absenteeism	-0.016***	
Job satisfaction	Intrinsic job satisfaction	-0.041*
	Extrinsic job satisfaction	-0.110***
	General job satisfaction	-0.085***
Job performance	Contextual performance	0.068***
	Task performance	0.104***
	Innovative performance	0.024
	Learning performance	0.019
	Overall job performance	0.059***

Note: * denotes $p < 0.05$, ** denotes $p < 0.01$, *** denotes $p < 0.001$ (2-tailed).

Table 5 Paired Samples *T*-test of Average Wage and Perceived Working Conditions

Variables	Paired differences (after-before the earthquake)
Average wage	-205.408***
Perceived working conditions	-0.587***

Note: * denotes $p < 0.05$, ** denotes $p < 0.01$, *** denotes $p < 0.001$ (2-tailed).

Table 6 Paired Samples *T*-test of the 20 Aspects of Job Satisfaction

20 aspects of job satisfaction	Paired differences (after-before the earthquake)
Activity	-0.019
Independence	0.000
Variety	-0.005
Social status	0.000
Supervision-human relations	-0.039
Supervision-technical	-0.044
Moral values	-0.039
Security	-0.199***
Social service	-0.058
Authority	0.015
Ability utilization	-0.063
Company policies and practices	-0.024
Compensation	-0.510***
Advancement	-0.029
Responsibility	0.005
Creativity	-0.058
Working conditions	-0.466***
Co-workers	-0.073
Recognition	-0.015
Achievement	-0.073

Note: * denotes $p < 0.05$, ** denotes $p < 0.01$, *** denotes $p < 0.001$ (2-tailed).

From table 4, the mean of differences between survival employees' absenteeism of the recent three months after the earthquake and that of three months before the earthquake was -0.016 ($p < 0.001$), thus, compared to that before the earthquake, survival employees' absenteeism decreased significantly after the earthquake. Hypothesis 1 was supported.

According to Table 5, the mean of differences between survival employees' average wage and perceived working conditions during the recent three months after the earthquake and three months before the earthquake was -205.408 ($p < 0.001$) and -0.587 ($p < 0.001$) respectively. Thus, compared to that of before the earthquake, survival employees' average wage and perceived working conditions decreased significantly after the earthquake. The results of paired samples *t*-test of 20 aspects of job satisfaction (Table 6) indicated that, compared to that before

the earthquake, 17 aspects of job satisfaction, including activity ($p = 0.696 > 0.05$), independence ($p = 1.000 > 0.05$), variety ($p = 0.902 > 0.05$), social status ($p = 1.000 > 0.05$), supervision-human relations ($p = 0.347 > 0.05$), supervision-technical ($p = 0.273 > 0.05$), moral values ($p = 0.249 > 0.05$), social services ($p = 0.070 > 0.05$), authority ($p = 0.681 > 0.05$), ability utilization ($p = 0.091 > 0.05$), company policies and practices ($p = 0.530 > 0.05$), advancement ($p = 0.397 > 0.05$), responsibility ($p = 0.876 > 0.05$), creativity ($p = 0.158 > 0.05$), co-workers ($p = 0.055 > 0.05$), recognition ($p = 0.550 > 0.05$) and achievement ($p = 0.075 > 0.05$) didn't change significantly after the earthquake. The mean of differences between survival employees' job satisfaction about security, compensation and working conditions in the recent three months after the earthquake and three months before the earthquake was -0.199 ($p < 0.001$), -0.510 ($p < 0.001$) and -0.466 ($p < 0.001$), respectively. Thus, compared to that of before the earthquake, survival employees' job satisfaction about security, compensation and working conditions decreased significantly after the earthquake. According to Table 4, the mean of differences between survival employees' intrinsic job satisfaction, extrinsic job satisfaction and general job satisfaction of the recent three months after the earthquake and that of three months before the earthquake was -0.041 ($p < 0.05$), -0.110 ($p < 0.001$) and -0.085 ($p < 0.001$), respectively. Thus, compared to that of before the earthquake, survival employees' intrinsic, extrinsic job satisfaction and general job satisfaction decreased significantly after the earthquake. Hypothesis 2 was supported.

According to the results of paired samples *t*-test, the mean of differences between survival employees' contextual performance, task performance, innovative performance, learning performance and overall job performance in the three months after the earthquake and three months before the earthquake was 0.068 ($p < 0.001$), 0.104 ($p < 0.001$), 0.024 ($p = 0.231 > 0.05$), 0.019 ($p = 0.325 > 0.05$), and 0.059 ($p < 0.001$), respectively. Thus, compared to that of before the earthquake, survival employees' contextual performance, task performance and overall job performance were improved significantly, while innovative performance and learning performance didn't change significantly after the earthquake. Hypothesis 3 was also supported.

5 Conclusion and Discussion

5.1 Conclusion

In this study, we empirically analyzed the impact of a natural disaster on survival employees' absenteeism, job satisfaction, and job performance, that is, whether there are significant changes in survival employees' absenteeism, job satisfaction

and job performance when they return to work, as compared with that of before the earthquake. Based on a survey on 206 survival employees in 33 affected enterprises of Wenchuan Earthquake, we found that the natural disaster has significant impact on survivors' absenteeism, job satisfaction, and job performance. In comparison with that of before the earthquake, (1) survival employees' absenteeism decreased significantly; (2) intrinsic, extrinsic job satisfaction and general job satisfaction also decreased significantly; (3) task performance, contextual performance and overall performance significantly increased, learning and innovative performance didn't change significantly.

From research results and feedback of survival staffs in informal interviews, we found that the intrinsic job satisfaction was much lower after the earthquake, while 11 aspects of intrinsic job satisfaction, including activity, independence, variety, social status, moral values, social service, authority, ability utilization, creativity, responsibility and achievement, had no significant change after the earthquake. Only the satisfaction on job security was significantly reduced after the earthquake. Thus, we argued that intrinsic job satisfaction decreased significantly after the earthquake due to a significant reduction of job satisfaction on security. In addition, the extrinsic job satisfaction was significantly lower after the earthquake. The five aspects of extrinsic job satisfaction, including supervision-human relations, supervision-technical, company policies and practices, advancement, and recognition, had no significant change, except that the compensation satisfaction was significantly reduced after the earthquake. And the results of paired t-test indicated that the average wage of survival employees also decreased significantly after the earthquake. Therefore, we argued that due to a decrease of compensation satisfaction, which were the results of decrease of survival employees' average wage, extrinsic job satisfaction decreased significantly after the earthquake. Furthermore, the decrease of perceived working conditions led to the lowered job satisfaction about working conditions after the earthquake. In summary, job satisfaction of security, compensation and working conditions' significant decrease after the earthquake gave rise to survival employees' lowered general job satisfaction after the earthquake.

5.2 Theoretical Contributions

The theoretical significance of this study is listed as follows. First, this study connected survivor research of natural disasters with organizational behavior and extended the academic management over special employees (e.g., survival employees). Previously, a few researchers indicated from a managerial perspective that natural-disaster-stricken enterprises should conduct psychological intervention on the survival employees. In the future, management researchers should pay their attention to the management research about special

groups of employees (e.g., survival employees) instead of always focusing on the “normal” employees. Second, this study demonstrated that earthquake has a significant influence on survival employees’ organizational behavior and therefore enriched the theory on survivor’s organizational behavior. Previous studies only found that natural disasters (e.g., earthquake) have huge negative impact on survivors’ physical and mental health (Zhang et al., 1998, 1999; Wang et al., 2005), while failed to mention the impact on organizational behavior. Finally, this article considered both the attitude (job satisfaction) and behavior (absenteeism and job performance) variables of survival employees’ organizational behavior and provided more extensive implications for management of survival employees. Meanwhile, we applied multidimensional job satisfaction and job performance indicators for a more thorough analysis of organizational behaviors’ change of survival employees.

5.3 Practical Implications

The conclusions of this study have practical significance in the management and reemployment of survival employees. Regarding to the management of survival employees, since this study found three reasons for the decrease of survival employees’ job satisfaction on security, affected enterprises can adjust their management in the following three ways: first of all, affected enterprises should take initiative to communicate with survival employees in group and individually so as to ensure them stable jobs, which will further improve the sense of their job security. When dismissing employees, affected enterprises must actively communicate with the other employees and give them reasonable explanations in case of their panic. Meanwhile, affected enterprises also need to communicate with the dismissed employees to comfort them and to reduce the negative effects of them on in-service employees. In fact, the stability of the social network offers their members a sense of security, the heritage of the spirit and values (Luo, 2008). Thus, enterprises should devote themselves to support the community development of survival employees, which not only helps to improve the overall security of survival staff and further improves their job security, but also plays a great role to restore a stable social order (Xu, Wu and Ma, 2008). And these implements also can promote fundamentally the rapid and effective post-disaster reconstruction (Xu and Ma, 2009). In addition, companies should organize group activities regularly, which help to fill the emotional vacancy of affected individuals (Li, Qu and Yan, 2009). Regarding to the wage and working conditions, the affected enterprises should adopt the following methods to improve the situations. First, they should try to improve their financial performances and resume employees’ wages and working conditions as soon as possible, which is a solution in the long run. Meanwhile, through active

communication with their employees, the affected enterprises should convince their employees that decrease in wages and working conditions were only caused by the earthquake. Furthermore, the affected enterprises should emphasize that wages and working conditions of all employees from affected enterprises were significantly decreased. This explanation will bring a sense of fairness and motivate their employees and thus improve their job satisfaction on compensation and working conditions.

From our conclusions of absenteeism and job performance, the un-affected enterprises outside the affected regions would benefit from choosing survival employees with lower absenteeism and better job performance. It is worth to give priority to survival employees who have equal job capacity as other job seekers in recruitment. More reemployment of survival employees also helps to speed up the reconstruction of affected regions. Thus, considering not only corporation social responsibility but also economic benefits, given the same conditions, giving priority to recruitment of the survival employees is beneficial to the un-affected enterprises themselves.

5.4 Limitations and Suggestions for Future Research

A number of limitations of the present study should be addressed in future research. First, this study analyzed the impact of natural disaster on survival employees' organizational behavior. However, it did not study its mediating mechanism. Thus, future research need to unfold the underlying mechanism how natural disaster influences survival employees' organizational behavior. Second, the sample of this study was not obtained through random sampling, but through convenient sampling from affected regions. Thus, this non-random sample limits the external validity of our findings. Future research should select survival employees in different affected areas and enterprises as samples. Also, we only studied survival employees from a single source of natural disaster—a recent serious earthquake. Future research may study various disasters' impact on survival employees' organizational behavior. Third, the data of our study was self-reported by survival employees, giving rise to possible common method bias. Some scholars argued that the common method bias may inflate the impact of variables (Malhortra, Kim and Patil, 2006; Spector, 2006). But as this study compared survival employees' organizational behaviors before and after the earthquake, common method bias might not have great effect on our findings. Furthermore, future research can adopt a variety of ways (sources) to collect data to further reduce common method bias. In addition, although the information of absence came from survival employees' memory, the data would not change the main conclusions of this study. However, its accuracy was not guaranteed completely. Obtaining the archival data of their absence will make

the conclusions more accurate and convincing. Fourth, this study only analyzed the impact of the earthquake on three organizational behavioral indicators (i.e., absenteeism, job satisfaction and job performance); future research shall consider more organizational behavioral indicators, such as organizational citizenship behavior (OCB), to broaden the academic scope of survival employee management. Fifth, due to a lack of relevant data, we could not analyze the moderating role of the reasons for absence on the impact of the earthquake on the absenteeism, which should be tested by future research. In summary, we wish more academic attentions would be paid to the study of the organizational behaviors of survival employees, and to continue expanding the scope of related academic fields so as to provide theoretic and practical implications for the management of survival employees.

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