

A Study on the Stress and Coping Behavior of Foreign Residents after the Great East Japan Disaster (2): Relationships between Social Characteristics of Residents and Stress

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Summary

Research was conducted on the stress and coping behavior of foreign residents who experienced the Great East Japan Disaster, using a questionnaire which included questions about a) their social characteristics, b) the situation of the respondents when the earthquake occurred, and c) stress and coping behavior.

Data on 154 subjects from 21 countries were obtained. The main results were as follows : a) a sense of belonging to Japanese society was positively correlated with the number of Japanese friends, b) percentage in tendency to evacuate was higher in those whose sense of belonging to the Japanese society was lower and in those who had fewer Japanese friends, and c) the respondents had less stress-related symptoms when their sense of belonging to the society was stronger and when they had more Japanese friends. As a whole the importance of social adaptation to coping with stress was confirmed by the results.

Key words : Great East Japan Disaster, foreign residents, social characteristics, stress, coping behavior

Introduction

Adverse circumstances are an intrinsic part of daily life, and most of the time although they provoke responses related to stress, they are seen as positive as they might be useful for survival. However, when those adverse circumstances are extreme and appear rather suddenly, opening a door to an important number of accumulative stressors which are present during a prolonged period of time, the natural defenses of people can not have sufficient time to cope appropriately with the series of continuous adversities, affecting their health in major or minor grade.

Although the term “stress” has been defined in different ways, most concepts refer to the presence of an acute or chronic stimulus that provokes an emotional and/or physical response. For practical rea-

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sons, in this study we will use the term “stress” as the response of the organism to some kind of threat toward its habitual homeostasis, leading to a generalized response to return back to its former internal equilibrium. Then, if the imbalance of the organism persists for a long time it could elicit physical and/or mental alterations affecting the subject’s health.

There is a large amount of researches that emphasizes the biological aspects of stress as the source of different diseases (e.g. alterations of the cardio-respiratory and digestive functioning, weakness of the immune system). On the other hand actually there are enough theoretical and empirical evidence that demonstrates that social, behavioral and psychological processes are also implicated as part of stress effects (e.g. overeating, substance abuse).

An exhaustive review of the literature on the biological, psychological and environmental approaches to the effects of stress shows that the exposure to stressors affects almost all the systems of the body, involving perception, cognition and other psychological processes mediated by brain activities, which generates an activation of nervous and endocrine system responses, altering the functioning of cardio-respiratory, skeletal muscle, digestive, reproductive and immune systems, among others (see Contrada and Baum, 2011).

Considering the variety of sources of stress, natural disasters could be cited as the one that generate enormous pressure on the victims since it involves a great danger and a accumulative number of stressors turning upside down the life of a larger number of people. As has been defined by The World Health Organization, disaster is a severe disruption of the functioning of a community or society generating human, material and ecological losses that exceed the ability of coping using its own resources (WHO, 2012).

The stressors associated with natural disasters, such as earthquakes, are related with the dimension of damage and risk, that is, the number of human victims and the structural and ecological destruction. Furthermore, besides the disaster per se, there are other kinds of difficulties, where entire communities have to deal with their consequences for a prolonged period of time until they restore themselves to their original and normal state. For instance, thousands of major and minor quakes, partial or complete destruction of infrastructures, shortages of basic needs, massive evacuations and refugees, huge amount of rubbles, repetitive broadcasts of images of the damage and of personal reports of the victims, etc., are the source of painful memories of the traumatic experience.

The stress caused by an earthquake itself and its consequences is considered to be a latent risk against physical and mental health. And the role of stress in the emergence of health problems could be analyzed in relation with factors such as the scale of the disaster, the previous personal history and health conditions of the individuals, the duration of exposure to the disaster, and the personal damage that each victim suffers.

As a large-scale disaster in Japan, the Great Hanshin Earthquake which occurred January 17th, 1995, has most of the cited characteristics of the disaster. And there is evidence that its victims showed various kinds of stress responses and disorders directly related with this earthquake (Kato & Iwai, 2000 ; Tsujioka et al., 1996 ; Kusaka et al., 1997).

On the other hand, the earthquake that affected the Tohoku area in March 11th, 2011, clearly has been a devastating disaster considering the number of victims and damage reported by the National

Police Agency. As of December, 2011, the number of fatal victims reached 15,842, still there were 3,485 missing persons and 5,890 were injured. In property damages 126,244 houses collapsed completely, 227,677 half collapsed, and 644,522 houses were partially damaged (Emergency Disaster Countermeasures Headquarters, 2011). For the dimension of this tragedy, there is no doubt that this natural disaster has been an important stressor for the residents of the area. Moreover, in this case, the earthquake of magnitude 8.9, brought many direct consequences, such as the tsunami, the continuous aftershocks, the lack of basic supplies including food, water, gas, and electricity, among others. The situation in this disaster was worsened by the Fukushima nuclear plant catastrophe which caused and still is causing environmental pollution with radioactive materials. The process of reconstruction of the affected areas is in progress, but the disposal of the doomed nuclear plant does not yet see its solution and the radioactive pollution itself became one of the main causes of impediment for the reconstruction. This pollution, due to the slow degradation of radioactive elements will continue for decades, creating a big economic problem to the agriculture, fishing and commerce of the region, electricity shortages, and continuous news of new leakages of radioactive material that keep people worrying about the health of their own and of their family. These are the ever-present memories of the traumatic events that have to endure victims, especially those who had to evacuate their city, town, or village, without having a clear date of return home.

Under these circumstances residents of the area are still stricken by the disaster and had to deal with all kinds of problems that generated situations of stress. In the case of foreign residents more stressors could be added to the list. Among them there are the possibility of becoming isolated, the lack of information in their mother tongue, and being confused by rumors and anxiety (Aoki, 2011), which make them prone to have more difficulties to cope with stress.

Certainly, foreigners who are adjusting to a new environment have to face differences in culture, language, social norms, etc., between their own country and the host country. Then, those cultural differences can be a source of stress, especially when the differences are large between countries, as in the case of Western countries and Japan. Japan is conceived as a mono-cultural country compared with others, which may make more difficult the adaptation of foreigners to Japanese society. There is some evidence that migrants have lesser problems in a multicultural environment where residents have more options to adjust themselves (Murphy, 1975). Also several investigations argued that the language proficiency is one of the most important factors in the process of adaptation to the new environment (Baker, 1988 ; Heikinheimo and Shute, 1986 ; Nicassio et al, 1986). In particular, in relation to the adaptation of foreigners to Japanese society it has been suggested that cultural differences cause them much stress, which include communication problems as a result of insufficient Japanese language proficiency, Japanese hierarchic human relations, and so on (Hirata and Foster, 1991).

Taking the dimension of the disaster and the possible vulnerability of the foreign residents in the affected area into consideration, in this research foreign residents who experienced the Great East Japan Disaster were asked to about their experiences during and after the earthquake. The main purpose of the study was to analyze what caused stress to the residents, how they reacted, and what they did to cope with it. Also, through the research we aimed to analyze the process of adaptation of foreigners to Japanese society in general, to have a general panorama of their process of adjustment and the relation of this factor with stress and their way of coping with it.

In a previous article the general results of the first part of this research have already been reported (Foster and Hirata, 2012). They are summarized as follows : a) although few respondents suffered injuries, almost half of them suffered material damages, b) about 40% of the respondents evacuated their home and one third of them went abroad for fear of radiation problems, c) more than 80% of the respondents had stress-related symptoms and 60% reported more than one symptom, d) radiation problems, continuous aftershocks and family health were answered most as causes of their stress, followed by work problems and family problems, among others, and e) answers most mentioned as alleviating factors to cope with the situation were being/talking with family/friends in Japan and other countries, doing useful things, preparing basic goods considering the possibility of further disasters, etc.

Here we report the results of the analysis on the relationships between some social characteristics of the respondents and a) their sense of belonging to Japanese society, b) their evacuation behavior after the disaster, and c) emergence of stress-related symptoms.

Method

The subjects who participated in this research were foreigners that resided in Tohoku area and were affected by the disaster which occurred in March, 2011.

The research was carried out using a questionnaire which was divided into three parts. The first part consisted of questions about social characteristics of respondents as follows : a1) nationality, a2) sex, a3) age, a4) occupation, a5) total length of stay in Japan, a6) marital status and nationality of spouse, a7) place of residence, a8) cohabiter, a9) sense of belonging to Japanese society, a10) number of Japanese friends, a11) number of non-Japanese friends, and a12) experience of natural disasters in the past. In the questions from a9 to a11 a four-point scale was used to answer the questions. And in the last question when the respondents had a previous experience of natural disasters they were asked to describe it.

The second part of the questionnaire was composed of questions about the situation of the respondents when the earthquake occurred and the questions were as follows : b1) where they were, b2) with whom they were, b3) what they were doing, b4) how they reacted, and b5) physical, economic or social damages they suffered. All of them were open-response questions.

The third part included questions about after the earthquake : c1) evacuation from their house, c2) stress-related problems of their family, c3) stress-related behaviors and symptoms of the respondents, c4) cause of their stress, c5) alleviating factor against stress, c6) stress coping behaviors, c7) principal concerns, c8) reactions of family and/or friends who lived abroad, c9) what they learned through the disaster experience, and c10) evaluation on the behavior of Japanese people during and after the earthquake.

In the case that the respondents replied they had evacuated, they were asked to describe the details of the evacuation, for example, to where, until when, and why. The questions from c4 to c10 were open-response questions and the respondents were required to mention up to three answers.

At the end of the questionnaire the respondents were asked to write their comments about their experiences and/or about this research freely. It is important to note that several subjects wrote many additional pages describing detailed experiences about their feelings and experiences on the earthquake.

Questionnaires with the same content were prepared in four languages, namely, English, Spanish, Korean and Japanese. They were used according to the selection of each respondent.

The research was carried out from August to December, 2011. Data was collected in two ways. To some respondents a printed questionnaire was handed over and they were asked to fill it out. To others the questionnaire was sent by e-mail and it was sent back, also by e-mail, to the researchers.

Results

1. Demographic characteristics of the respondents

The responses of 154 foreign residents, 75 males and 79 females, from 21 countries were obtained in total. There were more Koreans (79) followed by Americans (26) and Canadians (9). The age of the respondents was as follows : 27 of under age 30, 39 in their 30's, 46 in their 40's, 32 in their 50's, and 10 over-sixties. As to profession, 53 worked in education-related areas, and there were 37 housewives and 27 students. The length of stay in Japan varied from 2 months to 42 years and the mean length was 11.7 years. About marital status 38 respondents were single, and 111 were married, of whom 82 had spouse of Japanese national.

2. Sense of belonging to Japanese society

The subjects were asked how much they consider themselves as members of Japanese society. Only 10.4% of them replied "full member", and percentages of the other three alternatives, "significant member", "peripheral member", and "not a member", were 36.4%, 42.9%, and 9.1%, respectively. We examined the relationships between the sense of belonging to the society and some characteristics of the respondents.

The results on the relationship between mean length of stay in Japan and the sense of belonging to the society is shown in Fig. 1. A clear relationship was observed between two variables, showing that the stronger is the sense of belonging to the society, the longer is the mean length of stay. An analysis of variance was applied to these data revealing the significant main effect of membership consciousness ($F(3,147)=10.22, p<.01$). On the other hand, the results of the maximum and minimum lengths of stay indicate that there are subjects who stay long but do not consider themselves as members of the society, and there are others who stay for short time but have a stronger sense of belonging to the society, although both of them were not so many.

The results on the relationships between the sense of belonging to the society and a) marital status and b) the number of Japanese friends are shown in Fig. 2 and Fig. 3, respectively. There are not many differences in percentage of the response "full member" among three groups of different marital status, that is, unmarried, married with Japanese spouse and married with non-Japanese spouse. Although percentages of other responses varied somewhat among the three groups, any clearly discernible relationships were not obtained between marital status and the sense of belonging to the society. A chi-square test showed no significant relationship between two variables ($\chi^2=9.699, df=6, p>.05$). Roughly speaking, there was a slight tendency that married subjects had stronger sense of belonging to the society than

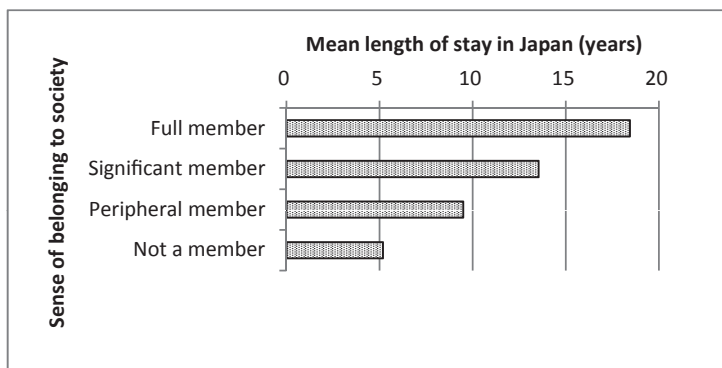


Fig. 1 Relationship between mean length of stay in Japan and sense of belonging to Japanese society

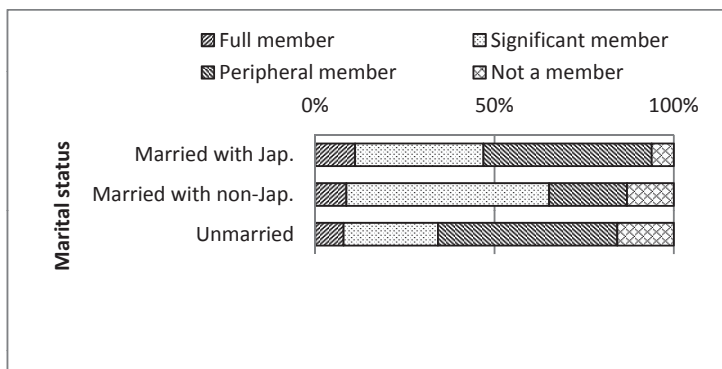


Fig. 2 Relationship between marital status and sense of belonging to Japanese society

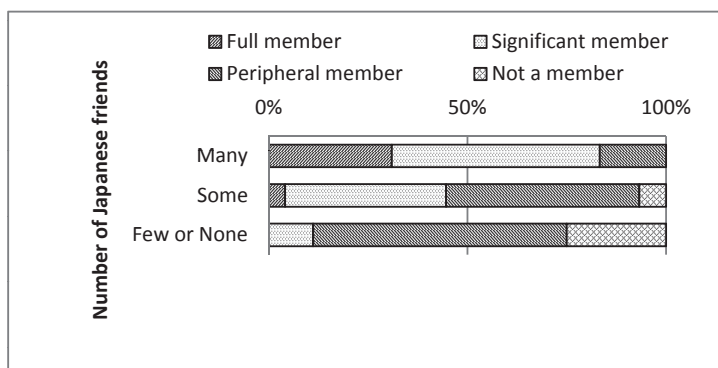


Fig. 3 Relationship between number of Japanese friends and sense of belonging to Japanese society

unmarried subjects. However, the comparison between those with Japanese spouse and those with non-Japanese spouse indicates that having Japanese spouse does not necessarily contribute to stronger sense of belonging to Japanese society.

As to the relationship with the number of Japanese friends, those who had “many” Japanese friends showed higher percentages of “full member” and “significant member” and those who had “few” or “no” Japanese friends showed higher percentages of “peripheral member” and “not a member”. In a Chi-square test a significant relationship was obtained between the membership consciousness and the number of Japanese friends ($\chi^2=57.838$, $df=6$, $p<.01$). From these results it is possible to deduce that the degree of the sense of belonging to the society is closely related to having Japanese friends, but not to having a Japanese spouse.

3. Evacuation behavior

Out of 154 respondents, there were 30 (19.5%) in total who left the city where they lived, of whom 23 evacuated the country. And 115 (74.7%) answered that they remained in their cities, although 28 of them had to evacuate temporarily to nearby public facilities. There was a difference in the motive of evacuation between those who escaped abroad and those who stayed in the city of residence. While most of those who evacuated abroad mentioned concerns about radiation problems as a motive of evacuation, many of those who remained in their city referred to damages to their house and problems of basic supplies.

The analysis of the differences between those who evacuated their city of residence and those who remained, referred to as “evacuees” and “non-evacuees”, respectively, was done in relation with several social characteristics of them. Firstly, the relationship between the evacuation and the length of stay in Japan was examined. Mean lengths of stay of evacuees and of non-evacuees were 11.8 and 12.2 years, respectively. A t-test did not show a significant difference between two means ($t=0.215$, $df=38.6$, $p>.05$), which indicates that the length of stay in Japan does not have direct relation with the decision of evacuation of disaster victims.

The results on the relationships between the evacuation and a) marital status, b) sense of belonging to the society, and c) number of Japanese friends are shown in Fig. 4, Fig. 5, and Fig. 6, respectively. These data were subjected to Chi-square test. As to the marital status there were little differences in the percentages of evacuees among three groups of different marital status, that is, married with Japanese, married with non-Japanese, and unmarried, although a slight tendency was observed that the percentage of evacuees was highest in the group of unmarried and lowest in the group of married with Japanese. No significant relationship was obtained in the Chi-square test ($\chi^2=0.626$, $df=2$, $p>.05$). In respect to the sense of belonging to the society those who answered “not a member” showed a higher percentage of evacuation than other groups. Among the other three groups the percentages of evacuation did not vary so much. The Chi-square test did not yield a significant relationship between the evacuation and the sense of belonging to the society ($\chi^2=2.709$, $df=3$, $p>.05$). The factor of number of Japanese friends showed a certain relationship with the percentage of evacuation. There was a tendency that the more Japanese friends had the respondents, the less the percentage of evacuation, although it was not statistically significant ($\chi^2=2.248$, $df=2$, $p>.05$).

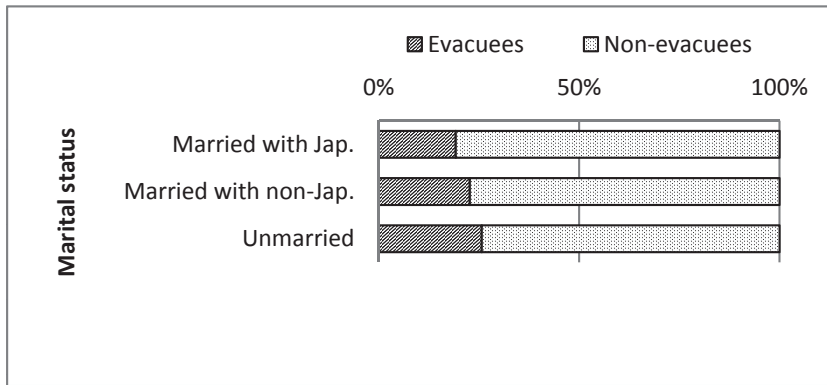


Fig. 4 Relationship between marital status and evacuation

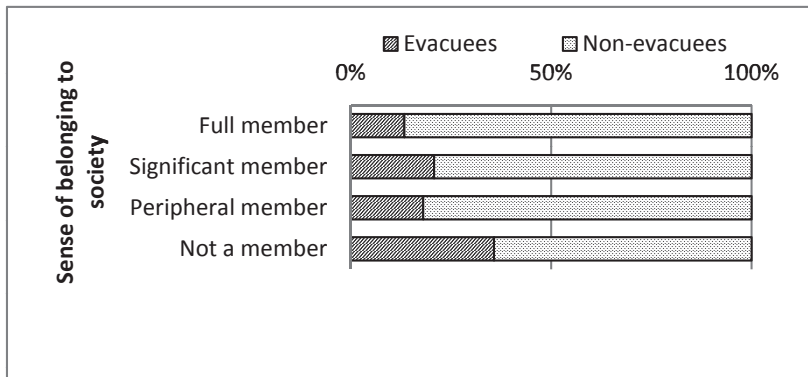


Fig. 5 Relationship between sense of belonging to Japanese society and evacuation

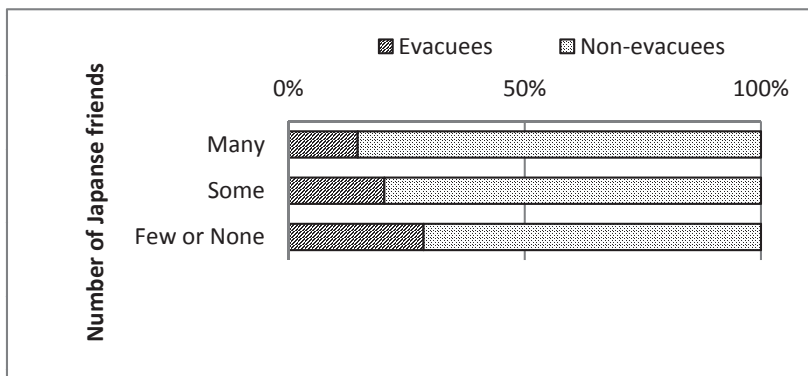


Fig. 6 Relationship between number of Japanese friends and evacuation

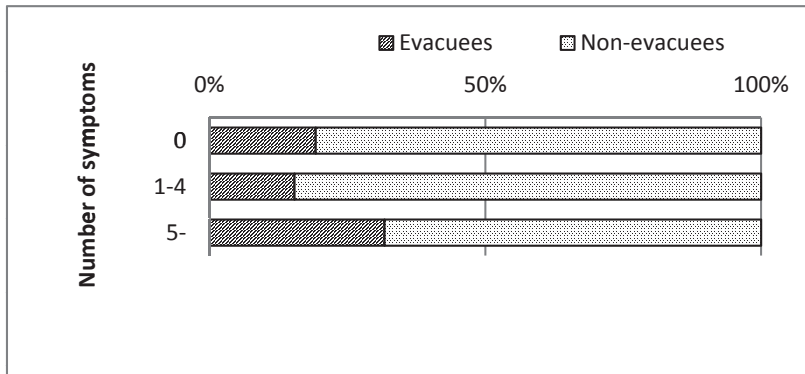


Fig. 7 Relationship between number of stress-related symptoms of respondents and evacuation

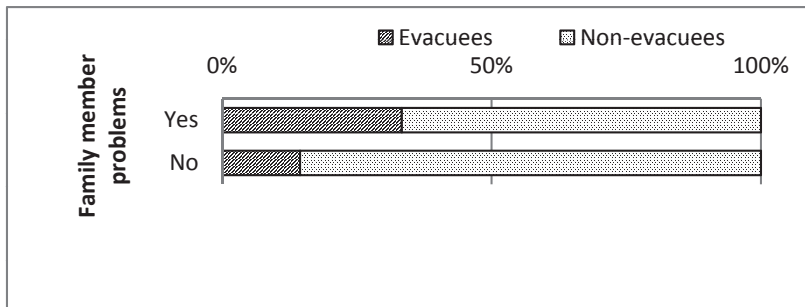


Fig. 8 Relationship between stress-related problems of family member and evacuation

Also the relationship between the evacuation and stress was analyzed. The results on the relationships between the evacuation and a) number of stress-related symptoms of respondents and b) stress-related problems of their family member are shown in Fig. 7 and Fig. 8, respectively. Here also Chi-square tests were applied to the data. About the factor of number of stress-related problems the results indicate a slightly higher percentage of evacuation in those with more symptoms of stress than those with less symptoms. But the difference was not significant ($\chi^2=4.405$, $df=2$, $p>.05$). On the other hand, the relationship between the evacuation and the stress-related problems of the family member of respondents proved to be statistically significant ($\chi^2=6.729$, $df=1$, $p<.01$). The respondents whose family members suffered stress-related problems showed higher percentage of evacuation compared with others whose family members did not have the problems.

4. Number of stress-related symptoms

In the questionnaire we mentioned 15 stress-related symptoms and asked if the respondents had each of them or not after the disaster. These 15 symptoms were selected from questionnaires of various reserches on the stress. The most frequently reported symptom was “Feeling fatigue or tiredness even after an adequate sleep”. Sixty-seven respondents (43.5%) answered that they had a feeling of

fatigue after sufficient sleep. Other symptoms more frequent were as follows : “Feeling too much pressure” (32.5%), “Becoming easily irritated or angered” (31.2%), “Feeling sad or depressed” (28.6%), “Impairment in concentration or memory” (27.3%). As to the number of symptoms mentioned, there were 29 subjects (18.8%) who replied that they did not have any. Twenty seven (17.5%) replied that they had one symptom and the rest, more than half of the respondents, had multiple symptoms. Considering that this research was conducted more than 5 months after the disaster we can say that the disaster affected the victims both physically and mentally for a long period of time.

The relationships between the number of stress-related symptoms and several social characteristics of the respondents were also analyzed using Chi-square tests. The results on the marital status are shown in Fig. 9. A clear difference in the number of stress-related symptoms were not found among three groups, married with Japanese, married with non-Japanese, and unmarried ($\chi^2=2.463$, $df=4$, $p>.05$). It can be said that there is not differences in the number of stress-related symptoms neither between married and unmarried subjects nor between those with Japanese and non-Japanese spouse.

The results on the relationship between the number of symptoms and the sense of belonging to Japanese society are shown in Fig. 10. A Chi-square test indicated that two variables are significantly related ($\chi^2=15.553$, $df=6$, $p<.05$). People who consider themselves “full member” or “significant member” showed higher percentages of “no symptoms” and lower percentages of “5 symptoms or more”. By contrast the results of those who regard themselves “peripheral member” or “not a member” were totally opposite. They gave very low percentages of “no symptoms” and higher percentages of “5 symptoms or more”. It seems clear from this result that the stronger is the sense of belonging to society, the less symptoms of stress appeared.

The results on the relationships between the number of symptoms and the number of Japanese and non-Japanese friends are shown in Fig. 11, and Fig. 12, respectively. Similar results were obtained for the factors of Japanese and non-Japanese friends. The percentages of three categories of number of symptoms did not differ so much between those who have “many” and “some” friends. Meanwhile, those who have “few” friends showed a little lower percentage of “no symptoms” and very higher percentage of “5 symptoms or more” than those have “many” or “some” friends. This tendency is more

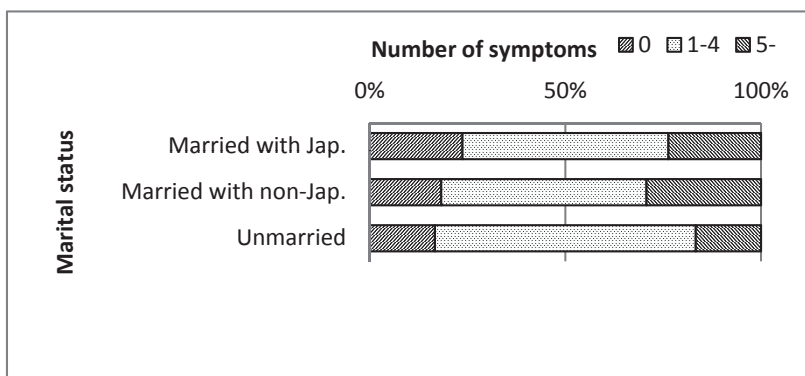


Fig. 9 Relationship between marital status and stress-related symptoms

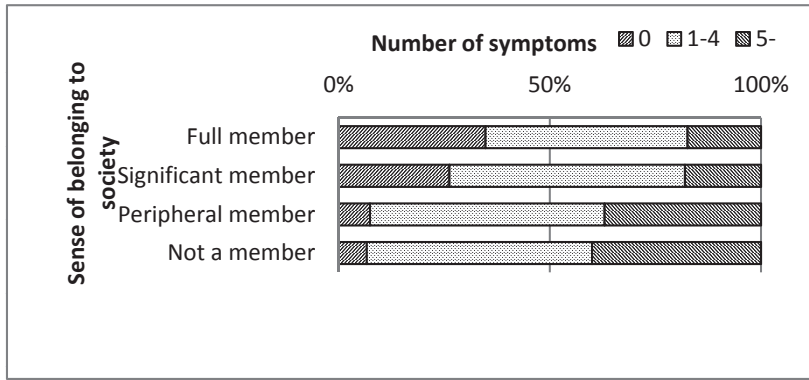


Fig. 10 Relationship between sense of belonging to Japanese society and stress-related symptoms

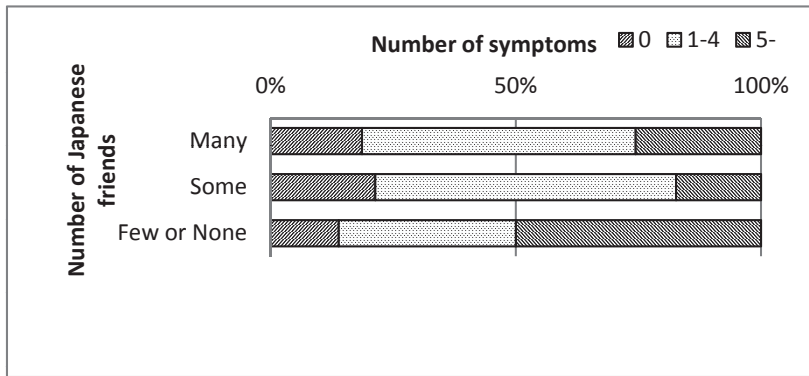


Fig. 11 Relationship between number of Japanese friends and stress-related symptoms

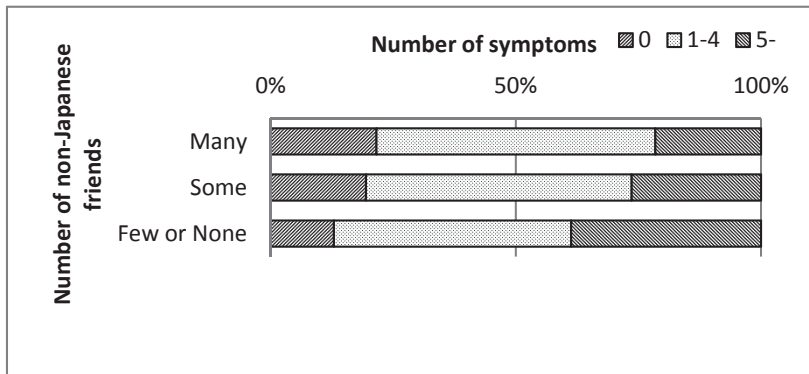


Fig. 12 Relationship between number of non-Japanese friends and stress-related symptoms

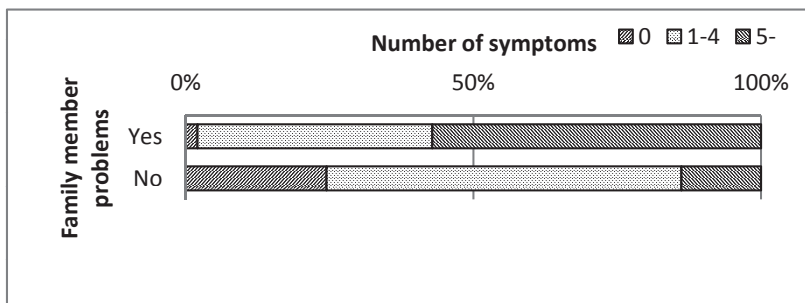


Fig. 13 Relationship between family member problems and stress-related symptoms

evident in the results on Japanese friends. The results of Chi-square test were different for the factors of Japanese and non-Japanese friends. In the case of Japanese friends a significant relationship was obtained ($\chi^2=13.209$, $df=4$, $p<.05$), while for non-Japanese friends the relationship was not statistically significant ($\chi^2=3.170$, $df=4$, $p>.05$).

The results on the relationship between the number of symptoms and family member problems are shown in Fig. 13. A Chi-square test showed a significant relationship between the two variables ($\chi^2=33.304$, $df=2$, $p<.01$). The percentage of “no symptoms” was appreciably higher and that of “5 symptoms or more” was fairly lower when the family member of respondents had stress-related problems than when he/she did not have them. The results indicate a strong positive correlation between stress-related problems of the respondents and those of their family members.

Discussion

When we evaluate how much a natural disaster affects victims, or how much stress it causes to them, it is not possible to do it without knowing how much stress they live with and how they cope with difficulties in everyday life. The degree of adaptation to the social environment is one of the most important factors which determine the degree of stress that we have in daily life. And it is plausible that the degree of adaptation is closely related with how much the people consider themselves as members of the society where they reside.

The results obtained show that the percentage of those who considered themselves as “peripheral member” or “not a member” exceeded 50 % of the respondents, though many of them reside for a long time in Japan. These results implicate that many of the respondents are not adapting to the society where they live, which may be a cause of stress in their daily life. Then the pervasive effects of the earthquake may have affected them more compared with the group of foreigners who feel themselves full or significant part of Japanese society and have more Japanese friends.

Here the relationships between the sense of belonging to the Japanese society and several social characteristics of the respondents were analyzed. The degree of membership consciousness had a positive correlation with the mean length of stay in Japan. It is possible that the degree of the sense of belonging to society is a causal factor of the length of stay. That is, people who consider themselves as

a core member of the society, or who successively adapt to the society are likely to remain where they are. On the other hand, those who do not adjust to the society look for alternatives to leave. But the length of stay does not seem to be the only factor connected with the sense of belonging to society. Among the respondents there were some who stayed long but their member consciousness was not strong and others whose stay is yet short but showed stronger sense of belonging to society, which suggests an involvement of other factors.

As to the marital status there was a tendency that married subjects showed stronger sense of belonging to society than unmarried respondents. But in those who married a Japanese national the percentage of “not a member” was lower, but that of “peripheral member” was higher than in those married a non-Japanese spouse. Then it is clear that having a Japanese spouse does not necessarily contribute to enhance the sense of belonging to society.

Compared to the results on the marital status the results on having Japanese friends were clear-cut. There was a positive correlation between the number of Japanese friends and the degree of the sense of belonging to society. The more Japanese friends they have, the stronger is their sense of belonging to society. It means that having Japanese friends is more important than having a Japanese spouse to feel oneself as a member of Japanese society. Consequently, it is possible to argue that having Japanese friends is of great importance for the adaptation in the Japanese society. And possibly this is related to a better degree of communication with the people surrounding them.

After the disaster, 19.5 percent of the respondents replied that they had evacuated their city of residence. The results indicate that the accident in Fukushima nuclear power plant caused by the earthquake and tsunami and consequent environmental pollution with radioactive materials were the principal motives for their evacuation.

Among the factors examined the problem of family members was the only one that had statistically significant relation with the evacuation. The respondents whose family member had some stress-related problems showed a higher percentage of evacuation. And there was a tendency that those who had many stress-related symptoms showed a higher percentage of evacuation, although the difference was not statistically significant. These results permit to imagine that the psychological damages caused by the earthquake itself and the fear of a worsened situation could have motivated the evacuees to leave Japan. Also there were tendencies that the percentages of evacuation were higher in the respondents who consider themselves as “not a member” and in those who had less Japanese friends.

In the case of the disaster of March, 2011, there were people who evacuated Japan for fear that the radioactive materials which leaked from Fukushima nuclear power plant might affect their health. At the same time, there were others who remained in their city helping other victims, making efforts to restore their lives to the normal and original state, or keeping on engaging themselves in their day-to-day activities such as family chores, work, and study.

Evacuation means the abandonment of study, job, other social activities, or, more generally speaking, society. Evacuation is not merely a physical displacement from a place where some problem occurred. It implies a possible abandonment of the society and desertion of its members. In other words, evacuees cut social and psychological ties with those who remain, at least temporarily. This is true in the case of this disaster, in which no one knew to what extent the pollution of the environment

with radioactive materials might reach and until when it would persist. Actually the evacuees did not know whether they can return or not when they evacuated, and it is plausible that many of them thought that they could not return. Considering these circumstances it is not difficult to imagine that the decision of evacuation was not so easy to take and that it involved a great psychological toll, especially when people have close and strong ties with their communities and their members. Also it is possible to suggest that the evacuees, when the critical moment passed away, might have a feeling of guilt for abandoning their community.

Then, it is possible to conclude that the stronger the ties with the community, the higher the possibility to remain in it. This idea is supported by the results on the relationships of the evacuation with the number of Japanese friends and the sense of belonging to society, in which the percentages of evacuees were higher in those who consider themselves as “not a member” and in those who had “few” or “no” Japanese friends.

In the previous article we reported that the most mentioned coping behavior was being with family or friends and talking with them (Foster and Hirata, 2012), which suggests the importance of social resources in stress coping. This idea is supported by many researches on stress coping behaviors (for example, Cohen, 1987 ; Paine and Jones, 1987).

In this study also, looking for social support was considered to be one of main factors for coping with stressful situations. It seems reasonable since even if a person is in a stressful situation, he/she has more possibility to handle it, if he/she has, or believes to have, friends or social networks that could help. By the contrary, a solitary person could be considered to be more vulnerable to stressors.

In the results obtained, there was a tendency that those who consider themselves as “peripheral member” or “not a member” and those who had “few” or “no” Japanese friends, had more stress-related symptoms. Both the sense of belonging to society and the number of Japanese friends can be indices of the degree of adaptation to Japanese society. These results mentioned above indicate that the disaster victims are less vulnerable when they are better adjusted to the society where they live.

Also there was another tendency that the respondents mentioned more stress-related symptoms, when their family members had stress-related problems. From this result it is evident that, in regard to the stress responses, there exists a strong correlation among family members. It is plausible that stressors related to the disaster affected the members of a family, and consequently they had stress-related problems. Or stress-related problems of a member become a stressor to other members of the same family and cause them problems of the same sort. It implies that the factor of family member, in some case as mentioned before, can be a alleviating factor against stressors, and in the other, the same factor can be a cause of stress in itself.

Finally, it is important to note that another source of additional stress for foreigners was generated in their own countries. Most of the people replied that their families were very concerned about the news from Japan. The terrible images of the tsunami and the devastation and the news of the nuclear disaster in Fukushima were shown around the world. Most of them were linked to a total collapse of the area, provoking urgent calls asking family members to leave immediately the country. Also embassies of many countries contact their citizens and prepared transports to evacuate them. As the tone of the news about the disaster in Japanese media, which many foreign residents could not fully understand,

did not coincide with the “sensationalistic and hysteric” pitch of the news from other countries, many foreigners felt confused and did not know which of them were true. The information seeking to try to understand the real situation produced a number of problems since most foreigners could not understand all the news in Japanese, and exaggerated news on other languages did not help to deal with the effects of the earthquake. This situation added more stress to the foreign residents.

In summary, the results of this study showed that the sense of belonging to the community and having Japanese friends were the most important protective factors against stress and they helped the foreign residents to cope more efficiently with the adverse situation. Finally, we think that the results of this research could be useful to bring light on some factors of vulnerability that the foreigners have and also to share some useful ideas to cope better with situations of disaster. That is, considering further disaster possibilities, it is possible to recommend better channels of information that can be easily accessed by foreigners and the promotion of a major interaction between Japanese and foreigners through a series of activities and networks that may help to build a better understanding between cultures.

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