

Rumor Anxiety in Post-Disaster Tohoku

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Research Goals

In this article, it will be argued that **Social Capital**—a conglomerate of factors which make up subjects' social networks and normsⁱ—was important in the palliation of harmful rumours which appeared in the post-disaster environment of Ishinomaki City, Japan following the great earthquake and tsunami of 2011. Furthermore, this research aims to understand what age and gender groups within the Ishinomaki City were most vulnerable to rumour-related trauma in the interest of providing organizations like local governments, medical organizations, and NGOs with better models for identifying the mid- to long-term psychological needs of natural disaster victims. The way in which post-disaster rumours are born and spread, as well as their potential harm, is a subject thoroughly documented by academics (Danzig E.R., Prasad J., Larsen O.M., Scanlon T., Walker C.J.). However, this research seeks to differentiate itself from previous studies by using a quantitative model to measure and subjective levels of anxiety in disaster victims.

Ishinomaki City was chosen for this research based on the fact that it was one of the cities which suffered the most severe tsunami damage during the 3.11 disaster.ⁱⁱ As a result, recovery in this region has been particularly prolonged.ⁱⁱⁱ This allowed the researcher to directly observe the community's ongoing recovery over a long period of time as well as engage in surveys and interviews with the victims. In order to prove that social capital acted as a mitigating factor in the prevention of the psychological harm caused by post-disaster rumours in Ishinomaki, the following questions need to be addressed:

Methodology

Over the course of 8 short-term visitations to Ishinomaki City, Japan, from September of 2011 to September of 2012, 50 oral interviews and written surveys were collected at random from the Ishinomaki City population. These visitations were made possible with the cooperation of non-profit organizations such as Peace Boat, which allowed the researcher to perform surveys and interview locals while participating in the volunteer recovery effort. Of the 50 surveys collected, 49 were used in the final analysis with 1 excluded due to incomplete answers. The gender breakdown of the final subject count was as follows: 22 men, 27 women. Subjects were asked by the survey to indicate their age and gender. Additionally, subjects were asked to indicate the proximity of their former home to Ishinomaki City as well as their primary means of receiving news. Finally, subjects were prompted to answer a series of questions designed to measure their social capital:

Q5) Generally speaking, do you believe it is safe to trust your neighbours and the people around you?

Q6) Immediately after the disaster, did you hear any rumours or disinformation (information that differed from the truth)?

Q7) how did you hear those rumours?

Q8) at that time, How much anxiety did you feel because of those rumours?

As noted by Halpern, one significant problem this research faces is the accurate identification and measurement of social capital.^{iv} Therefore, Question #5 and its multiple choice answers were designed using a World Values social trust survey as their basis.^v This allowed the researcher to quantify the amount of social capital possessed by the disaster victims of Ishinomaki City. Building on top of Question #5, Questions #6 through #8 were introduced in the hopes of identifying correlations between social capital levels and rumour-related anxiety.

Social Capital Results

Question #5 was critical to this research in that it provides a method of quantifying the amount of social capital each subject possessed. Possible answers to Survey Question #5 included the following: Not at all; Not particularly; A little; Quite; Very much so.

Of all participants, 27 subjects (55%) answered indicating that they were ambivalent or distrustful of their neighbours, as indicated below in chart 1. Of those subjects belonging to the “ambivalent/negative” group, 5 subjects' (10%) responses were extremely negative, answering that they “did not particularly trust” their neighbours or that they didn't trust their neighbours “at all”. The remaining 22 subjects (45%) of the “ambivalent/negative” group chose Answer #3, indicating that they only trusted their neighbours “a little”. These responses indicate that these subjects are relatively “socially impoverished”, or only possess weak links with their communities. The remaining 21 subjects (43%) expressed that they were very trusting of their neighbours, or that they trusted them implicitly, thereby suggesting that they possess strong social bonds with their community. It is notable, perhaps, that the largest number of subjects gave the most ambivalent answer possible. That is, they selected the answer which was most closely worded to a neutral answer. Generally speaking, subjects fell into three categories: subjects who possess high levels of social capital (“affluent” subjects), subjects who possess moderate levels of social capital (“ambivalent” subjects) and subjects who possess low levels of social capital (“impoverished” subjects).

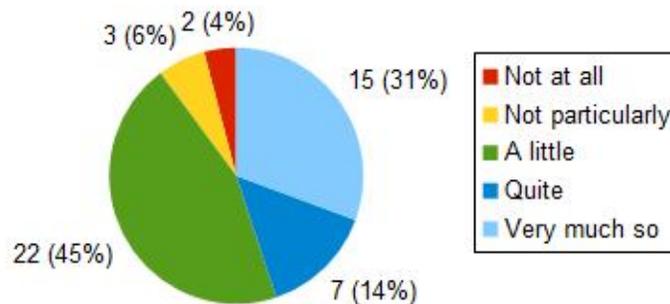


Chart 1: Question #5 answer distribution from all subjects.

As mentioned above, Question #8 was the other question considered critical in finding a correlation between Social Capital and subjective distress level, as it asks for subjects to subjectively evaluate the levels of distress which they experienced due to rumours they encountered after the disaster. Possible answers to Question #8 were: “Not at all”, “Very little”, “A little”, “Quite” and “Very”. Compared to answers to Question #5, answers to Question #8 were more varied, but with the majority (70%) expressing some level of anxiety as a result of rumours. The largest group of 15 subjects (34%) answering that they were made “quite” anxious by the rumours that they encountered. The next largest group of 11 subjects (25%) answered that they were made “a little” anxious due to rumours. Of the remaining subjects, 7 subjects (16%) answered that they experienced “very little” anxiety, 6 (14%) answered that they were not anxious at all, and 5 (11%) answered that they were very anxious.

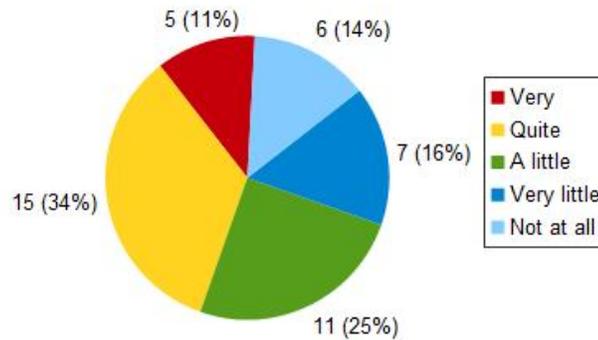


Chart 2: Question #8 answer distribution from all subjects.

Social Capital Analysis

The subjects' answers to Question #5 on the survey indicate that there are three distinct social capital “classes” represented: Subjects with high, moderate and low levels of social capital. These groups could also be referred to as socially “affluent”, “ambivalent” and “impoverished” groups. As their answers to Question #5 were distinct and indicate different levels of social capital, it seems important to determine if these three social capital classes experienced different levels of anxiety as a result of rumours in the post-disaster environment.

In order to determine if different social capital groups were affected differently by rumours, all subjects who answered that they had come into contact with rumours were separated into three different categories based on their answer to Question #5. Then, each groups answers to Question #8 were tallied. Note: Of the initial 49 subjects, 3 did not come into contact with any rumours and were thus excluded from this data. The results are illustrated in chart 7 below

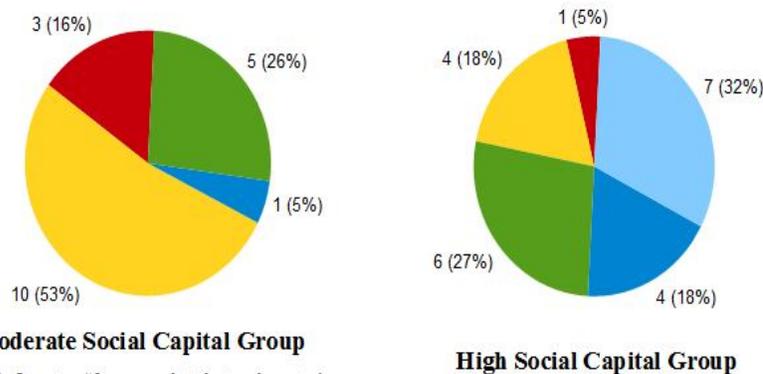
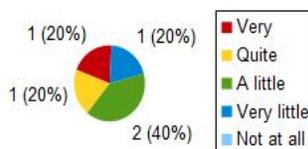


Chart 7: Question #8 answer distribution by social capital group as determined by Question #5.



When the data is sorted this way, several observations can be made. One immediately notes that the only individuals who reported that they did not experience any rumour-related anxiety at all were individuals belonging to the high social capital group. Furthermore, subjects who experienced no anxiety at all made up a significant number (32%) of the high social capital group. In comparison, virtually no correspondents in either the moderate or low social capital groups reported that they did not experience any rumour-related anxiety. Additionally, 69% of the moderate social capital group and 40% of the low social capital group reported that they were made “quite” or “very” anxious by post-disaster rumours compared to only 23% for the high social capital group. Finally, in both the moderate and low social capital groups, only one subject in each group reported that they were not significantly affected by rumours.

When one looks at the three groups, one can't help but notice that the moderate social group responded to Question #8 more negatively than the low social capital group did, with 69% of the moderate social capital group answering negatively compared to the low social capital group's negative answers only amounting to 40%. As such, one must consider the sociological implications of why the subjects answered ambivalently to Question #5 but displayed more negative responses on Question #8. As noted by authors and locals alike, the residents of North-eastern Japan tend to live in communities which are very small and tightly knit, and their social circles tend to consist of extended relatives, in-laws and long-term acquaintances.^{vi vii viii} This can lead to several problems when trying to ascertain how much trust Japanese invests in their community and, thus, how much social capital they possess. One possible issue may be that the subject may hold feelings of distrust for the people around them but, due to their social environment and the fear of being “found out”, they refrain from speaking their mind even with a guarantee of anonymity. Another problem may be that Japanese may consider anyone who is not immediate family as an outsider, and therefore may have answered truthfully to Question #5 but only in relation to their immediate family.

Finally, there was the issue of the cultural barrier between the interviewer and the Japanese subject; despite the interviews being conducted in Japanese, and the researcher being a Japanese speaker, there may have been some cultural differences in how the researcher and the subject interpret the concept of “community” as presented in Question #5. Regardless of which combination of factors were responsible, the group of subjects which superficially presented moderate levels of social capital gave responses which were, overall, indicated that they experienced more anxiety than those subjects which reported the lowest levels of social capital. This is contrary to the initial expectations of this research, as it was expected that the moderate social capital group would react moderately to rumours. However, as the data shows, this was not the case. Instead, initial answers to Question #5 may be a result of social pressures. Therefore, it may be most prudent to regard the moderate social capital group as partially overlapping with the low social capital group, with individuals in the moderate social capital group overstating their own social capital levels for cultural or local social reasons.

Among all three groups, the high social capital group performed almost exactly as expected, with fully one third of the group stating that they experienced no anxiety as a result of exposure to rumours; a response which was not presented at all by the moderate and low social capital groups. An additional 18% of the high social capital group answered that they only experienced “a little” anxiety as a result of rumour exposure. Furthermore, in terms of the most extreme answers possible for Question #8, the high social capital group's results were inverse to that of the other groups; only one individual in the high social capital group indicated that they were made “very” anxious by rumours. Finally, among the few high social capital subjects which indicated that they were made anxious by rumours, a pattern was observed during oral interviews: All were able to specifically identify which rumour had caused them anxiety, whereas other subjects from other groups often described general unease but were unable to specify what rumour made them so.

Following the classification of subjects into three groups and the analysis of their answers to Questions #5 and #8, the data from the three subject groups were expressed on a line graph with the Y axis representing the number of participants and the X axis representing indicated anxiety levels expressed as a numerical value in order to determine dependence of variables or a lack thereof.

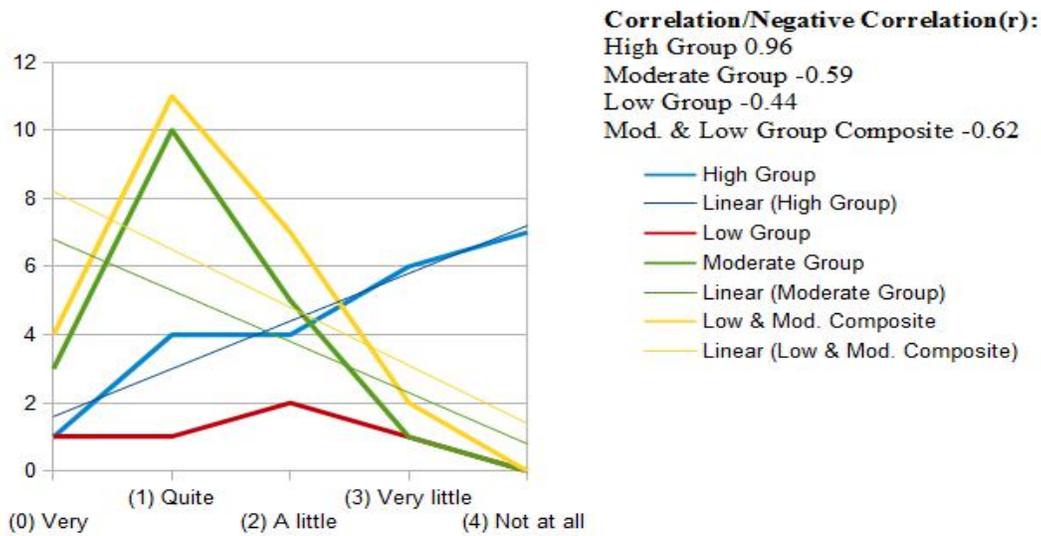


Chart 8: Linear regression graph with X and Y Axes representing distress levels and number of subjects, respectively.

As can be seen in the chart above, the high social capital group demonstrated good linear regression with even distribution; its subject body included the smallest number of individuals which reported rumour-related anxiety, and also included the largest group of individuals that reported little to no anxiety. Calculating the dependence of variables for the high social capital group yields a very strong positive correlation of $r = 0.96$.

As for the moderate social capital group, results are less clear. As mentioned above, one hypothetical may be that the moderate group is, in fact, an overlap with the low social capital group. Regression plotting for the moderate group also shows good linearity and, as hypothesized, the correlation between subject number and anxiety is a negative one ($r = -0.59$). However, due to a large number of moderate group subjects answering ambivalently to Question #8, their line is non-monotonic and peaks at the middle of the left-hand side of the graph. The low social capital group is the most difficult to accurately assess due to its small number of subjects, but also shows a negative correlation of variables ($r = -0.44$) In spite of the small subject number of the low social capital group, the linearity which this group's data expresses and the negative correlation of its variables are in line with the reasoning of this article. Incidentally, if one assumes that both the low and moderate social capital groups do overlap, combining their data groups into one produces strong linearity and dependence ($r = -0.62$) close to what was originally hypothesized.

Age & Gender Results

The other question which is important to this research is what age groups of which gender expressed the highest level of anxiety as a result of encountered rumours after the disaster. This question must be addressed by comparing the answers given by each age group and each gender. As mentioned previously, the subject body consisted of 22 men and 27 women. This is a fairly representative ratio of Ishinomaki City's population, as indicated by Ishinomaki City's population registries^{ix}.

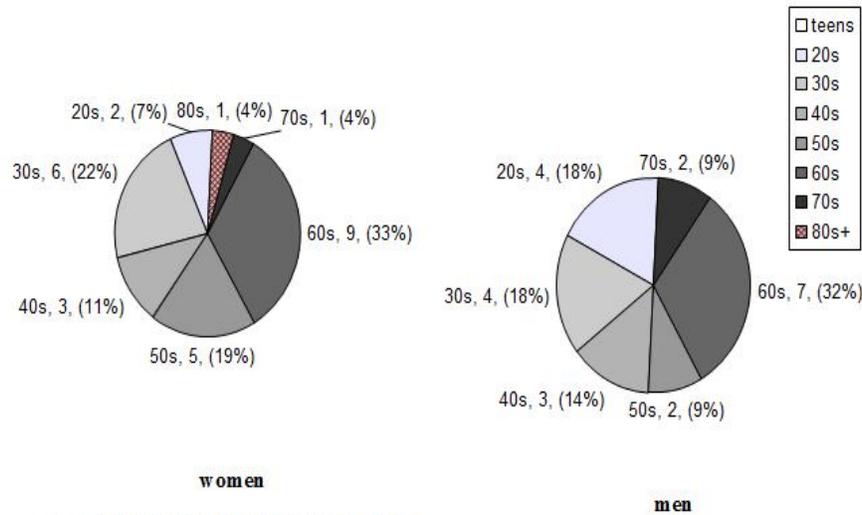


Chart 3: Questionnaire Age Distribution by Gender

Subjects were asked to indicate their age on the survey as one of the following: “teens”, “20s”, “30s”, “40s”, “50s”, “60s”, “70s” and “80s or above”. The female group consisted of 9 subjects (33%) in their 60s, 6 subjects (22%) in their 30s, 5 subjects (19%) in their 50s, 3 subjects (11%) in their 40s, 2 subjects (7%) in their 20s and 1 subject (4%) in both the 70s and 80s categories. The male group consisted of 7 subjects (32%) in their 60s, 4 subjects (18%) in their 30s, another 4 subjects (18%) in their 20s, 3 subjects (14%) in their 40s, 2 subjects (9%) in their 50s and another 2 subjects (9%) in their 70s. Although subjects were selected at random, the final number of subjects in each age category in both genders is fairly representative of Ishinomaki City's population when broken down by age group.^x This age breakdown is expressed by the two charts below.

As mentioned earlier, all subjects were asked to give a subjective appraisal of the anxiety they experienced due to rumours they encountered after the disaster. When subjects' answers were broken down by gender, it was discovered that 33% of female subjects and 27% of male subjects trusted their neighbours “very much”; 4% of female subjects and 27% of male subjects answered that they trusted their neighbours “quite a bit”; 52% of female subjects and 36% of male subjects answered that they trusted their neighbours “a little”; 7% of female subjects and 5% of male subjects did “not particularly trust” their neighbours; finally, 4% of female subjects and 5% of male subjects indicated that they did not trust their neighbours “at all”.

All in all, the distribution of subjects with high, moderate and low levels of social capital were similar across both genders with the following notable difference: Male subjects tended to answer in a more positive but tempered fashion, and female subjects tended to be more ambivalent about their neighbours. This information is expressed below in Chart 5.

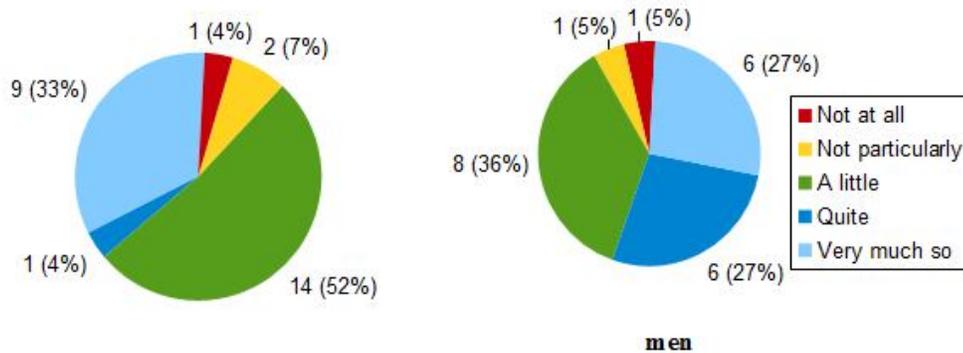


Chart 5: Question #5 answer distribution by gender

Age & Gender Analysis

Next, in order to determine if there was a significant difference in the social capital levels of male and female subjects of similar ages, a numerical value was attached to Question #5 responses of all male and female subjects of all age groups. The value scale is as follows: “Not at all” = 0, “Not particularly” = 1, “A little” = 2, “Quite” = 3 and “Very much so” = 4. These values were then averaged and expressed on a line graph, with individual lines representing male subjects, female subjects and an average composite score for both. The resulting data indicates that subjects in their 20s—both male and female—expressed similarly low levels of social capital. However, a dramatic growth in social capital is noted in subjects in their 40s. This growth in social capital slows and then diminishes in older age groups; subjects in their 50s and 60s demonstrated increasingly lower levels of social capital than subjects in their 40s. However, the trend reverses again with subjects in their 70s, which enjoy a second upswing in social capital levels which, remarkably, is the highest among any age group. Differences between both genders are minimal, and mirror one-another in most respects. The one exception to this is that female individuals appear to overtake their male counterparts in social capital during the later years of their lives, as is indicated below by the female data point in the 70s category. Linear regression for both genders shows social capital levels rising as subjects increase in age.

Should the data presented here be interpreted as fixed social capital “classes”, or do they represent a variable that fluctuates over each subject's lifetime? Will subjects currently in their 20s and 30s experience social capital growth as they mature into new social roles, or do they represent a new trend of waning social capital as theorized by Robert Putnam in his writings on social capital?^{x1} Is the low social capital levels expressed by individuals in their 60s a mark left by era-specific social and economic factors that lead to poor social integration, or is age itself and the social limitations which age brings that are causing this phenomenon? One thing seems to be certain:

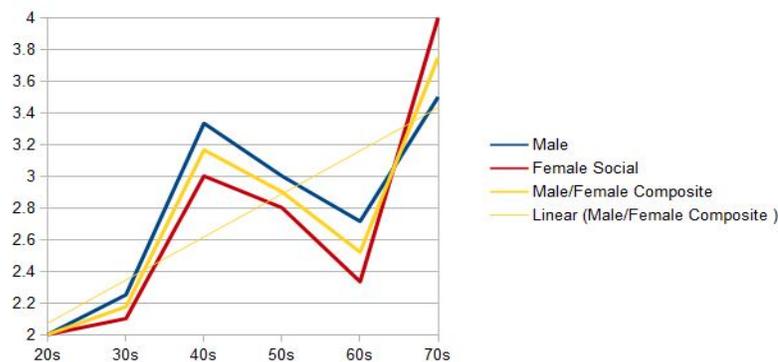


Chart 6: A linear regression graph with the X axis representing age groups and the Y axis their average social capital levels expressed as a numerical value

Regardless of gender, all subjects belonging to any given age group are affected the same way, or possess the same evaluation of their social environment. Even in age categories where the genders are, speaking generally in reference to Japanese societal structure, engaged in very different social roles, their social capital levels maintain parallel. It was expected that male subjects reaching retirement age would experience a much more severe drop in social capital compared to female subjects of a similar age, but this was not the case.

There are some hints in the age category data which suggest that social capital is a fluctuating value, rather than something which remains static over the course of an individual's entire life. First, consider subjects in their 30s and 40s in comparison to subjects in their 20s. The gradual increase in social capital across these three age categories coincides with lifestyle changes which Japanese typically undergo. These could include engaging in a career, marriage and parenthood as well as moving out of their parents' homes in their 20s. Social capital, as a matter of necessity, would grow proportionately due to these lifestyle changes. The next significant change in social capital occurred in individuals in the 50s category. This may again correspond with children maturing and moving out of their their parents' homes, but this time with the parent experiencing a contraction in their social circle and, therefore, a contraction in subjective social capital level. Continuing this trend, individuals in their 60s experience a more severe dip in social capital which. Interestingly, this trend is reversed by individuals in their 70s, which possessed the highest social capital levels of any subjects in the study. This sharp decline and rebound could represent subjects' entering retirement and then adjusting to post-retirement social networks. Incidentally, one outlying subject was interviewed for this research: A woman who had just recently turned 90. Of all subjects, she expressed the lowest social capital out of any subject aside from the age group in their 20s. Although one subject cannot practically be used as a representative sample, perhaps her experience is a reflection of old age and lessened mobility leading to isolation.

There are still many questions which are left unanswered. The modelling of social capital is a process does not sufficiently account for the odd parallel present between genders in spite of the gender-specific roles present in Japanese society. Furthermore, it remains to be seen whether subjects presently in their 20s or 30s will mature into individuals with high levels of social capital, or if the present social and economic conditions in Tohoku, Japan—and the consequential downward pressure on young individuals' ability to marry and foster families—will have a dampening effect on the growth of their social capital.^{xii}

Conclusion

This research sought to understand if there was an identifiable correlation between an individual's social capital level and the amount of distress they experienced as a result of post-disaster rumours. As the data above demonstrates, the anxiety levels of the high social capital group and the subjects of the moderate/low social capital groups are inversely correlated, with the high social capital group's responses to Question #8 nearly inverse to the moderate and low social capital groups'. It remains uncertain as to what portion of the moderate social capital group was frank when they appraised their own social capital level, but due to the fact that their answers more closely resembled the low social capital group's than the high social capital groups, it seems certain that there is at least a partial overlay. In conclusion, it appears likely that there is indeed a correlation between social capital and rumour-related distress in the post 3.11 Tohoku, Japan population. Even if this is not the case, there is almost certainly a strong correlation of high levels of social capital and low levels of rumour-related distress among this subject body.

The other question which this research attempted to answer was which age groups of which gender displayed the highest level of social capital in Ishinomaki City and whether or not there was an identifiable correlation between age or gender and social capital. According to the data gathered by this research, females and males in their 70s expressed the highest and second highest levels of social capital of the entire subject body. This leads to the question of whether or not age positively correlates with social capital. Although advanced age groups did express the highest levels of social capital noted in the study, and the youngest age groups recorded displayed the lowest level of social capital, the accumulation of social capital does not appear to be a gradual process. Rather, the data suggests that individuals experience a waxing and waning of social capital throughout their lives, associated with significant life events like graduation, starting a career, marriage and retirement. Finally, this research attempted to determine whether or not there was a significant difference in the social capital level displayed between male and female subjects. However, the data which was collected by this study suggests that there was, in fact, not much of a differentiation between male and female subjects across all age groups.

This was unexpected, as it was thought that different social roles would contribute to a more significant in the social capital levels between genders of certain age groups, particularly those age groups which typically perform significantly different social roles in Japanese society. Instead, the only age group which displayed a significant difference were the female subjects belonging to the 70s age group, which overtook their male counterparts and expressed the highest social capital level in the study. As dividing subjects between male and female groups did not produce any significant differences in social capital level across genders, perhaps a more surveying is necessary to determine the differences in how Japanese men and women subjectively appraise their social capital levels.

As a result of this study, it is likely safe to say that there is a correlation between high levels of social capital and a subjectively less distressing post-disaster experience, as the correlation expressed between tested variables was very strong ($r=0.96$). Such a strong correlation seems to imply that the inverse is true of subjects with low levels of social capital. However, this research was only partially successful in identifying a correlation between low levels of social capital and distress proved more difficult to determine due to the cultural proprieties of the Japanese subject body. A small number of test subjects and a limited time frame likely contributed to this issue. However, if one assumes that there is at least some overlap between the moderate and low level social capital groups, and that responses were affected by cultural traits specific to Japan and the region of Tohoku, then evidence of the correlation initially suggested in the research question is strengthened.

There were several other shortcomings that the researcher acknowledges and hopes to amend in later research. The question of whether there was a significant correlation between gender and social capital, it does not answer the question of whether there was a difference in anxiety felt by high, mid and low social capital groups of differing genders, remains unanswered. Furthermore, this research does not address the question of whether or not there is a correlation between socioeconomic status—that is to say, financial capital—and social capital, and could a combination of those two traits ultimately affect the amount of rumour-related distress that subjects experience? These are questions which all require further investigation.

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