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Tohoku Stories: Identifying Happy Themes of Disaster Relief

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Abstract: How have different types of individuals and organizations conducted disaster relief and support activities that make people happy following the March 11, 2011 disasters? This paper utilizes a mixed methods survey of 1,659 respondents involved in community support activities to uncover the types of activities that make people happy. Themes were extracted using BigML from semi-open interviews with local residents, volunteers, and concerned individuals in the disaster regions. The results highlight the types of community support projects that generate positive experiences.
Keywords: disaster relief, information, happiness, narrative, philanthropy, text mining

1. Introduction

This study identifies happy themes of disaster relief following the Great East Japan Earthquake. Beginning March 11th, 2011 the region of Northeast Japan (Tohoku) suffered a chain reaction, triple disaster: earthquake, tsunami, and radiation leak. In the aftermath of the disaster, 920,000 volunteers assisted in the first year alone (Yamomoto 2013). The number of non-profit organizations has more than doubled to over 40,000. Numerous CSR (corporate social responsibility) projects and international aid organizations assist in these community support and reconstruction activities. This research examined the perceptions of people in Tohoku about these activities. We asked an open ended question: What are the activities of organizations or individuals that assist the people in this community? We aimed to both evaluate and learn about people's experiences with such activities. Our goal was not only academic. Rather, we wished to assist organizations and people in the disaster region: to publicize the good things that were taking place, to enable them to further their work, and to motivate others to engage in future endeavors.

The Storytelling Project aimed to provide recognition to the reconstruction support activities of groups and individuals. In doing so, we also learned a great deal about themes and subthemes of disaster relief activities. The themes were derived deductively, using exploratory statistical methods. The theoretical model identified provides the academic community with greater understanding of how disaster relief activities are structured. More importantly, it provides administrators of disaster relief with examples of disaster support activities that generate happy experiences, projects that can be supported and mimicked.

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2. Background

The Storytelling Project was initially developed by GlobalGiving with the goal of creating a "reputation system for philanthropy", whereby communication between donors, organizations and clients could be facilitated by field based interviews (Maxson and Kuraishi 2012). The initial storytelling project was conducted in Kenya and Uganda and succeeded in gathering approximately 58,000 stories. Based on this experience, Maxson and Kuraishi suggest technological innovations for economical feedback collection. Owing both to the feedback from the Africa storytelling project and the extremely tech-savvy nature of the environment, the Japan Storytelling Project incorporated a number of technological innovations. Several types of mediums were used for data collection: self-reported and interview; phone survey, computer survey, and paper form; local scribe, Japanese scribe, and foreigner scribe. Each form of data collection has its own deficiencies and advantages. Respondents tended to provide very brief stories that often reflected a desirability bias. On the other hand, interviews often emphasized current events. The use of self-reports versus interview-based data is a hotly contested subject (Polkinghorne 2005). While behaviorists generally rejected introspective data, post-modernists thrived on it. Behaviorists claimed that empirical truth was based on measurable phenomenon. Post-modernists contended that there is no singular truth, and hence while perspectives may contradict one another they are justifiable data. These stories represent individuals' perceptions of the truth. They discuss individuals' experiences as volunteers and recipients of disaster relief. This research moderates between this feud of subjective and objective truths, delineating a mixed methods sampling, under the supposition that by using a variety of data collection methods, we can arrive at a

closer approximation of empirical truth.

When conducting research in a disaster region, there is an exceptional level of sensitivity concerns. In Japan individuals have a conception of what is known as Giri (responsibility for returning a favor). Hence, if the respondents were asked to provide a story of how someone helped them, they would be left with the feeling that they were weak, destitute, and should now dwell on the fact that they owe a favor. When conducting research, anthropologists just as medical practitioners are bound by the law of non-maleficence. Hence, it was incumbent upon the interviewers to ensure that respondents would feel good about the stories they shared. This deficiency in the research question was identified early in a pilot study with aid workers and academics. It was corrected by avoiding direct questioning of how others helped them and focusing on the activities that they are personally or presently involved in. As a result, the results discuss primarily happy stories about disaster relief. The task of conducting interviews in a disaster region is especially difficult, since the interviewer needs to gain the trust of the people, who often feel that the research is only being done for the sake of a university, a publication, or a broadcast, and not necessarily to help them. Often scientific studies require structured interviews with standardized questions, but researchers have often recognized the necessity to create informal conversations for data collection (Parkes 2011). Research on tsunami devastated areas in particular requires using a "questioning route" by which semi-structured interviews can lead to a thematic analysis (Fauci et. al 2012). This questioning route focused first on the personal or present story, and then followed up by asking them to identify an additional story of community support activities they may have seen or heard about.

This research follows in the tradition of the Grounded Theory (Glaser and Strauss 1967). No pre-given hypotheses were used in the research. This hypothesis development method differs from traditional hypothesis testing, in that no given presumptions are made that exist outside of the data. An exploratory questioning framework enabled the respondents to take part in hypothesis generation. This was accomplished by using open-ended interview questions, such as 'how are you involved in support activities in your community?" However, the scribe often provided close-ended questions, such as "how many people come to the City Hall meetings?" In order to facilitate the respondents' understanding of the purpose of the questioning, the initial approach often focused on an event or organization that the scribe is visiting: "Can you tell me about the types of volunteer activities of this organization? Why is this festival important?" Etc. Following this initial story, the respondent was encouraged to provide an additional story that was not related to the same organization.

3. Purpose

The purpose of the present study is to reveal themes of community support activities and to uncover specific types of activities that make people happy by analyzing the words used in narratives collected from the Japan Storytelling Project.

4. Methods

The data collection began in August 2013. The stories were collected primarily by means of a form, containing 12-15 questions. This form is based on the storytelling forms used by GlobalGiving in Africa (Maxson 2012). The stories were collected by both bilingual and Japanese-only scribes. Bilingual scribes simultaneously translated interviews, reviewing details of the translation with the respondent. Japanese-only scribes later translated their stories with the bilingual scribes. Stories were also occasionally recorded and relevant sections transcribed. The storytelling interviews attempted to focus on disaster relief, but the respondent was given liberty to provide any interesting story that might be relevant. In general, the respondent was simply asked to tell a story about any type of community support activity. This can be something they have done, received, or just heard about. Everyone has a story, and every story is important.

For the present study, 1,659 stories were analyzed. The most relevant question for the current research is "how does this story make you feel?" 411 respondents answered this question (24.8%). 90 of them categorized their story as "happy" (21.9%). 58% of the stories took place in Miyagi Prefecture, 10% in Fukushima, 8% in Iwate, and the remaining 24% in various prefectures in and around Tohoku. Owing to the large scale of support from around the country and evacuation to other prefectures, Tohoku support extends beyond just the affected areas. The high representation of Miyagi occurred because it has the highest population of tsunami affected prefectures, the central role that Sendai, Ishinomaki, and Kesennuma played as centers for the research, and the large number of organizations that are doing disaster relief activities there. Respondents were recruited by snowball sampling, as well as networking with local non-profit organizations and individuals in the disaster region. Emails and letters requesting participation in the storytelling project were sent to 29 organizations affiliated with GlobalGiving in Japan and hundreds of non-affiliated NPOs. The Storytelling Team (a.k.a. the scribes) also gave lectures and workshops at

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schools and universities, after which participants were interviewed or completed forms. Most importantly, scribes volunteered with numerous different organizations around Tohoku, doing everything from debris removal to child care. Participating in volunteer activities enabled the scribe to earn contacts and trust with local informants. Not only was the storytelling project about collecting data from informants, it was also about giving something beyond academic recognition back to those informants and communities. In summary, the Storytelling Team put a lot of muscle and sweat into collecting these interviews.

The data was analyzed using BigML (Donaldson and Donaldson 2012). BigML is a classification system designed for big data sets. This model builds a tree, similar to cluster analysis, whereby the correlations between words in the stories create distinct subsets that will minimize the squared error (Donaldson et. al 2013). Splits occur where one word is connected to two or more words that provide optimal predicting value. The algorithm improves the model by adjusting the coefficients using a stochastic gradient descent (Carpenter 2008), whereby the predictive value of the model is recomputed based on the partial results of logistic regressions, but only converges when the maximum likelihood of the model approaches 1. Further quantitative analysis was performed by categorizing the stories according to the themes and subthemes, then examining the odds ratio of whether words that correlated with each subtheme were included in stories that made people feel happy.

5. Results

Fig. 1 shows the results of a BigML analysis of the entire data set. 11 themes of community support were identified. Each theme was categorized ad hoc into three types: 1) Stories (for) that discuss an activity that targets a specific population or (at) that focus on a specific location; 2) Stories (about) that relate directly to the disaster or (from) that involve volunteers who came to help; And 3) stories (by means of) that discuss the technical aspects of providing support. Further analysis of actual stories that represent each category revealed 15 subthemes. Since the exploratory analysis was completed based on the words in each story, there is a certain level of overlap in themes and subthemes but not in the actual words used to define them. **Fig. 2** shows the themes and subthemes for the analysis. These subthemes are important as they are later used to explore correlations with happiness.

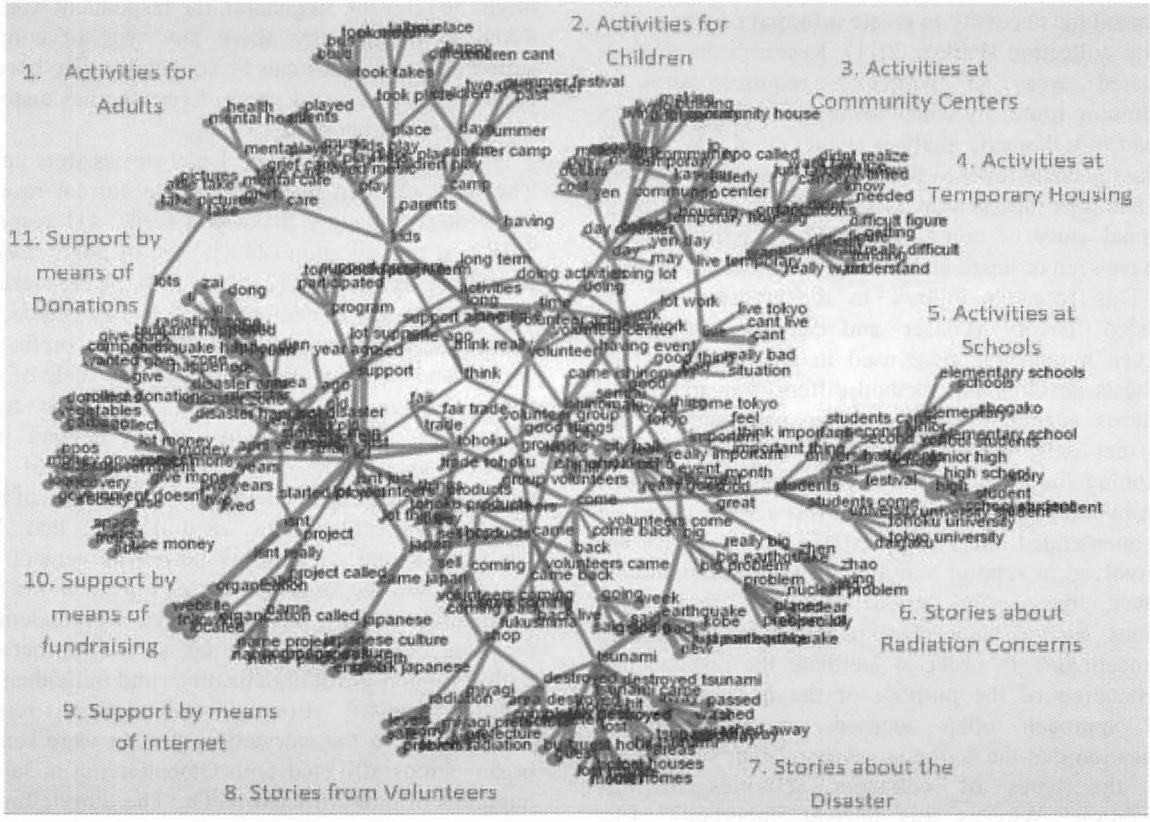

Fig. 1 BigML analysis of the entire data set with 11 themes and subthemes of community support

Table 1 Words Used to Analyze the Mental Health Subtheme

Mental	Therapists	Psychology	Counselling	treatment
Health	Healthy	Psychologist	Healing	suicide
Kokoro (heart)	Drug	Depression	Suffering	trauma

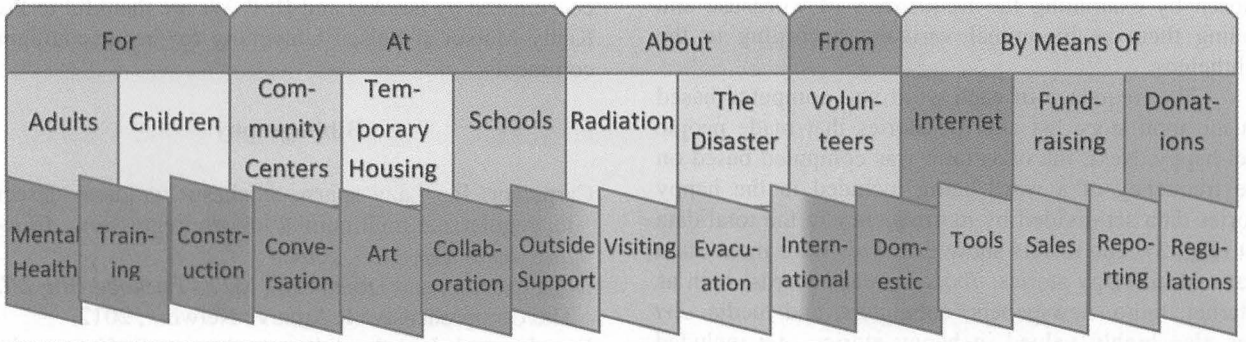

Fig. 2 Themes and Subthemes of Stories about Community Support Activities

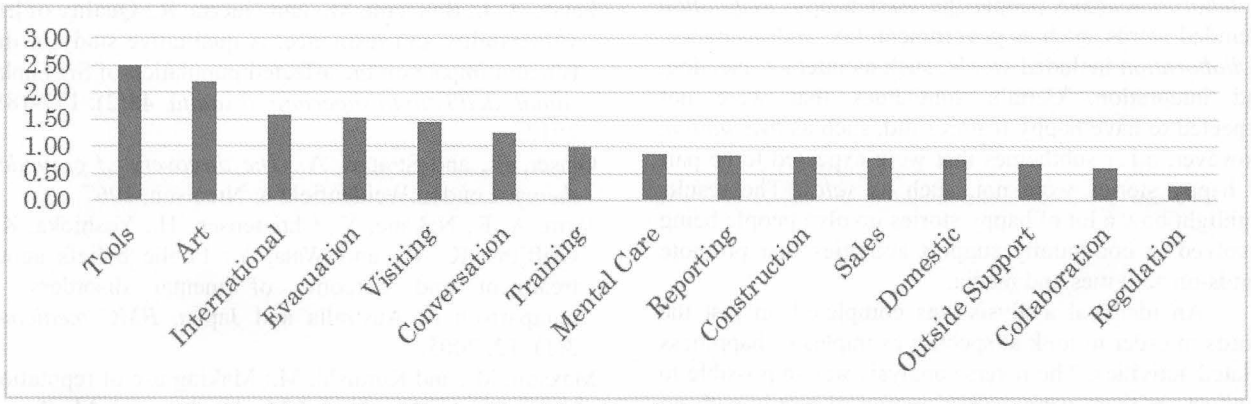

Fig. 3 Odds Ratio of Stories That Make People Feel Happy Featuring Each Subtheme

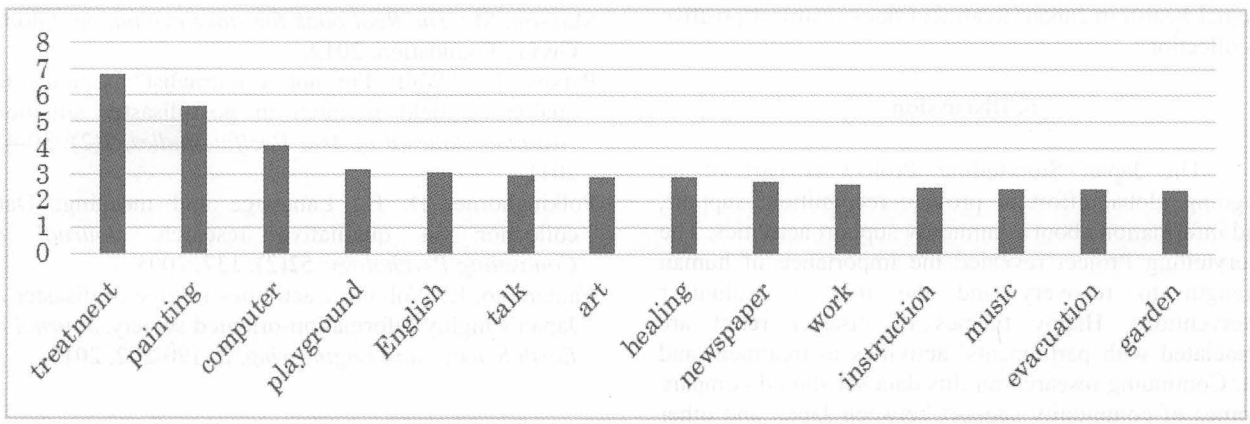

Fig. 4 Odds Ratio of Stories That Make People Feel Happy Featuring Each Word

Subthemes were developed based on a reading of the common words that were frequently used in the story (**Table 1**). Certain words that were especially common, such as volunteering, associated with almost all of the subthemes and were excluded. The goal of the word analysis was to create mutually exclusive subcategories, such that they could be compared. The words were chosen by examining the frequencies of word use and coding them as binominal variables according to the subthemes.

The frequency of each word was computed based on the total story list and the stories that made people feel happy. Next, the odds ratio was computed based on the frequency of a word being included in the happy stories data set divided by its frequency in the total data set (**Fig. 3**). The results show that *tools* were most often featured in happy stories. *Tools* included words, such as internet, radio, newspapers, computers, and media. *Art* was also highly valued in happy stories. *Art* included words, such as painting, crafts, music, concerts, and gardening. On the other hand, *regulation* and *collaboration* make people the least happy. *Regulation* included words, such as government, tax, and insurance. *Collaboration* included words, such as interact, meeting, and integration. Certain subthemes that were not expected to have happy features did, such as *evacuation*. However, other subthemes that were expected to be part of happy stories were not, such as *sales*. The results highlight how a lot of happy stories involve people being involved in community support activities that promote hands-on activities and media.

An identical analysis was completed on just the words in order to look at specific examples of happiness related activities. The reverse analysis was impossible to conduct, as there were a vast amount of words with no mention of happiness. The results in **Fig. 4** show that treatment had the highest proportion of making people feel happy. Despite the negative imagery associated with mental health in Japan, treatment does manifest positive recollections.

6. Discussion

The Japan Storytelling Project is part of an ongoing global effort to provide recognition, support, and information about community support activities. The Storytelling Project revealed the importance of human strength to recovery and the role of volunteer interventions. Happy themes of disaster relief are associated with participants' activities in treatment and art. Continuing research on this data set should compare themes of community support between Japan and other countries, extracting examples of activities that create happy experiences. Based on these preliminary results, we emphasize aid workers to focus on artistic activities and empowering people with tools, such as computers and language.

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東北の語り：災害救援における幸福のテーマ

(Tohoku Stories: Identifying Happy Themes of Disaster Relief)

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要旨：地震、津波、そして原発事故と2011年3月11日に東日本大震災で被災した人々への災害支援活動のなかには様々な活動のタイプがある。そのなかでも人々に幸せをもたらす共通の物語のテーマがあるはずである。本研究では1659人の調査に基づいて質的・量的分析をおこない、東北支援のタイプをカテゴリー化した。そして、その中でもコミュニティにたいしてポジティブな経験をもたらすようなものとネガティブな経験をもたらすような場合とで何に差があるかを分析し、「地球幸福憲章」との関連について考察する。

キーワード：災害、情報、メディア、ナラティブ、ストーリーテリング、テキストマイニング

問題と目的

2011年3月11日の東日本大震災においては様々な災害支援活動があり、その中で人々に幸せをもたらす物語も多く見られた。それらの活動を紹介するメディアとして、グローバルギビングとJISPが協力して実施した「ストーリーテリングプロジェクト」がある。この中での幸福に関する表現の特徴を解明することが本研究の目的である。

方法　ストーリーテリングの物語1,659のうち、411人が感情について回答しており、うち90　人が「幸せ」と回答していた。これらの回答についてビッグデータの解析ソフトBigMLを用いて分析を行った。

結果と考察

BigMLにより『大人』『子ども』『コミュニティセンター』『仮設住宅』『学校』『放射線』『災害』『ボランティア』『インターネット』『資金集め』『寄付』という11のテーマが抽出され（**Fig. 1**）、それと関わって[精神保健][訓練][建設][会話][芸術][協働][外的支援][訪問][避難][国際][国内][ツール][セールス][報告][規則]という15のサブテーマが示された（**Fig. 2**）。また、サブテーマの一つである「精神保健」を構成する単語の例を**Table 1**に示した。

15のサブテーマと幸福の感覚との関連の深さを単語の頻度とのオッズ比により比較した（**Fig. 3**）。

もっとも幸福感と関連の深いサブカテゴリーは[ツール]であり、その単語の例として「インターネット」「ラジオ」「新聞」「コンピュータ」「メディア」があった。2番目に幸福感と関連の深いサブカテゴリーは[芸術]であり「描画」「工芸」「音楽」「コンサート」「ガーデニング」などの単語がその例である。逆にもっとも幸福感と縁遠いのは[規則]であり「政府」「税金」「保険」などの単語が代表的である。2番目に幸福感と縁遠いのは［協働］であり「交際」「会合」「統合」などの単語が見られた。これらの結果から、メディアに触れることとコミュニティでのアートなどによる支援活動を体験することが幸福感と関連の深い活動であることが示唆された。

また、幸福感と関連の高い単語を見ると（**Fig. 4**）、高い順に「処置・治療」「描画」「コンピュータ」「遊び場」「英語」「話し」「芸術」「ヒーリング」「新聞」「仕事」「教示」「音楽」「避難」「ガーデン」という語が得られた。被災地の活動という困難な中にもかかわらず幸福感と関連の深い表現が少なからず見られた。

結論

被災地の活動という困難な中にもかかわらず幸福感と関連の深い表現が少なからず見られた。特にメディアへの接触と、芸術活動などの支援活動と関わりが幸福感と関連が深いことが示唆された。

（図表、文献は英文に記載）

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