Psychological Variables Underlying Cooperative Behavior for Local Communities: The Case of "Regional *Charismas*" in Japan

By Tsuyoshi Hatori & Satoshi Fujii

Ehime University, Japan

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Psychological Variables Underlying Cooperative Behavior for Local Communities: the Case of "Regional *Charismas*" in Japan

Tsuyoshi Hatori [α] & Satoshi Fujii [σ]

Abstract- Many empirical findings have shown that local communities can be improved if at least one altruistic person engages in cooperative behavior for the benefit of the community, as in the case of "The 100 charisma ambassadors of tourism" in Japan. This paper conducted a multilevel analysis to elucidate the psychological variables underlying such cooperative behavior (CB). A questionnaire survey was conducted using items previously proposed for measuring determinant factors of CB. The respondents were: "the 100 charisma ambassadors of tourism" (n = 95), residents living in the same region as the charismas (n = 400), and residents living in other regions (n = 500). By comparing different groups, personality and environmental factors promoting CB were examined. The results indicate that Schwartz's norm-activation factors contribute to the personality characteristics of the charismas, and that feelings of sympathy among residents contribute to the environmental characteristics of the locality of the charismas.

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I. Introduction

Local communities can be improved through voluntary contributions from local residents. The degree of their efforts to contribute to local communities, however, is likely to differ from person to person. Thus, it is often the case that some people work hard for the local community, while others do not share such concerns. In this situation, the presence of a few people or even one person volunteering to contribute to the local community may be key to enhancing the sustainability of the community (e.g., Hatori & Fujii, 2008).

Such a situation, in which the payoff for all of the people in a group (in the present study, the social welfare of the local community) is promoted if and only if at least one person acts in the interest of the group, is generally called the volunteer's dilemma (VD, Diekmann, 1985). In the VD, the group payoff depends strongly on whether at least one person volunteers to act cooperatively. However, each volunteer has to undertake a personal cost that cannot be shared by the others. Accordingly, people who care only for their own self-interest have no motivation to cooperate and, in the worst case, this may mean that nobody cooperates, causing low or no group payoff.

Fortunately, there are many real-world examples indicating that the voluntary contributions of one or a few people have triggered the revitalization of local communities. For example, a selection committee established by the Ministry of Land, Infrastructure, Transport and Tourism in Japan chose 100 people who had contributed to the revitalization of their local communities through tourism and designated them "The 100 charisma ambassadors of tourism" (hereafter, *'charismas'*; Ministry of Land, Infrastructure, Transport and Tourism, 2005). The committee, which included experts and members of organizations concerned with tourism, selected those people through deliberations, which lasted over 2 years (2002–2005), to examine and evaluate their achievements. The committee also published an official report about their efforts and achievements in community revitalization. While those designated as *'charismas'* include a variety of occupations, such as small business owners, farmers, public employees, leaders of non-profit organizations (NPO), and so on, all of the people were selected because of their dedicated and altruistic contributions to the revitalization of their local communities. They have exerted considerable energy and effort to solve local problems and have contributed greatly to the success of tourism in their area.

For example, one charisma voluntarily organized various regional events intended to encourage people to recognize the history and culture of the area and took the lead in carrying out these events. Furthermore, he gave his own property to build a small museum where historical and cultural assets of the region are shown to the public for free. He was selected as a charisma because his efforts contributed to the enhancement of residents' respect for the history and culture of the region as well as its prestige as a historical area.

As suggested from this example, the presence of such cooperative persons may be an essential factor for the improvement of a local community. Of course, it seems hard to imagine a situation where a local community can be revitalized and improved by one charisma alone. In many cases, the community

Author α: Department of Civil and Environmental Engineering, Ehime University, 3 Bunkyo-cho, Matsuyama, Ehime 790-8577 Japan.
e-mail: hatori@cee.ehime-u.ac.jp
Author σ: Kyoto University. e-mail: fujii@trans.kuciv.kyoto-u.ac.jp

improvement could not be realized without support from other local members. However, it should be also acknowledged that considerable energy and effort are usually required for one or several persons, such as this charisma, who initiate and take the lead in activities for revitalizing the community. In this sense, the presence of one or several altruistic persons can be still regarded as an essential key to the improvement of local communities.

However, the motives or psychological processes that have driven charismas to act cooperatively on behalf of their communities have not been sufficiently explored. Exploring the psychological variables underlying cooperative behavior (CB) might provide those engaged in regional policies with important insights regarding how they could encourage people to act cooperatively for local communities. With the aim of obtaining such insights, this research conducted explorative analysis to determine the psychological variables underlying CB. We also considered the implications of the results of the analysis.

a) A multilevel approach to CB

We adopted a multilevel analytical framework for understanding the psychological and structural conditions underlying CB for local communities. The framework comprises two basic perspectives, the inter-individual perspective and the inter-group perspective, on the emergence of persons conducting CB on behalf of local communities (Figure 1). The two perspectives highlight the personality factors and the environmental factors underlying CB. On the one hand, CB can be understood in terms of the personality traits of cooperative persons. One or a few cooperative persons in local communities may have some personality characteristics distinct from non-cooperative persons. Individual differences in CB between cooperative persons and non-cooperative persons represent a personality factor. On the other hand, cooperation itself is a matter of group relations among members rather than individual personality characteristics. Recent research on leadership has emphasized the effects of social processes on the emergence of leaders in a group (Hogg, 2001; Pawar & Eastman, 1997). According to this view, CB for local communities can be understood in terms of the environmental features of a group within which cooperative persons are embedded. The environmental factors entail situations and contexts that facilitate the emergence of cooperative persons within a group. The environmental factor encompasses differences between groups in which some persons act cooperatively and groups in which no persons do so. As such, both personality and environmental factors should be considered in any attempt to understand the entirety of psychological processes underlying CB on behalf of local communities.

b) The present study

The purpose of the present study was to explore psychological variables underlying CB on behalf of local communities. For this purpose, we implemented a questionnaire survey targeting those designated as "the 100 charisma ambassadors of tourism," residents living in the same regions as these 100 people, and residents living in other regions. According to the multilevel analytical framework, psychological variables underlying CB were divided into personality factors related to personality characteristics of the participants and environmental factors related to the environmental characteristics of their localities. We examined the personality factors of CB by comparing psychological variables between those designated as *'charismas'* and other residents. We examined the environmental factors of CB by comparing psychological variables between residents living in the same locality as those designated as 'charismas' and residents living elsewhere.

The case of "The 100 *charisma* ambassadors of tourism" suggests that those designated as 'charismas' acted cooperatively for the benefits of their communities. The committee chose the *charismas* as a result of qualitative deliberation. In these discussions, the social reputation that the committee extracted from results of the survey implemented in each locality in Japan played an important role, and these reputations reflect important information about human social behavior (see Lemasson, Mikus, Blois-Heulin, & Lodé, 2013). Yet, no quantitative evidence has shown that the charismas have cooperative and altruistic motivations on behalf of their communities.

Accordingly, to confirm the validity of the cooperative and altruistic motivations of those designated as *'charismas,'* we examined and compared the intention to engage in cooperative behavior (cooperative behavior intention, CBI) to that of others. Although we examined expressed intention rather than actual cooperative behavior, CBI can be regarded as a relevant antecedent of CB (Ajzen, 1985; Kaiser & Gutscher, 2003).

II. Literature Review

In this study, we examined personality and environmental factors by using psychological variables proposed by previous research to explain CB.

Many psychological variables have been proposed as relevant determinants of CB. First, Schwartz's norm-activation theory (Schwartz, 1977; Schwartz & Howard, 1981) has been applied by several researchers to explain cooperative or pro-environmental behavior (e.g., Fujii & Taniguchi, 2003; Gärling, Fujii, Gärling, & Jakobsson, 2003; Stern, Dietz, & Black, 1986; Thørgersen, 1996; Van Liere & Dunlap, 1978). The theory emphasizes the role of personal norms or "feelings of moral obligation" in promoting CB (Schwartz

& Howard, 1981, p.191). Personal norms are standards that are personally internalized and self-endorsed (Schwartz & Howard, 1981; Biel & Thøgersen, 2007). In this framework, the norm for engaging in CB is assumed to be activated by a sense of ascribed responsibility (Berkowitz & Daniels, 1963). Also, perceived effectiveness (Chen, Au, & Komorita, 1996; Olson, 1965; Strobe & Frey, 1982) and feasibility evaluation (Arbuthnot, 1977; Sia, Hungerford, & Tomera, 1985-1986; Stutzman & Green, 1982) are regarded as important factors in the norm-activation process; i.e., if people believed that CB would have no effect in solving a dilemma, or if they believed that implementing the behavior would be difficult, a personal norm or moral obligation to perform the behavior might not be activated.

Second, the theory of reasoned action (Fishbein & Ajzen, 1975) predicts that attitudes toward CB are influenced by individuals' evaluations of the consequences of the behavior; the higher the benefits of the behavior, or the lower the costs of the behavior, the more likely CB is to be performed (e.g., Black, Stern, & Elworth, 1985; Karns & Khera, 1983; Verhallen & Van Raaij, 1981). In addition, it is predicted that risk perception (e.g., Black et al., 1985; Thompson & Stoutemyer, 1991) and perceived difficulty in escaping from problems (e.g., Aronthon, 1992) may provide people with a reason to perform cooperative or pro-environmental behavior.

Third, social identity theory (Tajfel, 1981; Tajfel & Turner, 1986) stresses the importance of identification with a group. Many studies suggest that group identification is an important determinant of CB for the group (e.g., Kelly, 1993; Kelly & Breinlinger, 1996; Oberschall, 1993). Other proposed variables related to identification are place attachment (Brown, Perkins, & Brown, 2004; Tuan, 1974) and commitment in organizations (e.g., Weiner, 1982), both of which have been indicated to be important determinants of cooperative and prosocial behavior. Also, it has been suggested that the personal mobility of group members may reduce group identity and may lead to a tendency to avoid the performance of CB (Taresawa & Hirose, 2006).

Fourth, in the field of evolutionary psychology, many researchers have offered explanations as to how altruistic behavior evolved (e.g., Cosmides & Tooby, 1994; Nelson & Winter, 1982; Tooby & Cosmides, 1989). Among them, Sober and Wilson (1998) pointed out that altruistic behavior can evolve according to a group selection process, an idea included in multilevel selection theory (Henrich, 2004). Also, on the basis of the idea of multilevel selection, Hatori and Fujii (2008) showed that, theoretically speaking, group selection (individual selection) encourages (discourages) altruistic behavior.

Fifth, the theory of social networks (Granovetter, 1973) highlights the importance of social networks or ties between group members. Social adaption is also regarded as an important motivation of volunteers (Clary, Snyder, Ridge, Copeland, Stukas, Haugen, & Miene, 1998). Also, it has been suggested that sympathy and a sense of common fate promote forms of helping behavior (Aronson, 1992). Furthermore, several empirical surveys of cooperative and helping behavior in Japan have indicated that the feeling of happiness in being helpful, and the pleasure and gratitude evinced by an assisted person tend to motivate people to volunteer and help others (e.g., Fujii & Matsuyama, 2005; Oda, 1991).

Finally, it has been argued that interest and concern about community-based activities (Motoyoshi, Takao, & Ikeda, 2004) and emotional tranquility (Clary et al, 1998) are also associated with volunteers' behavior.

Note that the psychological variables mentioned above can be seen in Table 1.

III. Research Methods

a) Participants

A questionnaire was distributed by postal mail to "the 100 charismas of tourism" (n = 95), residents living in the same region as these people (in short, residents in CR, n = 400), and residents living in other regions (in short, residents in OR, n = 500). Residents in the CR whose street address numbers were the same as those of the 'charismas' were selected randomly. Four persons were chosen for each charisma. Residents in OR were selected randomly from phonebook listings. About 10 people were chosen from each prefecture. A total of 375 responses were returned by postal mail (a response rate of 38.6%). The mean age of the respondents was 64.02 (SD = 10.98). Females comprised 13.1% of the sample. The respondents consisted of 58 *charismas*, 139 residents in CR, and 178 residents in OR.

b) Measures

i. Cooperative Behavior Intention (CBI)

To measure CBI on behalf of the local community, respondents were asked to read a virtual scenario regarding the volunteer's dilemma, in which, "If at least one person in the local community works so hard for the community that the person has to undertake considerable personal costs, then the community will become revitalized and wealthy." Respondents were asked to place themselves in the position of a person living in the community. They were then asked, "Would you work hard for the community, despite great personal cost, in such a case?" The item was rated on a five-point scale from totally disagree (1) to totally agree (5).

ii. *Determinants of CB*

Respondents were asked to answer the questions regarding determinants of CB listed in Table 1. As shown in the table, measures of several variables were constructed by averaging across the corresponding items. The internal consistencies of these constructs were acceptable, except for risk perception (α = .42). Therefore, the two items regarding risk perception were examined separately. Also, the remaining variables were constructed as single-item measures. All items, except "participation in community groups," were rated on a five-point scale from totally disagree (1) to totally agree (5). For "participation in community groups," the number of community groups to which the participant belongs was measured.

IV. RESULTS

a) Comparison of CBI among three groups

To test the differences in CBI among the three groups (*charismas*, residents in CR, and residents in OR), we performed a one-way analysis of variance (ANOVA) with CBI as a dependent variable. The results showed that the difference between the three groups was statistically significant, $F (2, 368) = 34.91$, $p < .001$. The result of a multiple comparison (Bonferroni method) suggested that the CBI of the charismas was higher than that of other residents. We found no significant difference in CBI between men and women, $t = 1.64$, $p > .1$. CBI was moderately correlated with age, $r = .16$, $p < .1$.

b) Correlation between CBI and other variables

To investigate the effects of psychological variables proposed by previous studies mentioned in Section II as determinants of CBI, we analyzed the correlations between CBI and these variables. As shown in Table 2, many variables were correlated with CBI, as predicted by the previous studies.

c) Structural equation modeling

Next, we explored structural relations between psychological factors and CB of the charismas by employing structural equation modeling (SEM). As explained below, we formulated two models for analyzing personality and environmental factors, respectively. The analysis was conducted in an exploratory manner as there were no clear theoretical hypotheses about structural relations between the variables measured in this study except for a hypothesis that they would be determinants of CB.

First, we analyzed personality factors of the *charismas* by formulating a structural model including a dummy variable for the charisma (1 for the charisma, and 0 for a resident in CR) as a dependent variable. Thus, the data from the *charismas* and residents in CR were used in this analysis, while the data from residents in OR were not used. For specification of the model structure, we resorted to a two-step procedure. In the first step, aimed at distinguishing factors directly related to a dependent variable, *charisma* dummy, and those indirectly related to it, a two-level model was assumed. In order to identify direct factors, we performed a logistic regression analysis in which all psychological variables were regressed to the *charisma* dummy. Direct factors were selected by employing likelihood diagnostics in a stepwise way. From the results, two factors, norm-activation factor and benefit perception, were selected as direct determinants of CB. Then, relevant paths between the direct factors and indirect factors were specified according to modification indices calculated using LISREL 8 (Jöreskog & Sörbom, 1993). Then, the path diagram displayed in Figure 2 was implied as a result. As shown in the figure, the results indicated that the *charisma* dummy would be dependent on the norm-activation factor and benefit perception. In turn, the former factor, the norm-activation factor, would be dependent on benefit evaluation, perceived difficulty in escaping from problems, social adaptation, and interest and concern. The latter factor, benefit perception, was indicated to be dependent on benefit evaluation and the happiness in being helpful. The given model was estimated and the estimates are shown in Table 3. The results indicated that all the paths in Figure 1 were statistically significant and the model fit the data well, as judged by the following statistics: χ^2 (n = 198, df = 64) = 115.43, χ^2/df = 1.80, CFI = 0.99, NNFI = 0.94, and RMSEA = 0.068.

To investigate environmental factors, we formulated a structural model that included a dummy variable for residents in CR (CRR dummy, 1 for a resident in CR, and 0 for a resident in OR) as the endogenous variable. Data from residents in CR and residents in OR were used in this analysis, and the data from the charismas was not used. According to the same two-step procedure as the previous analysis, we specified the model in an exploratory vein. First, to identify direct factors and construct a two-level model, we performed a logistic regression analysis in which all psychological variables were regressed to the CRR dummy. By testing likelihood values in a stepwise way, one factor, sympathy, was selected. Second, also in the same way as in the previous analysis, relevant paths between the direct factor and indirect factors were specified according to modification indices calculated by using LISREL 8. Figure 3 shows the path diagram that was implied by this analysis. As shown in this figure, the results implied that the CRR dummy would be dependent on sympathy, which in turn would be dependent on group identification, place attachment, network, and a sense of common fate. We again estimated the given model. Table 4 shows the results. The following statistics indicated that the model produces an excellent fit to the data: χ^2 (n = 317, df = 44) = 44.12, χ^2/df = 1.00, CFI = 1.00,

NNFI = 1.00, and RMSEA = 0.003, and all the assumed paths were significant.

V. DISCUSSION

Although voluntary contributions of residents on behalf of local communities have been recognized as an important factor for improving these communities, the motives or psychological processes that underlie their cooperative behavior have not been sufficiently investigated. This study aimed to explore the psychological variables underlying CB on behalf of local communities, focusing on the case of the charisma ambassadors of tourism in Japan. The results of the comparison of CBI among the three different groups (charismas, residents in CR, and residents in OR) revealed that the charismas were more likely to have the intention to engage in cooperative behavior than were other participants. Although some research has highlighted self-oriented motivations, such as self-enhancement and self-fulfillment, as determinants of volunteers' behavior (e.g., Clary et al., 1998), these results seem to refute the idea that the charismas engage in CB based solely on such self-oriented motivation. Rather, the present study supports the view that the charismas serve their communities selflessly, similar to the "volunteers" in the theoretical setting of the volunteer's dilemma, as implied by the result that the standardized coefficient for norm-activation factor (.29) was larger than that for benefit perception (.19).

Consistent with the previous research discussed in Section II, this study provides good evidence for associations between many of the proposed psychological variables and CB. The results may appear to suggest that prior explanations of altruistic and cooperative behavior offered by related theory, i.e., norm-activation theory, theory of reasoned action, social identity theory, theory of multilevel selection, and social network theory, can be applied to CB for the local community. However, it should be noted that the correlations between CB and psychological variables reported here do not demonstrate causal relationships. The causal relationships between these variables are an issue to be addressed in future research.

The central aim of this study was to explore the personality and environmental factors underlying CB toward local communities from a multilevel perspective. We examined the two factors by comparing the charismas with other residents and by comparing the residents living in the same region as the charismas with residents living in other regions. Several variables related to personality factors and to environmental factors were identified. The results demonstrated both inter-individual and inter-group aspects of CB, which can explain respectively individual differences between the charismas and other residents and regional

differences between residents living in the charisma's region and those living in other regions.

The results of the structural equation model for personality factors revealed that norm-activation factor and benefit perception were directly associated with the personality characteristics of the charismas. The scale of the norm-activation factor was indicated to be constructed from three items, i.e., ascribed responsibility, perceived effectiveness, and feasibility evaluation, which are all regarded as relevant factors activating moral obligation and personal norm. Therefore, the results suggest the possibility that the psychological process for activating the norm to perform CB might underlie the charismas' behavior. In addition, given the fact that the charismas actually engage in CB, it can be concluded that Schwartz's norm-activation theory might be viable to explain the psychological process underlying the CB of the charismas.

The result indicating that the personal norm and benefit evaluation, which can be regarded as a social and a personal factor, respectively, contribute to the personality characteristics of the charismas could imply that the two factors are compatible for the charismas. Indeed, the two factors are likely to work together to support the CB of the charismas. These results seem to support the view that the charismas undertake considerable efforts for local communities due to their sense of moral obligation and, at the same time, they feel happy about contributing to their communities by means of such behavior. In addition, while social dilemmas including the volunteer's dilemma can be defined as conflicts between personal and collective interests (Dawes, 1980), the present finding implies that situations that in general are regarded as social dilemmas would not always be regarded as such by the charismas.

The exploratory result using the structural equations model also suggests that several items are causally related to the norm-activation factor and benefit perception. First, it shows that benefit evaluation, perceived difficulty in escaping from problems, social adaptation, and interest and concern are directly related to norm-activation factor. The result regarding the factor of perceived difficulty in escaping from problems indicated that those who feel difficulty in escaping from local problems tend to activate social norms. This may be because such situations may activate responsibility for solving the problem (ascribed responsibility), which is an important factor in activating the norms (Schwartz, 1977). The finding that benefit evaluation and social adaptation had direct effects on the norm-activation factor may imply that these variables are related to the awareness of consequences that is also an important factor in the norm-activation process. Regarding interest and concern, it might be possible to assume that those who have an interest in community-based activities appear to recognize the effects of their own CB on their

local community, i.e., perceived effectiveness, which is also known to be an important factor for the norm-activation process. It was also indicated that benefit evaluation and the happiness of being helpful are positively related to benefit perception. This result reflects the fact that these variables are conceptually directly related to personal benefit.

The estimation result of the structural model for environmental factors indicates that regional differences between residents in the region that produced *charismas* and those in the regions that did not could be directly explained by whether they feel sympathy for the charismas. This result implies that selfless people, like the *charismas*, would be more likely to emerge in an environment where residents share feelings of pleasure and hardship. Also, we found that identification with the local community place attachment, network, and a sense of common fate were causally related to sympathy. These variables might contribute indirectly to the emergence of the *charismas* through the interaction with sympathy.

a)   Active passivity of the charismas

In general, the findings of the present research support the view of cooperative persons conforming to group norms within local communities. Cooperative persons tend to internalize the norms of moral obligation that are embedded in society (Schwartz & Howard, 1981). Furthermore, they tend to share feelings of sympathy within local communities. Still, we should not conclude from these results that persons acting cooperatively like the *charismas* are just "passive" members of local communities. Rather, the present results imply that charismas are distinct from other persons in the sense that they can use their vitality to more actively undertake the role of a member of the communities. As shown in this study, they tend more to be sensitive to the hardships of community members and actively accept norms and the obligation to improve communities. Hence, their attitude can be regarded as a form of "active passivity."

Recent research has often put an emphasis on the individualistic and creative aspects of entrepreneurs, presenting them as agents of "creative destruction" who are change oriented and may violate the existing norms and standards within localities (Conger & Kanungo, 1987; Florida, 2002). In contrast, the present case study highlights the social and conforming characteristics of the *charismas*, who activate existing norms and standards. The attitude of "active passivity" can be seen as one of the relevant characteristics underlying CB of the charismas. Although it cannot be concluded from this study alone that the attitude of "active passivity" is unique to Japanese cultural contexts and distinct from other cultures, such an attitude may underlie CB shown at least in the case of the charismas. Cross-cultural comparisons of CB in local communities are needed in future research to examine whether such an attitude is also present in other cultures.

The present results could have several policy implications. The given personality factors should be taken into account to enable cooperative people to keep up their CB on behalf of local communities or, at least, to not prevent or discourage them from engaging in the behavior. Also, encouraging the environmental factors, for example through strengthening social ties, might be efficacious in promoting the emergence of cooperative people like the charismas. A challenge for future research is to develop measures for promoting these personality and environmental factors.

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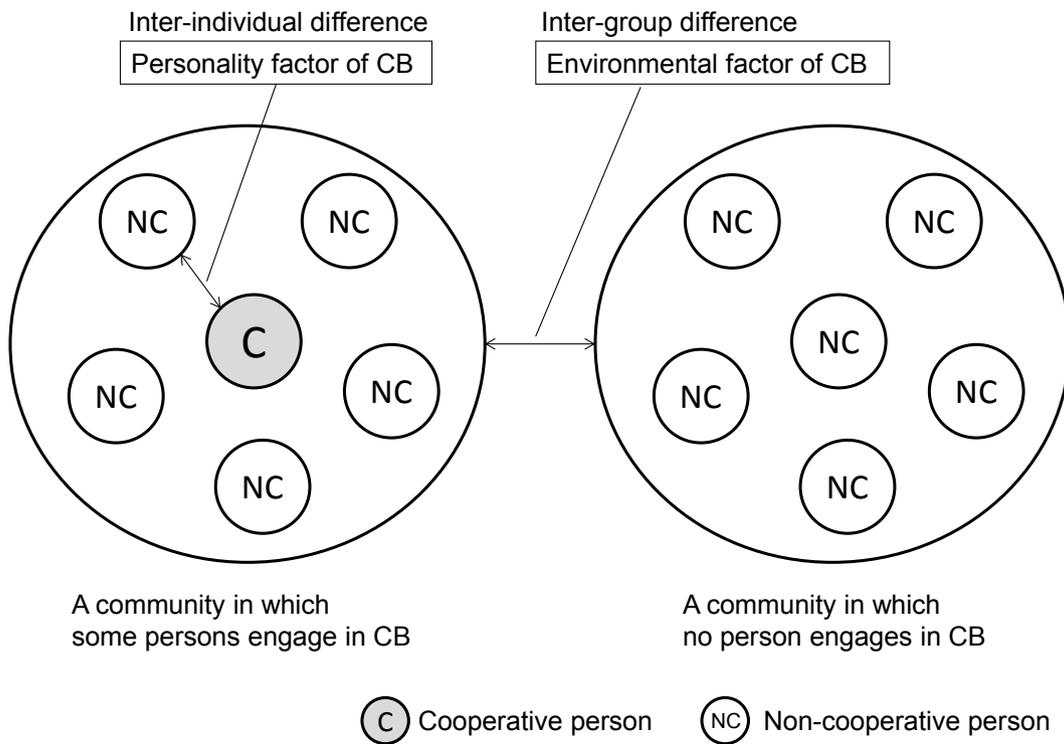
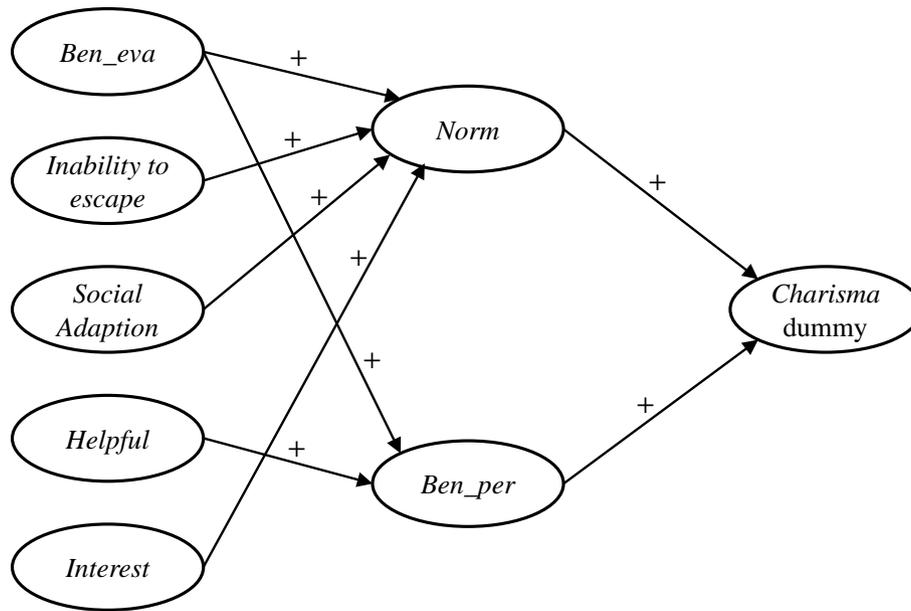*Figure 1 :* Personality and environmental factors underlying CB

Figure 2 : Structural model for personality factors.

Ben_eva = Benefit evaluation, Inability to escape = Perceived difficulty in escaping from problems, Helpful = Happiness in being helpful, Interest = Interest and concern, Norm = Norm-activation factor, Ben_per = Benefit perception
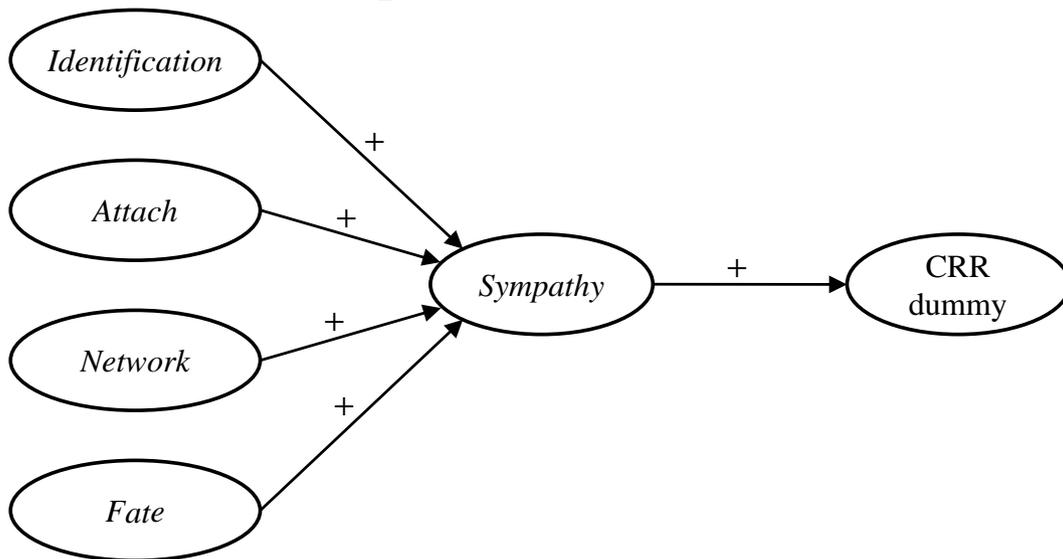

Figure 3 : Structural model for environmental factors.

CRR dummy = Residents in CR dummy, Identification = Group identification, Attach = Place attachment, Network = Neighborhood network, Fate = A sense of common fate

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Table 1 : Questions regarding measures of determinants of CB

1) Norm activation

Norm-activation factor [+] (α = .82)

   Ascribed responsibility

   I feel a responsibility to support our local community.

   Perceived effectiveness of behavior

   I think that I can change our local community by engaging in CB.

Feasibility evaluation of behavior

I think it is possible for me to engage in CB.

2) Reasoned action

Evaluation of consequences of behavior

Benefit perception [+] (α = .82)

I feel X as the result of engaging in CB;
X is "I can find friends", "I can change my attitude to life", "I can learn how to engage in community activities" and "I can change the situation".

Benefit evaluation [+] (α = .83)

I think it is desirable that X as the result of engaging in CB;
X is the same as the above items.

Cost perception [-] (α = .67)

I feel Y as the result of engaging in CB;
Y is "my free time becomes decreased", "it becomes difficult to work" and "stress caused by human relations".

Cost evaluation [-] (α = .67)

I think it is desirable that Y as the result of engaging in CB;
Y is the same as the above items.

Risk perception [+] (α = .42)

Perceived likelihood of occurring

I think it is possible that our local community becomes dead in future.

Perceived seriousness

I think that my livelihood would be threatened if our local community stagnates.

Perceived difficulty in escaping from problems [+] (single-item)

I think that if our local community was in decline, I would have to face the problem.

3) Social identity

Group identification [+] (α = .85)

I feel proud to be a member of our local community.

I feel a strong tie with our local community.

Place attachment [+] (single-item)

I have an attachment to our local community.

Commitment [+] (α = .74)

I agree to the goals and philosophy of our local community.

I would spare no efforts for our local community.

I would like to continue to stay in our local community.

Personal mobility [-] (single-item)

Members in our local community frequently move to other areas.

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[a] Estimates of reliability with Cronbach's *α* are given within parentheses.

[b] [+]: Positive factors, [-]: Negative factors.

Table 1 : Questions regarding measures of determinants of CB (Cont)

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4) Evolutionary selection

A sense of group selection [+] (α = .68)

I think that many towns in our region would become dead if appropriate measures were not carried out.

I think that towns in our region struggle for customers.

I think that towns in our region tend to learn from the success of other towns.

I think that towns in our region can be vitalized if they change how things are done.

I think that towns in our region tend to improve if they are not concerned about conventionalities.

A sense of individual selection [+] (**α = .63)**

I think that many stores and companies in our town would go under if appropriate measures were not carried out.

I think that stores and companies in our town struggle for customers.

I think that sores and companies in our town tend to learn from the success of other stores and companies.

I think that stores and companies in our town can be vitalized if they change how things are done.

I think that stores and companies in our town tend to improve if they are not concerned about conventionalities.

5) Social relations

Neighborhood network [+] (single-item)

I often meet with my neighbors.

Participation in community groups [+] (single-item)

The number of community groups to which a participant belongs.

Social adaption [+] (*α* = .82)

I think that the people around me are interested in community-based activities.

I think that people around me appreciate persons who engage in CB.

I think that people around me regard CB as important.

Pleasures of others [+] (single-item)

I think that people around me are pleased that I engage in CB.

Happiness in being helpful [+] (single-item)

I feel happy that I can help people by engaging in CB.

Gratitude [+] (single-item)

I think that people in our local community are grateful to persons who engage in CB.

Sympathy [+] (single-item)

I often share feelings of pleasure and hardship with other people in our local community.

A sense of common fate [+] (single-item)

I feel that I share a common fate with other people in our local community.

6) Other factors

Interest and concern [+]

I am interested in community-based activities.

Emotional tranquility [+] (*α* = .81)

I feel that I can forget feelings of hatred by engaging in CB.

I feel that I can escape from a sense of isolation by engaging in CB.

I feel that I can reduce feelings of guilt by being happy to engage in CB.

I feel that I can escape from personal troublesome problems by engaging in CB.

I feel that engaging in CB enables me to solve personal problems.

[a] Estimates of reliability with Cronbach's *α* are given within parentheses.

[b] [+]: Positive factors, [-]: Negative factors.

Table 2 : Correlations between CBI and psychological variables

Measure	Cooperative Behavior Intention(CBI)
1) Norm activation	
Norm-activation factor	.45 [***]
2) Reasoned action	
Benefit perception	.40 [**]
Benefit evaluation	.38 [**]

Cost perception	-.17 *
Cost evaluation	.28 **
Perceived likelihood of occurring	.08
Perceived seriousness	.27 **
Perceived difficulty in escaping from problems	.32 **
3) Social identity	
Group identification	.44 **
Place attachment	.33 **
Commitment	.41 **
Personal mobility	.22 **
4) Evolutionary selection	
A sense of group selection	.21 **
A sense of individual selection	.26 **
5) Social relations	
Neighborhood network	.33 **
Participation in community groups	.27 **
Social adaption	.25 **
Pleasures of others	.26 **
Happiness in being helpful	.42 **
Gratitude	.23 **
Sympathy	.37 **
A sense of common fate	.34 **
6) Other factors	
Interest and concern	.38 ***
Emotional tranquility	.35 ***

N = 375.

* *p* < .01. ** *p* < .001.

Table 3 : Estimation of structural equations model for personality factors

Path from	Path to	Standardized Coefficient	*t*
Benefit evaluation	Norm-activation factor	.20	3.62 ***
Perceived difficulty in escaping from problems	Norm-activation factor	.19	3.08 **
Social adaption	Norm-activation factor	.23	3.94 ***
Interest and concern	Norm-activation factor	.37	5.68 ***
Benefit evaluation	Benefit perception	.70	14.0 ***
Happiness in being helpful	Benefit perception	.22	4.48 ***
Norm-activation factor	Charisma dummy	.29	3.79 ***
Benefit-perception	Charisma dummy	.19	2.49 *

N = 198.

* *p* < .05, ** *p* < .01, *** *p* < .001.

Table 4 : Estimation of structural equations model for environmental factors

Path from	Path to	Standardized Coefficient	*t*
Group identification	Sympathy	.15	2.41 *
Place attachment	Sympathy	.12	1.97 *
Neighborhood network	Sympathy	.12	2.52 *
A sense of common fate	Sympathy	.48	9.64 ***
Sympathy	CRR dummy	.20	3.44 ***

N = 317.

* *p* < .05, ** *p* < .01, *** *p* < .001.