

[Sugiura,J.](#) 2005 Tac dung cua su truyen ba thong tin va su cam ket mang tinh hanh vi doi voi danh gia cua dan chung ve he thong tai su dung rac thai (**The effects of informational exposure and behavioral commitment on residents' evaluations of the recycling system**) "Ung Dung Tam Ly Hoc tai Nhat Ban" (**Applications of Psychology in Japan**) In Vu.D., Ito,T., Phan,T.M.H., & Yamamoto,T.(eds), 2005, (pp.153-168).Hanoi: Nha Xuat Ban Tu Dien Bach Khoa (Hanoi: Encyclopedia Publishing House) ([in Vietnamese](#))

Original Manuscript in English

The effects of informational exposure and behavioral commitment on residents' evaluations of the recycling system

SUGIURA Junkichi (Aichi University of Education)

1. Introduction

Japan has achieved economic growth through mass production, mass consumption and mass waste-production. As a result, it has faced such problems as the depletion of resources and shortage of landfill. The promotion of a recycling-oriented society by the recycling of collected waste through separated collection can be mentioned as an example of an effective method of solving these problems. For this, it is necessary for residents to separate wastes properly when wastes are being taken out. This is because wastes that have been collected mixed up are difficult to use as resources. Given this factor, in recent years many municipalities have adopted a policy of promoting recycling by separating wastes. Throwing away any wastes without distinguishing them is not a great burden on residents compared to the complicated separation of wastes.

How the administration's waste separation system will be accepted by residents will be examined in this chapter. Articles related to the intervention experiment on the behavior of waste disposal in shopping malls (Takahashi, 1996) and determinants of the act of recycling (Nonami, Sugiura, Ohnuma, Yamakawa & Hirose, 1997) have been published for instance in "The Japanese Journal of Psychology" with regards to the applied psychological study related to the recent waste problems in Japan. On the other hand, psychological researches are also attracting attention at the Waste Management Expert that has dealt with the problems of waste. Here, I would like to introduce you to an applied psychological study related to the problems of waste in

Japan through the research of Sugiura, Nonami and Hirose, which was published in the "Journal of the Japan Society of Waste Management Experts" in 1999.

2. Applied social psychology related to the evaluation of environmental policy

How will the waste separation system introduced by the administration for waste reduction be accepted by residents? How the residents' practice of waste separation after the introduction of the system through obtaining the information from the administration prior to the system's introduction could effect the evaluation of the new system is an especially important issue that needs to be considered in introducing the system of waste reduction.

With regards to the case of recycling behavior, an inconsistency between the attitudes toward behavior and the actual environment-conscious behavior is observed. This is because one tends to choose actions that lead to such personal benefits as amenity and convenience even though a positive attitude for social benefit is maintained (Hirose, 1994). Development of a system that enables waste separation by individuals is required in order to actualize a recycling-oriented society. However, the introduction of a relaxed waste separation system for residents almost never has a remarkable effect on waste reduction, and only increases the costs for the administration that has to purchase the facilities for the mechanical separation of waste. In turn, the introduction of an effective waste separation system in waste reduction will create more trouble of separating wastes by residents. There is a great possibility of residents rebelling against the administration, making it difficult for them to behave in compliance with the system. As a result, the effect of waste reduction will diminish.

If so, how is the waste separation system going to be accepted by residents? It can be assumed that the general evaluation of residents toward the new system consists of the evaluation related to the aspect of such social benefits as waste reduction, and the evaluation related to the aspect of such personal costs as separation of wastes. Publicity activities that adequately offer information on social benefits brought on by the new system can be considered as a way for residents to make a positive evaluation toward the new system. After the new system is introduced in such a way, it is expected that the residents' evaluation of the system can change in two ways. One is the expectation that residents' general evaluation toward the new system will change more negatively compared to before the introduction due to the increase of such personal costs as the burden of waste separation that is different from the conventional practice of waste disposal. The

other is the opposite expectation that the general evaluation will become more positive due to the behavior of waste separation possessing the function of commitment toward the new system, which the residents themselves judged to be desirable before the introduction of the system. Commitment is "the pledging or binding of individual to behavioral act" (Kiesler, 1971), which declares support for a particular social phenomena, and furthermore signifies behavior that suggests support. According to the "Theory of cognitive dissonance" (Festinger, 1957), when an individual has a commitment toward some object, that individual will have an attitude consistent to the action taken toward that object. If residents evaluate the new system to be desirable before its introduction, it can be considered that the behavior of separating that accompanies the new system is the commitment toward that system. In such case, the personal burden of residents that accompanies the act of separating wastes prior to the introduction of the system is evaluated relatively low. As a result, residents will maintain a positive evaluation toward the new system and it can be expected to change even more positively.

3. The process of introducing the system and the response of residents

Three stages can be assumed as response from residents in the introduction of the separation system by the administration. First is the stage in which they are exposed to information related to the new system prior to the introduction, and residents will come to understand an aspect of social benefits brought on by recycling based on information related to the new system. Second is the stage where the act of separating wastes, is commenced along with the introduction of the new system, which is the stage where personal costs are specifically recognized. Third is the period when the behavior is repeated with the passage of time, and the behavior pattern of waste separation is attained. The aforementioned processes are supposed with regards to the change in response of residents toward the introduction of the recycling system by the administration.

I would like to refer to the case of H City that introduced a new system that differed greatly from the traditional system (Sugiura et al., 1999). From October 1994 to December 1995, H City had shifted from the dust-box system, which allowed dumping of waste anytime by separating the wastes into two types, burnable waste to nonburnable waste, to the new method, which collected burnables twice a week using a specified bag, and nonburnables subdivided into 25 categories, which were brought into the station twice a month. In short, it shifted from a waste disposal

method that was virtually fuss-free to a method which heavily burdened the residents themselves. i.e., separating, storing and transporting. H City had decided to implement a new system that separates wastes into more than 20 categories from 1994, after studying what type of wastes the residents produced and at what quantity. By dividing the city into three areas, North, Central and South, the system was implemented on a trial basis with the North area as its first model area, and it was expanded in sequence from Central to South areas (Figure 1). The explanation of the new system was given in H City's newsletter and at a special neighborhood meeting. The explanation included details related to the social benefits of waste separation and personal costs.

The above mentioned process is apt for examining the changes in the resident's evaluation of the system at the stage of exposure, to information related to the new system and leading up to the practice of separating wastes that complies with the system. In other words, this is a case in which three areas have different timings of introduction, i.e., 1) an area where the system was not introduced yet, 2) an area immediately after the introduction of the system, 3) an area where the operation of the system had taken off after a certain period had passed, were simultaneously present at one point in 1995. Given this factor, by comparing the individual estimates of the social benefits/personal costs of the new classification of waste dumping and the general evaluation of the new system between these three areas, the effects of informational exposure and commitment toward the system can be examined in the evaluation of the system.

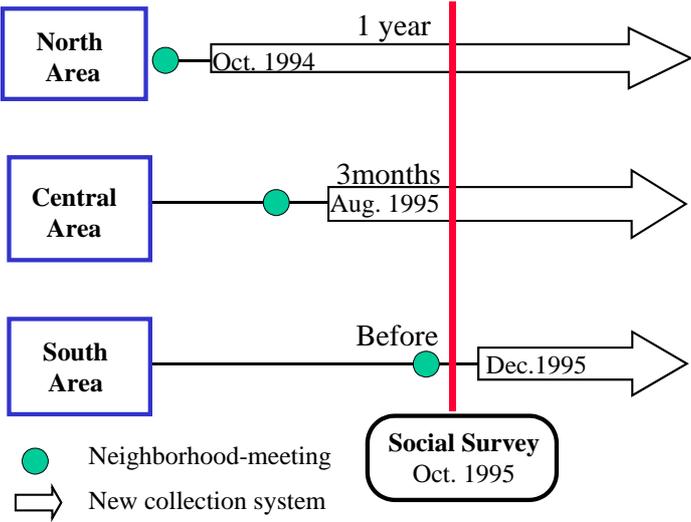


Figure 1 Actions to introduce the new waste collection system by the administration

4. Quasi experiment by a social survey

The social survey reported in this chapter was carried out at the end of October 1995, about a year after the introduction of the system in the North area, after the introduction in the Central area and after a special neighborhood meeting was held in the South area. This study took on a style of a quasi experiment that measured the impact the provision of information and the implementation of the system by the administration had on the residents' evaluation of the new system. A quasi experiment is enabled by measuring the dependent variable properly in relation to objects with slightly varying conditions that correspond to the matters that one wishes to study, even when the independent variable is hard to control or when it is ethically inefficient.

210 households from each area, a total of 630 households, were selected as research samples using a random sampling method from three points within the approximately 20,000 households in the whole of H City, i.e., the South area just before the introduction (apprx. 8,500 households), the Central area where three months had passed since the introduction (apprx. 9,000 households) and the North area where a year had passed since the introduction of the new system of waste collection (apprx. 2,300 households). A questionnaire was posted to each household and a response was requested by the person in charge of housework. The collection of the questionnaires was carried out by researchers visiting homes individually. The recovery percentage was 89.5%.

In the analysis of the survey results, (whether or not there was any bias) in the samples from the three areas were examined. The years in residence and resident status including gender and age are considered to have an impact on the evaluation towards the waste disposal policy. This study had planned for an analysis as a quasi experiment that compared the three areas, and presupposed that the attributes of the three areas resembled or do not have an impact on the dependent variable. As differences were observed only in the years in residence of the respondents between the three areas, an analysis of covariance was carried out in which, the effect of the years of residence is set up as a covariate in the analysis of comparisons between areas. 2/3 of residents attended the special neighborhood meeting, confirming the fact that there was no difference between the three areas. It was also confirmed that there was no difference with regards to exposure and information related to waste collected published in the newsletter.

5. Evaluation of the new system

In order to examine the changes in the residents' general evaluation toward the new system prior to the introduction of the system with regards to the general evaluation of the collection system, weighted average of the two items related to the general evaluation was carried out to examine the differences of the average of each area (Table 1). As a result of comparing the three areas, differences in the North area where a year had passed and the South area before implementation was observed. To be more specific, the general evaluation of the new system changed more positively in the area where a good deal of time had passed in comparison to the area that had not yet introduced the system, regardless of the average years of residence of households of each area.

Differences between the three areas were examined, with regards to social benefits and personal costs of the new system presumed to have an impact on the general evaluation as well. Factor analysis on eight items of social benefits and personal costs with regards to the system of waste separation was carried out first, and they were confirmed to be consisting of two factors as attributes related to "social benefits" and attributes related to "personal costs" (Table 2). Based on this result, respective scales were composed.

Table1 Mean scores of 3 areas on general evaluation of the new waste collection system

	South area before	Central area 3 months	North area 1 year
General evaluation	3.32 ^a	3.50 ^{ab}	3.62 ^b
Social benefit	4.09 ^a	4.14 ^b	4.31 ^b
Personal cost	1.80 ^a	1.98 ^{ab}	2.07 ^b

The higher the score, residents have positive evaluation of the new system.

The same superscript letters indicate that there are no statistical differences between the groups.

Table 2 Factor analysis of 8 items concerning advantages of waste collection system

			h ²
increasing awareness for environmental problems	<u>.84</u>	.09	.71
decreasing the amount of household wastes	<u>.80</u>	.13	.65
saving the municipal costs of waste disposal	<u>.76</u>	.16	.60
becoming an effective means of material recovery	<u>.74</u>	-.01	.55
being possible to put out household wastes at any time	.12	<u>.79</u>	.63
convenient because materials do not have to be separated	.04	<u>.78</u>	.61
taking few burdens like being present at drop-off station	.07	<u>.77</u>	.60
taking few burdens like moving recyclable materials to drop-off station	.14	<u>.72</u>	.54
	2.50	2.40	

: Social benefit : Personal cost

Evaluations of social benefits and personal costs were compared in three areas with different timings of introduction of the new system. With regards to the evaluation of the social benefits, it changed positively the longer the period of implementation. With regards to the evaluation of personal costs, it indicated that the evaluation changed positively after a year had passed from the implementation compared to before the introduction.

A multi regression analysis which sets social benefits and personal costs as the independent variable, and the general evaluation of the new system as the dependent variable with regards to the three respective areas and the impact the social benefits and personal costs have on the general evaluation of the new system was carried out. As a result, the aspect of social benefits alone was the determinant with the general evaluation before the implementation of the new system, but both the social benefits and personal costs became the determinants after the implementation of the new system.

6. Effect of information exposure

H City's newsletter article and participation in the special neighborhood meeting can be mentioned as the information source of the new system. The connection between the exposure to such information and social benefits and personal costs of the new system becomes an issue. First of all, the impact of participation in the special neighborhood meeting prior to introduction was examined. When a comparison was made concerning the evaluation of social benefits by dividing the residents into two groups depending on whether they had taken part in the special neighborhood meeting or not, those residents who participated in the special neighborhood meeting evaluated the social benefits higher. In a similar comparison, no difference in

evaluation was observed with regards to personal costs. In other words, participation in the special neighborhood meeting had no impact on the evaluation of personal costs of the new system. Next, a difference was observed again in social benefits alone, and no difference was observed concerning personal costs with whether or not the residents had read the article in H City's newsletters related to resource recycling and waste separation. In short, provision of information through the special neighborhood meeting and publicity exposure had raised only the positive evaluation of the new system through the aspect of social benefits. It was found that the impact the provision of information, prior to introduction gives to an aspect of social benefits is especially great. So why did an aspect of social benefits change and the evaluation of personal costs did not change?

In case of the introduction of a new system, a method of introducing the system into a model area first, as had been done in this case, and expanding it step by step is applied. Furthermore, information on the new system is provided often just before the introduction. Residents who will be accepting the untried system, obtain information concerning the system from special neighborhood meetings and publicity materials issued by the administration. It is believed that the evaluation of a new system is made at this point from the perspective that thorough separation, will have an impact on recycling and waste reduction, and the perspective that the numbers of categories of separation could increase personal costs. In H City's case, not only information related to such personal costs as ways of separating wastes under the new system was offered, but the aspect of such social benefits as environmental crisis on a global scale was emphasized in the special neighborhood meeting and the newsletters. Prior to the introduction, the determinant of the general evaluation was the evaluation of the social benefits alone, but by giving an explanation that stressed the effectiveness related to social benefits in addition to specific information concerning the method of waste separation prior to the introduction, has lead to positive evaluation toward the new system more with those who understood the social benefits. This fact shows us that the dilemmas of common and personal benefits are in accord with the knowledge that the behavior of recycling is promoted by the provision of information that emphasizes social benefits in the existing resource recycling behavior (Burn, & Oskamp,1986 , DeYoung, et al.,1993). Moreover, it is conceivable that positive attitudes can be formed by many residents, by information provided through the mass media with regards to social benefits

(Nonami et al., 1997). Therefore, it is believed that the general evaluation of the new system was decided as the already formed environmentally friendly attitude became firmly set by the explanation that emphasized social benefits.

7. Effect of behavioral commitment

The research findings from the quasi experiment (Sugiura et al., 1999), examined the differences of evaluation of the three areas by converting it to results as to whether or not the separation of wastes was being practiced under the new system. In short, those residents who experienced the practice of separating wastes under the new system were more likely to appreciate the social benefits brought on by the new system, and estimated the personal costs that accompany the new system as being small. It was also made clear that although the general evaluation of the new method was based on an aspect of social benefits prior to introduction, the evaluation became more positive based on both aspects, the social benefits and personal costs, in the course of time after the introduction.

In that case, how did the cognition of social benefits and personal costs change by the actual behavior of separating wastes? The individual will be in the condition of being committed toward the new system by the introduction of a system that has been positively evaluated on the aspect of social benefits, and the implementation of practice that accompanies it. It is considered that the degree of commitment will become higher as time passes from the introduction and that behavior is repeatedly carried out. There are two following possibilities concerning the change in the evaluation of personal costs by commitment through the introduction of the system.

First is the possibility that the evaluation of personal costs through commitment will change and improve and become consistent with the evaluation of social benefits. With regards to personal costs, contrary to the aspect of social benefits that are decided by exposure to information, they will be experienced directly in terms of trouble and burden by the behavior being carried out. The level of commitment will rise by experiencing the behavior that complies with the new system. It is conceivable that the evaluation concerning personal costs will be evaluated lower than the real costs. In other words, the general evaluation toward the new system will be decided based on cognitive consistency which states, that the practice of separating wastes requires personal costs, but could also lead to social benefits, which are indispensable in living a social life. It is supposed, that although residents were negative toward the new system in the

beginning, the perception of personal costs had changed and improved and became consistent with the behavior, stating that "practicing a burdensome behavior is socially desirable" by behavioral commitment.

Second is the reduction effect of the sense of burden by the conventionalization of the separation of wastes. Under a condition in which there was only the experience of behavior through a less burdensome method prior to the introduction, the evaluation from the aspects of personal costs of the new method with greater burden could shift toward a direction that supports the old method. However, at a stage when a new behavior has been acquired, it is conceivable that the adaptive value toward a behavior that complies with the new system may rise, stating such notions as "it is surprisingly easy once I've tried" or "it is less troublesome when I have contrived ways of handling it". When considering that in comparing the two areas, one before the introduction and one after the introduction, with regards to the aspect of personal costs, no difference with the area immediately after the introduction was observed, and that there was a difference only with the area a year after the introduction. It is supposed that the evaluation of the new system, by the aspect of personal costs had changed positively by the action becoming conventionalized in addition to the commitment toward the system by the passing of a year.

8. Conclusion

It is supposed that the support toward the new system, in respect to social benefits, becomes higher by residents receiving sufficient provision of information before the introduction of a new system. It was indicated that even when that new system comes with personal costs, cooperation of residents could be obtained after the introduction of the new system, as it will be supported by the evaluation of social benefits, when information regarding the aspect of social benefits was provided to residents before the introduction. It was also indicated, that even if sufficient provision of information is not received before the introduction, the amount of information increased gradually, by being exposed to information related to the effects of the new system, which leads to the support toward the system from the aspect of social benefits. However, detailed provision of information and activities for convincing residents by the administration, as well as the presence of a neighborhood association, can be considered as reasons for the success of H City's case.

Perception on such macro levels as resource recycling and waste reduction has changed with the

exposure to information on waste separation, which raised the positive evaluation of the new system through aspects of social benefits. On the other hand, perception on a micro level changed through the commitment which accompanied the introduction of the system, and lead to a rise in the evaluation of the new system relatively from both aspects of social benefits and personal costs. It is indeed significant to have been shown that a thorough recycling system can be accepted by residents if it is implemented based on sufficient explanation and detailed proceedings by the administration. However, the progression of thorough waste separation is not enough. Although it is necessary to utilize recycled goods, ~~but~~ unless we think of how consumption itself should be, our society will only become a mass consumption/mass recycling society.

References

- Burn, S. M. & Oskamp, S. 1986 Increasing community recycling with persuasive communication and public commitment. *Journal of applied social psychology*, **16**, 29-41.
- DeYoung, R. Duncan, A., Frank, J., Gill. N., Rothman, S., Shenot, J., Shotkin, A., & Zweizig, M. 1993 Promoting source reduction behavior: The role of motivational information. *Environment & Behavior*, **25**, 70-85.
- Festinger, L. 1957 A theory of cognitive dissonance. Row Peterson & Company.
- Hirose, Y. 1994 Determinants of environment-conscious behavior. *Research in Social psychology*, **10**, 11-23. (In Japanese with English Abstract)
- Kiesler, C. A. 1971 The psychology of commitment: Experiments linking behavior to belief. New York: Academic Press.
- Nonami, H., Sugiura, J., Ohnuma, S., Yamakawa, H., & Hirose, Y. 1997 The roles of various media in the decision making processes for recycling behavior: A path analysis model. *The Japanese Journal of Psychology*, **68**, 264-271.(In Japanese with English Abstract)
- Sugiura, J., Nonami, H., & Hirose, Y. 1999 The effects of informational exposure and behavioral commitment on residents' evaluations of the new waste new system: An environmental and social psychological approach. *Journal of the Japan Society of Waste Management Experts*, **10**, 87-96. (In Japanese with English Abstract)
- Takahasi, N. 1996 A study of litter prevention at a shopping mall. *The Japanese Journal of Psychology*, **67**, 94-101.(In Japanese with English Abstract)