Send Orders for Reprints to reprints@benthamscience.ae

The Open Psychology Journal , 2018, *11*, 25-34

The Open Psychology Journal

Content list available at: www.benthamopen.com/TOPSYJ/

DOI: 10.2174/1874350101811010025

RESEARCH ARTICLE

Effects of the Environmental Attitude and Responsibility on Household Waste Separation: Evidence from Iranian Married Women

Siroos Ahmadi*

Department of Sociology, Faculty of Human Science, Yasouj University, Yasouj, Iran

Received: January 30, 2018 Revised: February 01, 2018 Accepted: February 24, 2018

Abstract:

Background:

Women can play an important role in relieving problems in every society but this capacity has been neglected especially in developing countries. Given the intensification of the waste issue in Iran, this research aimed to investigate the effect of environmental attitude and responsibility of married women on household waste separation as a significant strategy to alleviating waste problem.

Methods:

This cross-sectional survey was conducted on 562 married women in two Iranian provinces; Kohgiluye and Boyerahmad, and Fars.

Findings:

Research findings using structural equation model suggested that; the environmental attitude and responsibility positively affect on HWS (R^2=.66). Furthermore, HWS was significantly different in terms of demographic variables of education, age, job, city of residence, years of marriage, and number of children.

Conclusion:

The study concluded that; by improving the married women's environmental attitude, responsibility, education level, and employment chances, HWS as an urgent need of the country will be significantly developed.

Keywords: Household waste separation, Environmental attitude, Responsibility, Iranian married women, Urbanization, Education.

1. INTRODUCTION

Due to growth in population, urbanization and change in ways of life in Iran, generation of municipal solid waste, as garbage that comes mainly from homes [1], has reached 20 million tons [2] per year; 600g per day for everyone. Continuing this situation damages the country from various dimensions. A principal strategy to deal with the rapid waste generation problem is recycling particularly through household waste separation. Given that, married women are traditionally home managers who usually receive the discarded materials by other members of the household [3] and are generally more engagement in ordinary home activities, they could play an important role in this context. Married women by doing HWS are able to make possible usage of more household waste before destroying and improve better quality of the recycled materials [4]. Many studies have shown that women are commonly more apt to carry out pro-environmental behaviors than men [5]. Though the waste separation at source's plan has been carrying out since 2004 in

* Address correspondence to this author at the Department of Sociology, Faculty of Human Science, Yasouj University, Siroos Ahmadi, Yasouj, Iran; Tel: +987433242151; E-mail: sahmadi@yu.ac.ir

Iran [6] and 40% of the generated waste by homes is easily recyclable dry waste such as paper, plastic, glass, metal, textile, wood, *etc.* [7, 8]. the rate of HWS is a small amount [2, 6 - 11].This reality shows that the married women are not very much inclined to do HWS. The question is why?

As a behavior, HWS is influenced by a range of factors such as, knowledge of how to separate [12], trust [13], associated facilities [14], socioeconomic status [15], number of family members [16, 17], membership in environmental organizations [18], age [19], economical incentives [20], social influence [21], education [22], attitude toward recycling [23, 24], and use of media [25].

Many environmental studies have shown that environmental attitude, as a set of knowledge and positive emotions to the environment [26, 27] can be a key factor to explain environmental behaviors [28] like HWS. According to Allport [29], attitude dynamically affects on how people react to objects, persons and situations. Fishbein and Ajzen [30] in the Reasoned Action Theory believe; intention as an element that comes before any behavior is determined by attitudes and subjective norms. Based on this theory, there is a close relationship between attitude and behavior. Attitude consists of three components; cognitive, emotional and behavioral. The mechanism of influencing attitude on behavior is that everybody has some knowledge of a subject. If this cognitive part is backed up by emotional component, the behavioral part is shaped and one behaves in agreement with that subject, if not, one shows no behavior agreeing with that subject [31].

Some studies have examined the relationship between environmental attitude and HWS. They are different not only in measuring the HWS, but also in their findings. Some researchers have shown a significant relationship between the two variables [19, 32, 33] and some have revealed no significant association between them [34, 35].

Responsibility is another major variable that might be influencing HWS. Responsibility is generally regarded as a personal capacity or competence [36]. Responsibility is an internal obligation and commitment to do good all activities that a person has been undertaken [37] or expectations society has from him/her [38]. Responsibility is an inherent potential living in each person, which becomes evident as the self begins to recognize the needs of others [39]. Responsibility is usually determined by some basic signs; taking into account the consequences of behavior looking at self and others [40], caring task, responsiveness, reliability [41] and concerns with the well-being of self and others [42]. Responsibility as a multidimensional construct [43] can be divided into two types of personal and collective, in a general grouping [44]. While one feels commitment toward self in the personal responsibility, the collective one connects an individual toward a group or community that he/she is a member. Given that, the responsibility causes internal commitment aimed to concerns about the well-being of self and others, it can promote appropriate behaviors that finally profit both, individual and society such as HWS.

There are a few studies that have shown responsibility impacts positively on prosocial behaviors such as altruism [45 - 48] or energy saving [49 - 51]. Some researchers have suggested that there is a significant relationship between responsibility and undertaking environmental behaviors [52, 53]. Yuan *et al.* [54] clearly showed a negative significant relationship between responsibility denial and household kitchen waste separation and Nguyen *et al.* [13] suggested that, awareness of responsibility significantly impact on waste separation intention.

Logically, lack of HWS would damage at last to the environment, society and all members through destroying a main portion of recyclable material [4], allocating more land for landfill or dump [32], increasing the cost of collection and transportation waste [4], growing viruses, bacteria, parasites and fungi [55], generating hazardous gases in incineration [56, 57], and long-term absorption of some waste, for instance, plastic, glass and metal by nature. As a result, it is expected that, the more environmental attitude and responsibility the married women have, the more household waste separation they do. Therefore, the research question of the present study is that; do environmental attitude and responsibility affect on HWS among Iranian married women?

2. METHODS

This cross-sectional survey was conducted in two Iranian provinces; Kohgiluyeh-Boyerahmad in southwestern Iran and Fars in southern Iran that generate the maximum rate of municipal solid waste in Iran with an average of 700g per person per day [58]. The main difference is that, while, the waste separation at source's plan is carried out in Shiraz the capital city of Fars province, it is not performed in Yasouj the capital city of the other one. The population of the study consisted of 342851 married women; 315725 in Shiraz and 27126 in Yasouj [59]. To determine the sample size, Cochran's [60] sampling formula was used. Regarding the estimated proportion of existence of HWS in the population ($p=0.5$), the estimated proportion of lack of HWS ($q=0.5$), the value for the selected alpha level ($t=1.96$), acceptable

margin of error (d=0.05), and the total population (N=342851), the sample size was achieved 562 that were selected through multistage random sampling method in 10 urban districts out of 11 in Shiraz, and 2 urban districts out of 2 in Yasouj. The needed data were gathered during one month; Jan 10, 2017 to Feb 12, 2017.

Research instrument to assess the HWS was a researcher-made questionnaire developed according to the preliminary study on the most common consumable items by Iranian households in ordinary life. The questionnaire consisted of four components; plastic (10 items), paper (10 items), glass (7 items), and metal (6 items), that have been shown in Table **1**. The questionnaire included 33 dichotomous (yes, no) question asking respondents that items they separate from wet waste when discarded in a recent month. Therefore, the score range varied from zero to 33. The questionnaire was content-validated through looking for the views of a panel of experts. To assess the reliability, Kuder-Richardson coefficient was used that its value for the paper, metal, glass, plastic and the whole questionnaire were .68, .72, .65, .70 and .74, respectively.

Table 1. Demographic characteristics of the respondents.

-	Categories	F	%
City	**Y**asouj	232	41.9
	Shiraz	330	58.1
Education	**P**re-diploma	74	13.3
	Diploma	161	28.6
	B.A or B.S	236	42.0
	M.A or M.S	82	14.6
	PhD	9	1.6
Job status	**E**mployed	217	38.6
	Homemaker	345	61.4
Age-group	**18**-29	169	30.1
	30-39	243	43.2
	40-49	111	19.8
	50+	39	6.9
No. years of marriage	**0**-10	310	55.2
-	11-20	136	24.2
-	21-30	77	13.7
-	31-40	27	4.8
-	41-50	12	2.1
No. children	**0**	104	18.5
-	1	141	25.1
-	2	121	21.5
-	3	83	14.8
-	4	52	9.2
-	5	18	3.2
-	6	23	4.1
-	7	13	2.3
-	8	5	.9
-	9	1	.2
-	10	1	.2

The second instrument was New Ecological Paradigm (NEP) developed by Dunlap *et al.* [61]. The NEP includes 15 items that have been designed in terms of a five-point likert scale so that the range is from 15 to 75. This scale has a five-factor structure; anti-exemptionalism, anti-anthropocentrism, limits of growth, balance of nature, eco-crisis. Some of the NEP question are as follows; *We are approaching the limit of the number of people the Earth can support, Humans are seriously abusing the environment; Plants and animals have as much right as humans to exist; Humans were meant to rule over the rest of nature; The balance of nature is very delicate and easily upset*. The tool was applied by Nooripour and Ahmadvand [62] in Iran and its psychometric properties was calculated. The Cronbach's alpha coefficient was used to assess the reliability in this study that the results were .81, .84, .76, .67, .84 and .86 for anti-exemptionalism, anti-anthropocentrism, limits of growth, balance of nature, eco-crisis, and the whole scale, respectively.

The third research instrument was Gough's [63] responsibility scale that was designed as a part of California Psychological Inventory. This scale consists of 42 items and has a one-factor structure. Measurement level is a dichotomous one (yes=1, no=0) and the range is from 0 to 42. Some of the responsibility scale taken from CPI is as follows; *when I work on a committee I like to take charge of thing, sometimes I rather enjoy going against the rules and doing things I'm not supposed to, I am embarrassed with people I don't know well*. This tool was applied by Saadati Shamir *et al.* [64] in Iran and its psychometric property was measured. For evaluating the reliability, Kuder-Richardson coefficient was employed in this study that the value was 0.94.

To describe the data, descriptive statistics including frequency, percentage, mean and standard deviation were used, and to examine the relationships among variables, Structural Equation Modeling (SEM) using LISREL, One-Way ANOVA, Independent t test, and Pearson Correlation were applied (Fig. **1**).

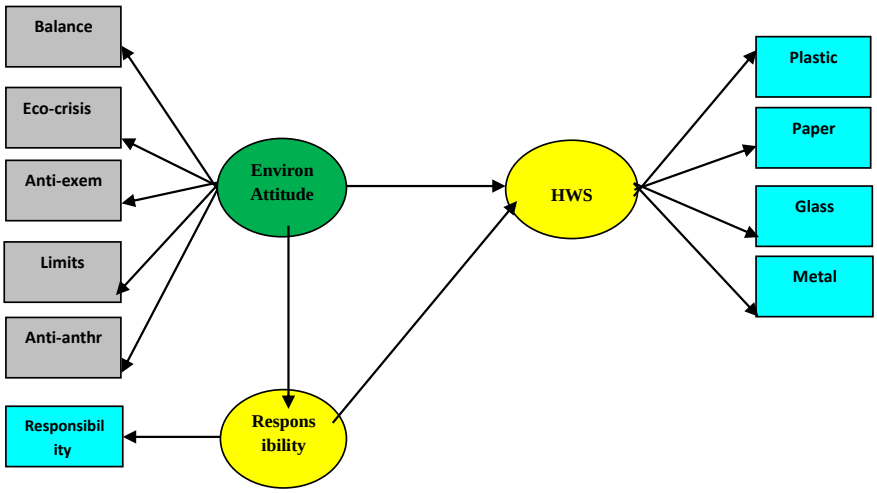

Fig. (1). Conceptual framework.

3. RESULT

The descriptive findings of the study are presented in Tables **1**, **2**, **3** and **4**. According to the Table **1**, most respondents lived in Shiraz, had a B.A or B.S degree, were homemakers, ranged in age from 30-39, got married from 0-10 years, and had 1 child.

Table **2** shows the HWS among the married women that, yogurt container, book and manual, jar of jam, and soda can, had the most separation by the respondents in categories of plastic, paper, glass and metal, respectively.

Table 2. Descriptive statistics of HWS among the married women.

-	-	Yes		No	
		F	%	F	%
Plastic	Disposable container	400	71.2	162	28.8
	Yogurt container	428	76.2	134	23.8
	Cheese container	350	62.3	212	37.7
	Mineral water bottle	408	72.6	158	27.4
	Oil bottle	363	64.6	199	35.4
	Detergent bottle	370	65.8	192	34.2
	Shampoo bottle	340	60.5	222	39.5
	Handle plastic	278	49.5	284	50.5
	Gloves	257	45.7	305	54.3
	Sauces container	371	66.0	191	34.0

(Table 2) contd.....

-	-	Yes		No	
		F	**%**	**F**	**%**
Paper	Tissue packet	333	59.3	229	40.7
	Detergent packet	312	55.5	250	44.5
	Juice packet	259	46.1	303	53.9
	Toothpaste pocket	201	35.8	361	64.2
	Biscuit package	195	34.7	367	65.3
	Soap packet	187	33.3	375	66.7
	Cream pocket	235	41.8	327	58.2
	A4 paper	345	61.4	217	38.6
	Newspapers and magazines	405	72.1	157	27.9
	Books and manuals	457	81.3	105	18.7
Glass	Jar of jam	474	84.3	88	15.7
	Glass of sauce	473	84.2	89	15.8
	Soda bottle	419	74.6	143	25.4
	Syrup bottle	393	69.9	168	29.9
	Perfume bottle	338	60.1	224	39.9
	Honey glass	398	70.8	164	29.2
	Lemon juice bottle	402	71.5	160	28.5
Metal	Cans	340	60.5	222	39.5
	Paste can	342	60.9	220	39.1
	Soda can	346	61.6	216	38.4
	Cans of insecticide	321	57.1	241	42.9
	Aluminum coat	272	48.4	290	51.6
	Battery	275	48.9	287	51.1

Based on the Table **3**, the means for HWS, environmental attitude, and responsibility were 20.03, 52.8 and 26.05, respectively.

Table 3. Summary statistics for HWS, environmental attitude, and responsibility.

-	Min	Max	Mean	Std.D
Household waste separation	0	33	20.03	8.1
Plastic	0	10	6.3	2.9
Paper	0	10	5.2	3.1
Glass	0	7	5.1	2.2
Metal	0	6	3.4	1.2
Environmental attitude	23	69	52.8	7.6
Balance of nature	3	15	11	2.3
Eco-crisis	3	15	10.9	1.9
Anti-exemptionalism	3	15	9.4	2.7
Limits	3	15	11.1	2.8
Anti-anthropocentrism	3	15	10.4	2.3
Responsibility		42	26.05	8.4

Table 4. N-way of Analysis of variance on effect of demographic variables on HWS.

-	Type III Sum of Squares	df	Mean Square	F	P value
Corrected Model	12850.6[a]	22	584.1	13.1	P< .001
Intercept	15481.5	1	15481.5	348.2	P< .001
Education	2333.3	4	583.3	13.1	P< .001
Age-group	227.8	3	75.9	1.7	NS
City of residence	1307.7	1	1307.7	29.4	P< .001
Job situation	49.1	1	49.1	1.1	NS
Years of marriage	154.7	4	38.7	.87	NS
No. children	367.8	9	40.8	.92	NS
Error	23922.4	538	44.5	-	-

(Table 4) contd.....

-	Type III Sum of Squares	df	Mean Square	F	P value
Total	262134	561	-	-	-
Corrected total	36772.9	560	-	-	-

.R Square=.349 (Adjusted R Square=.323)

To explain HWS as the dependent variable based on environmental attitudes and responsibility as the independent variables, SEM was performed that the results are shown in Fig. (**2**). In this model, HWS was defined by four observed variables of plastic, paper, glass, and metal. Environmental attitude was described by five observed variables of anti-exemptionalism, anti-anthropocentrism, limits of growth, balance of nature, and eco-crisis. And the responsibility was explained by only one observed variable of responsibility. Root Mean Square Error of Approximation (RMSEA=0.075) showed that, the SEM has a desirable goodness of fit. Coefficients of GFI (0.96) and AGIF (0.92) also supported the SEM goodness of fit. Causal coefficient of environmental attitude on HWS is (0.59) and on responsibility is (0.49). In addition, the causal coefficient of responsibility on HWS is (0.62). The error variance for HWS is (0.34) and for responsibility is (0.76) that mean the environmental attitude and responsibility are able to explain 0.66 of HWS variance, and 0.24 of the responsibility variance is explained by the environment attitude.

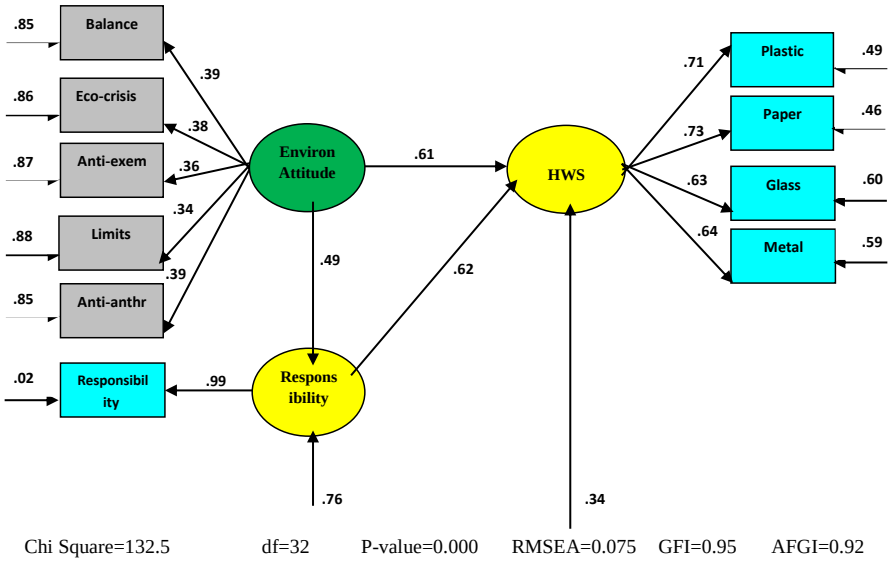

Fig. (2). The estimated Structural Equations Model (SEM).

Table **4** presents statistical analyses between demographic variables including education, age group, city of residence, job situation, number of years of marriage, and number of children with HWS using n-way analysis of variance. Based on the results, education, and city of residence affect significantly on HWS so that the married women with PhD educational level carried out HWS more than other categories, and those who live in Shiraz performed HWS more than their counterparts in Yasouj. Other demographic variables didn't have a significant effect on HWS. The results show that, the significant variables of education and city of residence were able to explain .323 of variance of HWS.

4. DISCUSSION

Because of population growth and rapid urbanization, generation of municipal solid waste is quickly increasing and its management is becoming a serious problem in Iran that can damage to the country from various aspects. Considering much of the MSW comes from homes, married women as home managers by household waste separation can effectively assist to improvement of the MSW management but they don't pay much attention to this issue. As long as women do not participate actively in the HWS, waste management will remain a serious challenge in the country.

The descriptive findings of the study showed two things; first, the rate of HWS is not well enough among the married women and their mean score is 20.03 in range of zero to 33. This means that lots of dry recyclable waste are mixed with wet waste and become useless. Second, the married women are, among the four categories of items, more apt to separate glass. This may be because of more usability of glass for reusing at house compared to other categories

and the Iranian married women can use them for various purposes especially in the kitchen.

The inferential research part also suggested three findings. First, the environmental attitude positively affects on HWS. This research finding is consistent with the results of Zhang *et al.* [32], Meneses & Palacio [19], and Chan [33], showing environmental attitude significantly and positively impacts on HWS, and is not in agreement with the results of Oskamp *et al.* [34] and Vining & Ebreo [35] representing no significant relationship between the environmental attitude and HWS. This incompatibility might be due to the difference of samples. While, those studies focused on a variety of people, this research has just concentrated on the married women. Significant effect of the environmental attitude on HWS seems logical because the environmental attitude as a set of knowledge and positive feelings to the environment raises one's own sensitivity to the environment, self, and society. Regarding lack of HWS damages severely to the environment and society as well, the more positive the environmental attitude people have, the more HWS they do. Second, responsibility influences positively and significantly on HWS that is in concurrence with the results of Yuan *et al.* [54], and Nguyen *et al*. [13] revealing responsibility increases HWS. Significant effect of responsibility on HWS looks like reasonable since the responsibility as an intrinsic potential living in person who concerns with the well-being of self and others, increases one's own compassion to the environment, self and society. Given that lack of HWS harms cruelly to the environment, self, and society, those who have more responsibility are more probably to carry out appropriate ecological behaviors like HWS to benefit the environment, self and the society. Third, education, and city of residence affect significantly on HWS. This research finding seems rational because women with higher level of education are more informed and concerned about the damage caused by lack of HWS on the environment, self, and society compared with lower educational levels. Living in larger city, as well, leads to more cognizances of the risky results of not HWS.

CONCLUSION

Women, because of more prone to carry out the appropriate behaviors toward the environment and being traditionally home managers, can simply contribute to alleviate the growing MSW generation as an acute problem in Iran by doing HWS. The present study focusing on married women showed that, 1) the rate of HWS is not still satisfactory among married women and a plenty of recyclable waste is destroyed. 2) The environmental attitude increases the HWS. 3) Responsibility raises HWS. 4) Married women with higher educational level, and living in larger city are more prone to carry out HWS. Women are half of population in every society and have a tremendous capacity for lessening the problems and increasing the development but using their capacity requires removing the obstacles preventing them to do the appropriate behaviors. In the light of the present study findings, the following suggestions would be practical especially in developing countries to increase HWS as an important way to decrease the harmful effects of increasing MSW; 1) Improving and promoting the environmental attitude of married women's. 2) Developing the responsibility among the married women as an important behavioral skill. 3) Enhancing their educational level and increasing the educational opportunities for them. In that case, one of the most important necessities of the developing countries, HWS, will be significantly improved.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Not applicable.

HUMAN AND ANIMAL RIGHTS

No Animals/Humans were used for studies that are base of this research.

CONSENT FOR PUBLICATION

Not applicable.

CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

ACKNOWLEDGEMENTS

I would like to thank Yasouj University Office of Vice Chancellor for Research for its financial support.

REFERENCES

[1] Lee S, Paik HS. Korean household waste management and recycling behavior. Build Environ 2011; 46: 1159-66. [http://dx.doi.org/10.1016/j.buildenv.2010.12.005]

[2] Kalkenari HH, Ghorbani A, Bayani A, *et al.* Investigating the behavioral patterns of households regarding waste separation at source: A case study in Mashhad. J Nat Env 2015; 68(1): 31-44.

[3] Scheinberg A, Muller M. Gender and waste Urban Waste Expertise Programme (UWEP). Gouda the Netherlands 1999.

[4] Hoornweg D, Bhada-Tata Perinaz. World Bank. What a waste: A global review of solid waste management. Washington, DC: World Bank 2012.

[5] De Feo G, De Gisi S. Domestic separation and collection of municipal solid waste: Opinion and awareness of citizens and workers. Sustainability 2010; 2(5): 1297-326. [http://dx.doi.org/10.3390/su2051297]

[6] Sarvar R. Social impact assessment of the waste separation at source project in the urban areas: Tehran district 21. Geography 2012; 33: 49-70.

[7] Abtahi M, Saeedi R, Nasrollaboroojerdi M, *et al.* Public awareness, education and participation in solid waste management in Tehran. J Health in the Field 2015; 3(2): 7-16.

[8] Rafiei H, Shahnooshi N, Rahnama MR. Study and ranking of urban regions based on citizens' participation in origin separation of waste by using several criterion programming. Geogr Res 2013; 109: 195-214.

[9] Shams Khoramabadi G, Pourzama H. People rolr in solid waste management in the Khorramabad city. Quar Res J Lorestan Uni Medi Sci 2006; 8(4): 25-30.

[10] Zarrabi A, Mohammadi J, Ahangari S. An analysis of municipal solid waste management emphasizing on the recovering of waste. Jughrafiya va Barnamah/Rizi-i Muhiti 2012; 48: 91-108.

[11] Ahmadi S, Panah N. Relationship between responsibility and metal waste separation at source among women. J Eco Dev Soc 2016; 5(1): 1-16.

[12] Karim Ghani WA, Rusli IF, Biak DRA, Idris A. An application of the theory of planned behaviour to study the influencing factors of participation in source separation of food waste. Waste Manag 2013; 33(5): 1276-81. [http://dx.doi.org/10.1016/j.wasman.2012.09.019] [PMID: 23415709]

[13] Nguyen TTP, Zhu D, Le NP. Factors influencing waste separation intention of residential households in a developing country: Evidence from Hanoi, Vietnam. Habitat Int 2015; 48: 169-76. [http://dx.doi.org/10.1016/j.habitatint.2015.03.013]

[14] Ando A, Gosselin A. Recycling in multifamily dwellings: does convenience matter? Econ Inq 2005; 43(2): 426-38. [http://dx.doi.org/10.1093/ei/cbi029]

[15] Jakus PM, Tiller KH, Park WM. Explaining rural household participation in recycling. J Agric Appl Econ 1997; 29: 141-8. [http://dx.doi.org/10.1017/S1074070800007628]

[16] Sidiquea SF, Frank L, Satish VJ. The effects of behavior and attitudes on drop-off recycling activities. Resour Conserv Recycling 2010; 54: 163-70. [http://dx.doi.org/10.1016/j.resconrec.2009.07.012]

[17] Bartelings H, Sterner T. Household waste management in a Swedish municipality: Determinants of waste disposal, Recycling and composting. Environ Resour Econ 1999; 13: 473-91. [http://dx.doi.org/10.1023/A:1008214417099]

[18] Ekere W, Mugisha J, Drake L. Factors influencing waste separation and utilization among households in the Lake Victoria crescent, Uganda. Waste Manag 2009; 29(12): 3047-51. [http://dx.doi.org/10.1016/j.wasman.2009.08.001] [PMID: 19740642]

[19] Meneses GD, Palacio AB. Recycling behavior: a multidimensional approach. Environ Behav 2005; 37: 837-60. [http://dx.doi.org/10.1177/0013916505276742]

[20] Milea A. Waste as a social dilemma: Issues of social and environmental justice and the role of residents in municipal solid waste management, Delhi, India Master's thesis, Lund University Lund, Sweden. 2009.

[21] Do Valle PO, Elizabeth R, Menezes J, Rebelo E. Behavioral determinants of household recycling participation: the Portuguese case. Environ Behav 2004; 36: 505-40. [http://dx.doi.org/10.1177/0013916503260892]

[22] Saphores JM, Nixon H, Ogunseitan OA, Shapiro AA. Household willingness to recycle electronic waste: an application to California. Environ Behav 2006; 38: 183-208. [http://dx.doi.org/10.1177/0013916505279045]

[23] Singhirunnusorn W, Donlakorn K, Kaewhanin W. Household recycling behaviors and attitudes toward waste bank project: Mahasarakham municipality. Journal of Asian Behavioral Studies 2012; 2(6): 35-47.

[24] Omran A, Mahmood A, Abdul Aziz H, Robinson GM. Investigating households attitude toward recycling of solid waste in Malaysia: A case study. Int J Environ Res 2009; 3: 275-88.

[25] Mosler H, Tamas A, Tobias R, Rodriguez TC, Miranda OG. Deriving interventions on the basis of factors influencing behavioral intentions for waste recycling, composting, and reuse in Cuba. Environ Behav 2008; 40(4): 522-44.
[http://dx.doi.org/10.1177/0013916507300114]

[26] Kassin S, Fein S, Markus HR. Social psychology. NewYork: Wadsworth 2011.

[27] Milfont TL. A functional approach to the study of environmental Attitudes. Medio Ambiente y Comportamiento Humano 2009; 10(3): 235-52.

[28] Nixon H, Saphores JM. Information and the decision to recycle: results from a survey of US households. J Environ Plann Manage 2009; 52: 257-77.
[http://dx.doi.org/10.1080/09640560802666610]

[29] Allport GW. The historical background of modern social psychology.Handbook of social psychology. Cambridge, MA: Addison-Wesley 1954; Vol. 1: pp. 3-56.

[30] Fishbein M, Ajzen I. Belief, Attitude, Intention, and behavior. Reading, MA, USA: Addison-Wesley 1975.

[31] Bordens KS, Horowitz HA. Social psychology. The United States of America: Freeload Press 2008.

[32] Zhang D, Huang G, Yin X, Gong Q. Residents' waste separation behaviors at the source: Using SEM with the theory of planned behavior in Guangzhou, China. Int J Environ Res Public Health 2015; 12(8): 9475-91.
[http://dx.doi.org/10.3390/ijerph120809475] [PMID: 26274969]

[33] Chan K. Mass communication and pro-environmental behavior: Waste recycling in Hong Kong. J Environ Manage 1998; 52: 317-25.
[http://dx.doi.org/10.1006/jema.1998.0189]

[34] Oskamp S, Harrington MJ, Edwards TC, Sherwood DL, Okuda SM, Swanson DC. Factors influencing household recycling behavior. Environ Behav 1991; 23: 494-519.
[http://dx.doi.org/10.1177/0013916591234005]

[35] Vining J, Ebreo A. What makes a recycler? A comparison of recyclers and nonrecyclers. Environ Behav 1990; 22: 55-73.
[http://dx.doi.org/10.1177/0013916590221003]

[36] Zittoun T. Symbolic resources and responsibility in transitions. Nordic J You Res 2007; 15: 193-211.

[37] Bierhoff HW. Pro-social behavior. London: Routledge 2002.

[38] Ford ME. Social cognition and social competence in adolescence. Dev Psychol 1985; 18: 323-40.
[http://dx.doi.org/10.1037/0012-1649.18.3.323]

[39] Dodds CA. Responsibility and HIV/AIDS: A sociological investigation PhD Thesis, University of Warwick, Department of Sociology. 2002.

[40] Mattos ED, Branco A. Exploring the intersection of personal and collective meanings: Responsibility in the transition to adulthood. Psychology and Society 2014; 6(1): 11-27.

[41] Schwartz SH, Clausen GT. Responsibility, norms and helping in an emergency. J Pers Soc Psychol 1970; 16: 299-311.
[http://dx.doi.org/10.1037/h0029842]

[42] Keller M, Edelstein W, Krettenauer T, Fu-xi F, Ge F. Reasoning about moral obligations and interpersonal responsibilities in different cultural contexts.Morality in context. Amsterdam: Elsevier 2005; pp. 317-38.
[http://dx.doi.org/10.1016/S0166-4115(05)80042-1]

[43] Cohen A. Multiple commitments in the workplace: An integrative approach. Mahwah, New Jersey: Lawrence Erlbaum Associates 2003.

[44] McGunnigle PJ, Jameson SM. A focus on commitment. Employee Relat 2000; 22: 403-22.
[http://dx.doi.org/10.1108/01425450010340380]

[45] Latane B, Darley JM. The unresponsive bystander, why doesn't he help?. New York: Appleton – century – crofts 1970.

[46] Maruyama G, Fraser SC, Miller N. Personal responsibility and altruism in children. J Pers Soc Psychol 1982; 42: 659-64.
[http://dx.doi.org/10.1037/0022-3514.42.4.658]

[47] Levine R, Norenzayan A, Philbrick K. Cultural differences in the helping of stranger. J Cross Cult Psychol 2001; 32: 543-60.
[http://dx.doi.org/10.1177/0022022101032005002]

[48] Ahmadi S. A study on altruism in daily social relationships and the effective factors influencing it. Ira J Soc 2009; 10(2): 87-108.

[49] Berkowitz L. Advances in experimental social psychology, Academic Press, INC. 1987.

[50] Reynolds M, Blackmore C, Smith MJ. The environmental responsibility reader. London: Zed Books 2009.

[51] Ahmadi S, Mirfardi A, Zarei G. An investigation of the relationship between responsibility and attitude towards saving water. J Appl Sociol 2013; 50(2): 45-8.

[52] Saha P, Idso J. New hydropower development in Norway: Municipalities attitude, involvement and perceived barriers. Renew Sustain Energy Rev 2016; 61: 235-44.
[http://dx.doi.org/10.1016/j.rser.2016.03.050]

[53] Hooper JR, Nielsen JM. Recycling as altruistic behavior normative and behavioral strategies participation in a community recycling program. Environ Behav 1991; 23: 195-220.
[http://dx.doi.org/10.1177/0013916591232004]

[54] Yuan Y, Nomura H, Takahashi Y, Yabe M. Model of Chinese household kitchen waste separation behavior: A case study in Beijing City. Sustainability 2016; 8: 1083-97.
[http://dx.doi.org/10.3390/su8101083]

[55] Epstein E. Disposal and management of solid waste: Pathogens and diseases. London: CRC Press 2015.

[56] Al-Khatib IA, Kontogianni S, Abu Nabaa H, Alshami N, Al-Sari' MI. Public perception of hazardousness caused by current trends of municipal solid waste management. Waste Manag 2015; 36: 323-30.
[http://dx.doi.org/10.1016/j.wasman.2014.10.026] [PMID: 25464943]

[57] McAllister J. Factors influencing solid-waste management in the developing worldAll graduate Plan B and other Reports 2015. Paper 528

[58] Wastes. Shiraz: Shiraz Municipality Publishing 2015.

[59] National population and housing census. Tehran: SCI Publication 2012.

[60] Cochran WG. Sampling techniques. New York: John Wiley & Sons 1977.

[61] Dunlap RE, Van Liere KD, Mertig AG, Jones RE. Measuring endorsement of the new ecological paradigm: A revised NEP scale. J Soc Issues 2000; 56(3): 425-42.
[http://dx.doi.org/10.1111/0022-4537.00176]

[62] Nooripour M, Ahmadvand M. Environmental attitudes of agricultural students at Yasouj University. Ulum-i Tarvij va Amuzish-i Kishavarzi 2010; 6(2): 1-13.

[63] Gough HG. California Psychological Inventory administrator's guide. Palo Alto, CA: Consulting Psychologists Press 1987.

[64] Saadati Shamir A, Shahraray M, Farzad V. A study on identity styles and taking responsibility in Tehran University. Educ Res 2007; 10: 91-116.