

Analysis of Waste Management Processes Based on Peer Interaction

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Received: August 30, 2023
Revised: September 20, 2023
Accepted: October 25, 2023
Published: October 31, 2023

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DOI: [10.29303/jppipa.v9i10.5302](https://doi.org/10.29303/jppipa.v9i10.5302)

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Abstract: Peers advisory is important to help improving individual behavior, including waste-management and handling activities. The data analyzed in this study were derived from primary data collection on some populous provinces in Indonesia, along with waste-management problem. A survey has been conducted on more than 2,000 observations at individual level, gathered from 563 household to examine how social and education affect the probability of a person to follow correct waste-handling actions: put trash righteously. This study found that urban citizens in Indonesia are probably 1.7 times more likely to follow correct waste-handling actions, if they've have been taught in environmental caring. This study also found that peers' advice in terms of environmental caring will affect people 3.77 times more likely to put trash righteously. Overall, this study found that peer's socialization environment is important in reshaping human's behavior on handling wastes. In addition, good habits formed during childhood, and self-initiative behavior has not also been important enough to solve waste-handling problems.

Keywords: Environmental; Management; Peer interaction; Sustainability; Waste

Introduction

Waste problem is a fundamental problem that occurs in almost all countries in the world. Cities in the world produce around 1.3 billion tons of waste annually (The World bank, 2012) and the number is predicted to increase in 2025 to 2.2 billion tons. If a certain amount of waste produced by individuals is disposed of carelessly, what will happen? This waste problem makes the environment dirty and the environment unhealthy. Causing floods, pollution, and impacting on health such as respiratory problems, diarrhea and fever. City cleanliness is an indicator of environmental health, so that the environment is appropriate to live in, the environment must be free from waste. As many as 50% of the world's population live in cities (The World Bank, 2012), where citizens tend to have a lifestyle of consumerism that mostly originates from cities. The by-product of consumption activities in the form of waste becomes a challenge in its disposal and management.

In Indonesia the problem of waste does not go unnoticed, especially in big cities in Indonesia. Various attempts were made by the government to tackle littering. Proper waste disposal behavior can take place when there are binding rules and penalties for violators. In Jakarta, one of the largest cities in Indonesia has a Regulation No. 3 of 2013 which regulates the fines imposed for dumping waste into rivers, with a maximum imposed penalty of 500,000. The existence of these regulations does not necessarily make citizens dispose of waste in its place, there are still those who throw it carelessly, because the action on violations that are less strict. When there are no sanctions that are imposed as if littering is considered behavior that does not violate.

Indiscriminate waste disposal is not only done in rivers but many are also done on the roadside. According to Miller et al. (2016), individuals do negative behavior due to the ignorance of the individual regarding these norms or activities whether wrong or

How to Cite:

Agustina, H., Herdiansyah, H., & Adinegoro, H. (2023). Analysis of Waste Management Processes Based on Peer Interaction. *Jurnal Penelitian Pendidikan IPA*, 9(10), 8963–8973. <https://doi.org/10.29303/jppipa.v9i10.5302>

not. As happened in littering because they assume that their activities cannot be said to be wrong because it might be because there is no action or no reprimand. Indiscriminate waste disposal is also caused by supporting facilities. Factors that cause individuals to litter due to lack of availability of trash. The closeness of this trash can reduce arbitrary waste disposal (Durdan et al., 1985), but according to Leeabai et al. (2019) the behavior of waste disposal in its place is not influenced by the existence of the trash. Although waste disposal facilities have been provided, we still find many waste disposal that is not in place.

Various studies have been carried out to reduce the level of littering. Some of the activities undertaken to prevent waste disposal include: Use of written instructions as a method of encouraging better waste disposal on campus (Durdan et al., 1985). There are also methods through campaigns that encourage individuals to dispose of waste in their place. Examples of methods for using campaigns such as Leave No Trace "(LNT) and" Minimal Impact Bushwalking "(MIB) (Hu et al., 2018). The method of giving gifts or rewards to those who dispose of waste to those who dispose of waste in its place is also influential (Lehman et al., 2008).

The behavior of disposing of waste originates from self-initiative, it is the basis of individual behavior. Behavior of caring for waste disposal begins with conditioning or habituation from the family. Family relationships influence more than non-family groups (Hu et al., 2018), because the family is the initial agent of forming habits. When the family tends to dispose of the right waste, the child will follow the behavior at a young age. The family can put pressure on the child to dispose of waste in its place. In contrast to families who are indifferent to waste disposal, it will produce children who have no concern for the environment. Family behavior has a greater impact, so parents must participate in the behavior and set an example for the child (Hu et al., 2018).

As a child grows into adolescence or adulthood, individual behavior is influenced by other factors such as perception, habits and knowledge. Based on Ecological Systems theory that children are affected by the microsystem, ecosystem and macrosystem environment (Leijdekkers et al., 2010). The microsystem environment comes from the influence of family and peers. In this environment children are taught to care for the environment and behave pro-environment. Ecosystem is a natural environment, so children directly learn about nature through natural observation. Macrosystems are based on culture, law and regulation and social conditions norms. Model theory of planned behavior, waste disposal is influenced by knowledge of environmental theory, knowledge of environmental practices, and incentive measures as well as subjective

norms of friends, and behavioral intentions (Hu et al., 2018). The most influential factor on waste disposal is behavioral control of waste disposal. For the negative impacts generated, it is necessary to have control from individuals so that they are not ensnared to follow their behavior and minimize negative behaviors such as smoking and drinking alcohol (Cho et al., 2019). The difference in environmental awareness is also a driving factor in littering. Lack of knowledge and awareness is the basis, environmental awareness is influenced by emotional involvement or interaction interactions on complex environmental problems. Even if the individual has an emotional reaction to the environment, this individual may not necessarily act pro-environment. The impact of actions that can be felt both in the short term or long term in degradation causes stronger reactions (Kollmuss et al., 2002). Peers advisory is very important factor in reshaping individual perception and behavior. As the part of socialization theory how characters and attitudes are formed, the peer environment takes place as one of the most important parts of socialization. Peers, can bring good or bad influence, depending on how the peers themselves are formed.

In this study the author wants to analyze the influence of peers on waste disposal behavior. Friends have a role in changing individual behavior. Several studies have been conducted on how the role of peers can influence individual behavior, including teenage behavior, smoking, alcohol or learning. Peer behavior influences smoking behavior (Vitória et al., 2020). Smoking behavior can also be influenced by the habits of parents or peers. But if both parents don't smoke, it's likely that the child is affected by peer behavior. Smoking is sometimes considered as behavior that does not violate the norms of society. So that a perception that the activity is a normative behavior that can be accepted by the community, and the community can tolerate the behavior (Stucki et al., 2014). Smoking behavior can be caused by peers, but the role of peers can also be used to reduce the level of smoking addiction. The method of reducing smoking behavior is done by using a smoking-free competition. Individual participation in smoking-free competition aims to prevent, reduce and increase knowledge about smoking. These peers are used as control agents in reducing smoking behavior. The application of this method is suitable for use in behavioral change that is just starting to smoke. Norms that are instilled in peer groups have the potential to protect themselves from smoking. But this method is not suitable for old cigarette addicts (adults), because increasing age is not easy to change one's behavior.

The role of peers in education was also published in several studies. Where learning in schools in particular, is supported by classmates who interact with

each other. These classmates can help others help with material that is not understood, this classmate can support the creation of learning that is conducive to maximum results. To carry out group assignments, classmates will work together in small groups to complete assignments. According to Diaconu-Gherasim et al. (2019) it was reported that interactions with classmates can increase student academic motivation, and this motivation will improve learning outcomes. The study was also conducted on kindergarten children, peers used as a method for understanding vocabulary. A study conducted by Chen et al. (2020), he compared learning that was only done by teachers as tutors and peers as tutors. The results obtained that the use of peer media to understand vocabulary turned out to provide higher understanding results. In childhood (preschool), friends play a role in supporting the cognitive development of children and also the affective development in learning and play (Chen et al., 2020). Cognitive development is important for childhood where there will be a transition in entering the formal education stage. Cognitive development teaches children to use logic or reasoning in problem solving. This stage consists of knowledge, understanding, application, synthesis and evaluation. Whereas affective development is related to emotional individual. Peers can influence individual emotions in increasing enthusiasm, interest and attitude towards a thing. Individuals are more attentive and more responsive.

In general, peers have a role in motivating the indicators that can bring benefits in learning activities. Peers contribute to the development and learning of education. The average peer who interacts with each other will have language and literacy similar to those of his friends. In interactions with peers this is also able to improve children's social, cognitive, and language skills (Piker et al., 2008). It was also reported that peers can influence test scores. Peers are strong determinants of student change (Sacerdote, 2011). Children tend to negative attitudes with learning, because the learning process is not liked by students. As a result students are less active in learning and the results are also not optimal. By maximizing the role of interaction between peers that are positive can be used to increase motivation in learning (Lin et al., 2016).

The role of individual interactions with peers results in the influence of dropout rates in schools (Gao et al., 2019). Peers are the pull and push factor for dropouts. Factors that cause drop outs are caused by negative experiences experienced either directly or from the experience of peers. Social experiences such as loneliness, ridicule, neglect make the school environment an unpleasant place for students. So that the learning conditions do not run conducive, this causes the individual to be unable to focus and difficulties so

that the level of hubcaps increases. There is an active push by peers that causes short-term impulsive responses. There is also research on interactions that affect individual eating behavior. Behavior to choose food, or not spend the food eaten due to imitating peers (Pace et al., 2018).

Peers have complex relationships, cooperation and competition. Interaction done with peers will affect other friends, there is a conflict if one individual rejects the influence of peers (Hartup et al., 1988). Peer environment has the potential to protect or potentially at risk. Correlation of an individual's active environmental genes is influenced by his genes to search for specific environmental conditions (Cruz et al., 2012). Peers tend to attract other friends to follow the behavior that they do.

Based on this background, the problem of waste disposal becomes a problem that needs to be addressed immediately and based on research that has been done by other researchers emphasizes the importance of the role of peers. Peers who can affect changes in individual behavior both positively and negatively. For this reason, researchers want to take advantage of the role of peers in waste disposal in its place. So that we can maximize the role of the environment to keep the environment clean and healthy. This study wants to change the behavior of arbitrary waste disposal into disposal in its place with a heavy emphasis on role. Littering may also be caused by perception as a normative behavior that can still be tolerated and accepted in the community, it needs strong action so that the perception can be changed. These peers can be used as control agents in littering. The effect of peer interaction can be used to improve student learning outcomes in the classroom through the involvement of school residents and peers (Diaconu-Gherasim et al., 2019). State the objectives of the work and provide an adequate background, avoiding a detailed literature survey or a summary of the results.

Method

Data Description and Collection

The information utilized in this study was procured from primary data collection. A purposive arbitrary examining study has been led on in more than 2000 people. The overview records 563 observations on household levels, with aggregate of 2,349 observations on individual level. The review has been directed on a few major urban communities in Indonesia, taken from most crowded areas in Indonesia. The areas which have been picked are Jakarta and Surabaya. Apart from being chosen because of population density, Jakarta and Surabaya were chosen as research sites because they are the 2 cities that contribute the most waste in Indonesia.

This is the basis for selecting a suitable place to conduct research. The span of information assortment was roughly two weeks. The survey comprises of 3 sessions, to investigate numerous angles on waste-handling and littering behavior, financial conditions, and educational factors. All meetings of the overview comprise in excess of 80 questions so as to improve explore conceivable outcomes. In this study, all outcomes will be shown are related subjects of the likelihood of a person to throw waste correctly caused by their peers. This investigation utilized fourth and sixth segment of the review: 'Depiction of Self-Propensity on Tossing Trash' and 'Portrayal of Discernment and Reacts on Squander Taking care of'.

Testing technique that has been utilized in this article is purposive random sampling where irregular family units were taken from planned urban communities which have waste-handling issues, alongside huge number of populations. Should the family unit had been picked, enumerators recorded the responses on individual level. Hence, the information of waste-handling varies between individual observations within common families.

Economic Modelling and Regression Method

In this study, author used logistic regression model to estimate the probability of a person to follow put waste on correct place. This study is examining how several repressors (independent variable) might impact an individual to throw waste in a correct place. In the other words, author tried to explore what might cause an individual to follow their peers on such good habit. The dependent variable has been derived from the question of how's respondent's perception when seeing another people throwing waste in the rightful place. The answer choices were 3 options: (i) support and will follow, (ii) somewhat indifferent, (iii) dislikes. The dummy dependent variable has been made based on the first choice (i). The affirmative dummy (1=yes) stands for 'support and will follow' respond. Otherwise, the option (ii) and (iii) are converted as non-affirmative response on the dummy variable of probability of a person to follow put waste on correct place.

In this study, probability of a person to follow put waste on correct place defined as a dummy variable showing when respondent is willing to follow to throw waste in place after seeing such correct waste-handling action. With the dummy variable as the dependent variable, this study uses logistic regression to predict how likely respondent to follow throwing waste correctly along with the independent variables. Willingness to follow (in this study) is on normal respondents only, in terms of mental and psychological condition. None of interviewed respondents had abnormal psychological conditions.

All independent variables are also dummy variables, interpretation of the model will use odds ratio of logistic regression to interpret how much each independent variable affects dependent variable. Odds ratio has no negative numbers. Should telling negative relationship, odds ratio shows decimal ($0 < x < 1$) coefficient parameter (0.x). This 'below-one' odds ratio interpreted if when a dummy independent variable is affirmative (yes=1), it will likely decrease the probability of dependent variable by 0.x times. Research design and method should be clearly defined. The variable of interest of this study is the dummy of peers advisory. Dummy variable of peer advisory has been used to approximate whether each respondent has supportive peers in terms of keeping the cleanness of environment. Peers advisory in this study shows any kind of advices from their peers about how the respondents are supposed to handle wastes, including to keep environment clean. The regression model in this study specified as follows:

$$p = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_1 + \varepsilon)}} \tag{1}$$

Where, 1= Probability of a person to follow put trash on correct place (1=Yes), e = number of exponential, β_0 = parameters of coefficient, $\beta_1 X_1$ = Dummy respondent taught to keep environment clean (1=Yes), ε = Error terms.

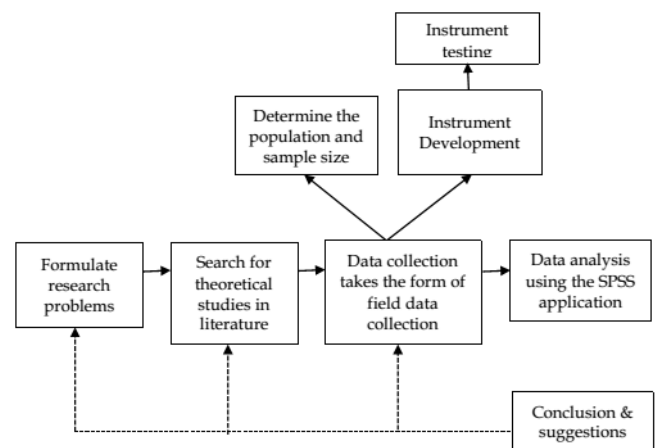


Figure 1. Research flow

Result and Discussion

According to the regression table above, environmental education has significant positive relationship to probability of a person to follow put waste on correct place. The positive and significant relationship means that an if an individual is well-educated enough in terms of environmental knowledge, their probability to follow put waste in place are likely 1.701 times higher than if the respondent hasn't. This

positive and significant relationship shows how important knowledge of environment in reshaping individual's willingness to follow good habits. This finding confirms the theory that environmental knowledge could help solve waste-management problem by affecting human's perception, behavior, and respond on waste-handling activities. This finding also shown that environmental education – whether formal

or informal is important to make the environment clean and healthy. In the case of urban citizens in Indonesia, environmental education could help solve waste-management problem in some cities which has the problem. In this case, Indonesia's urban citizens tend to follow put waste on the correct place when they have environment education as one of their education backgrounds.

Table 1. Regression Result, Dummy Variables are Interpreted with Odds Ratio

VARIABLES	(1) Prob. To Follow (Put Waste on the Correct Place)	(2) Prob. To Follow (Put Waste on the Correct Place)	(3) Prob. To Follow (Put Waste on the Correct Place)	(4) Prob. To Follow (Put Waste on the Correct Place)	(5) Prob. To Follow (Put Waste on the Correct Place)
Educated to Keep Environment Clean; 1=Yes	1.415*** (0.1758)	1.390** (0.1807)	1.656*** (0.2371)	1.788*** (0.2657)	1.701*** (0.2677)
Environmental Advice from Peers; 1=Yes	4.413** (2.6134)	4.532** (2.6956)	3.654** (2.1903)	3.621** (2.1705)	3.769** (2.2675)
Non-Littering Habit Since Childhood; 1=Yes		1.059 (0.1321)	1.13 (0.1433)	1.197 (0.1557)	1.187 (0.1551)
Childhood Education to not litter; 1=Yes			0.660*** (0.0878)	0.684*** (0.0913)	0.671*** (0.0909)
Self-Initiative to keep cleanness; 1=Yes				0.752* (0.1224)	0.689** (0.1272)
Has littering habit; 1=Yes					0.809 (0.1609)
Constant	4.277*** (0.4373)	4.232*** (0.4433)	4.438*** (0.4718)	5.035*** (0.6591)	5.898*** (1.1742)
Pseudo R-Square	0.0097	0.0098	0.0148	0.0163	0.0169
Observations	2.349	2.349	2.349	2.349	2.349

Important environmental education was given as a child. Before the child enters school, is the right time to teach the message not to litter (Roggenbuck et al., 1986). As mentioned by Ardoin et al. (2020), at the age of 4-5 years children must be taught about environmental education. There are trends in the world about the importance of environmental education as a child, because this education will determine the behavior of children, where there have been several studies that have been conducted on early childhood environmental education.

Environmental education has the aim to create an environment for individuals who are literate about environmental sustainability issues, through the development of the value of knowledge, attitudes and skills to take pro-environment actions (Mastrángelo et al., 2019). One of the environmental education that needs to be taught about waste management. Teaches what waste is, its types, how we behave when we find waste, and the possibility for us to recycle waste. According to

Cingolani et al. (2016) to reduce waste disposal, the use of educational methods has more effective results compared to the direct method. The educational method through persuasive communication is able to minimize waste. Environmental education generally draws people closer to nature, when individuals interact directly with nature, there is a reciprocal relationship between social and ecological systems (Mastrángelo et al., 2019). So that individuals can feel the natural conditions, and this can be one of the supporters for closeness to nature. Environmental education in waste management can be done formally or informally. Providing counseling, or by utilizing other communication media such as print and electronic media can be used as supporting media for environmental education. Environmental education through counseling or providing direct education can reduce the behavior of littering, this method can also be used to promote the cleaning of areas littered with waste (Manning, 2003).

Providing information or knowledge about norms about behavior and attitudes can minimize negative behavior in individuals (Miller et al., 2016). Individuals who have knowledge of the environment will automatically have more pro-environment behavior compared to individuals who do not have environmental knowledge. As explained by Brown et al. (2010), the way to dispose of waste from each individual is different depending on the environmental knowledge they have. Waste disposal in its place is carried out using norm-based interventions. The verbal method (communication) is a method commonly used, but there is another model that is by role modeling. Communication is carried out on a persuasive basis that focuses on the impact when littering, and this becomes the basis for forming pro-environment behavior.

Environmental knowledge and practices influence the intention to dispose of waste properly, but it is not significant. This intention will influence attitudes, subjective norms and control behavior (Hu et al., 2018). The level of environmental knowledge is related to environmental practices carried out, the more knowledge about waste management, the individual will have a pro-environment attitude from littering. When individuals have environmental knowledge and practices, individuals have behavioral control to maintain cleanliness.

Next, the environmental advice from peers. Environmental advice from peers in this study, also has significant and positive relationship with probability of a person to follow put waste on correct place. If we pay attention to this variable, its odds ratios are much higher than environment education in all models. This indicates that environmental advice from peers are more matters than environment education on urban citizens, in the case of Indonesia. The interpretation of the odds ratio is when an individual has environmental advice from peers, the probability of a person to follow put waste on correct place will likely 3.769 times higher than if a person doesn't have supportive peers to keep environment clean. This finding also confirms previous studies, where peers' advice is important and significant on affecting human's behavior and perception. Peers' advice on environment in this study are derived under question 'From where you learnt to throw waste in place'. In this study, this variable clearly shows from where an individual got environment education. In models above, model 5 might not have biggest odds ratio of advice from peers like on the first model. Yet, first model has smallest pseudo R-square, which isn't enough to explain how an individual might follow put waste on correct place.

According to Laghi et al. (2019), factors that influence individual behavior are biological, psychological, environmental, and socio-cultural.

Research conducted by Cruz et al. (2012) by comparing twins, found that the most influential was not from family but from peer influence. When a child is old, peers exert more influence on changes in individual behavior. Interaction between peers will affect attitude. When there is communication between peers, it will be formed perceptions which affect other individuals. Continuous communication will strengthen the perception instilled by peers to form a belief. Strong beliefs will affect individual attitudes (Brown et al., 2010). In this study, utilizing the role of peers is used in the right attitude to dispose of waste. Relationships with peers can influence adolescent attitudes and perceptions of waste disposal norms, exposure to social events and contexts involving waste management, as well as access to waste (Zheng et al., 2019).

Communication carried out between individuals with other individuals in the form of two-way interaction, where communication by peers is persuasive (Brown et al., 2010). Communication between peers will form an interaction, reciprocal relationships that lead to individual curiosity. This individual curiosity can be directed to think more critically about waste, provide more explanations and achieve research objectives, namely reducing littering through the role of peers. Which individuals will influence other individuals, this is determined by the level of superiority. Where individuals who have superiority will dominate conversations affecting other individuals (Maki et al., 2017). Individuals who throw waste in their place are described as having superiority so that they can attract friends who do not throw waste in their place. According to Lin et al. (2016) individuals have learning skills by observing and imitating peers. When friends throw waste in its place, there is a process of observing and imitating the behavior. Individuals want similarities with peers (Zheng et al., 2019). Peers directly or indirectly provide learning to their friends through active activities, between peers supporting each other. So that formed a reciprocal relationship and become peers learning (Chen et al., 2020).

As already stated, waste disposal behavior in its place is also influenced by the knowledge possessed by individuals. The role of peers can be used as a method for designing environmental education. Peers can become educational agents in increasing students' knowledge about waste disposal in its place (Chen et al., 2020). The role of peers is an important part of student learning for both formal and non-formal education. Peers provide experiences that affect learning outcomes (Lee et al., 2016), experiences of peer behavior can be knowledge of other individuals. The peer-to-peer approach refers to participatory teaching and learning styles, which are increasingly gaining popularity as

inclusive and participatory interventions (Heidenreich et al., 2020).

The influence of peers is a process of transfer of knowledge through the export of the moral environment of peers. Friends who have superior environmental trust can influence other individuals (Maki et al., 2017), with more knowledge about waste disposal will attract individuals to dispose of waste in its place. The role of peers tends to have a high moral export of the environment, so it has a good attitude towards waste disposal. They have a stronger belief that their behavior that disposes of waste in the right place is the right attitude, and they know that their attitude does not have a negative impact on the environment. The export of environmental morals is related to the superiority of environmental trust.

Peers who have the superiority of environmental trust, prefer to engage in conversations where the role of peers is more active than non-superiority. Give knowledge transfer to others. When individuals have environmental moral superiority and followed by a higher export of environmental moral will change the behavior of others through a pro-environment perspective. The role of peers is intervening to reduce the behavior of littering. The success of an intervention can be determined through students' perceptions using accepted norms. An evaluation of the interventions is needed (Miller et al., 2016).

Next is non-littering habit since childhood. According to the regression table above, having non-littering habit has positive insignificant yet to probability of a person to follow put waste on correct place. This indicates that non-littering habit since childhood might help increase willingness to follow put waste on correct place on an individual, but it isn't enough. Statistically, a person who has non-littering habit are more likely to follow such good behavior (put the waste in place), yet the result is not significant - not all people who have non-littering habit since childhood are doing so. So far, good habit since childhood is important to help solve waste management problem.

Yet, such good habit since childhood wasn't enough to make urban citizens in Indonesia to have correct behavior on handling wastes.

Childhood habits support the formation of behavior. According to Oskamp et al. (1991) pro-environment behavior is influenced by habit variables, one of which is habit as a child. Habits that have been carried out will encourage individuals to behave according to habits. A single experience cannot shape people to be sensitive in acting to preserve the environment. It is the experience that invades the environment, such as childhood experiences, experiences of current environmental conditions, values held by the family and role models of teachers and friends (Chawla, 2015). So small time habits cannot be a reference for pro-environment behavior. The habit of disposing of waste in its place as a child cannot be a guideline that the individual will continue to dispose of waste properly, because there are other modifying factors, namely environmental conditions and peer influence. As already mentioned that when stepping on childhood, the role of peers is significantly higher than the influence of parents who have formed a childhood habit. The role of peers can change behavior habits in the past.

Previous variable's finding is also been confirmed on the next variable: dummy of childhood education to not litter. It has significant negative relationship to the probability of a person to follow put waste on correct place. According to the regression result, it shows that in the case of Indonesia is quite unique compared to the other countries. In this case, an individual who has been educated to not litter since their childhood age, their probability to follow put waste on correct place are likely 0.671 times lower than if doesn't. According to the data, this finding shows that childhood education to not-litter were either ineffective or not enough to reduce littering behavior. To have a deeper analysis on why this variable shows negative and significant relationship, author has tabulated related variable to childhood education.

Table 2. Tabulation between Dummy of Willingness to Follow Put Waste in Place and Dummy of Good Habits Formed During Childhood

	Willingness to Follow (put waste in place)		Total
	No	Yes, will follow	
Doesn't have non-littering habit since childhood	219	1,189	1408
Has non-littering habit since childhood	135	806	941
Total	354	1,995	2,349

According to the tabulation above, it's shown that not many individuals who are willing to follow put waste in correct place are having good habit since childhood. Only 806 respondents who are willing to, has such good habit since childhood while the other 1,189 do

not have such good habit since childhood. The sample of this study shows that in order to have present good behavior in waste handling aren't always started by having good habits since childhood. Yet, this study disagree with previous studies which found that

childhood habit is important. In the case of this study, it's just come from the natural characteristics of the respondent.

In line with having self-initiative to keep the environment clean, this study found that it has negative and significant relationship to the probability of a person to follow put waste on correct place. This means that when an individual has self-initiative, will likely to have 0.689 times lower probability to follow. This finding is similar with previous variable, where people who are willing to follow, not always have a self-initiative to keep the environment clean. The spearman's correlation below shows that the relationship is weakly negative. Author believes that self-initiative in aggregate level

could make an individual to throw wastes on righteous places. In addition to the influence of the natural environment and peers, there is one factor that plays a role in waste disposal. The factor is an initiative in the form of individual self-targeting. Individuals tend to have initiatives in awareness and tendencies to take responsible environmental actions (Chawla, 2015). When there is a negative influence in the form of littering, their beliefs remain in the right disposal. And when there is no influence from the outside environment, individuals should have the initiative to throw it in place. Because these individuals should be able to feel that littering has a negative impact on the environment and human.

Table 3. Spearman's Rank Correlation Test

	Willingness to follow (put waste in place)	Having self-initiative to keep cleanness
Willingness to follow (put waste in place)	1	
Having self-initiative to keep cleanness	-0.0145 0.4833	1

Standard errors in second row. Coefficient correlation stated in bold. *p<0.05

Last is the dummy variable of littering habit. According to the regression results, it shows below-one odds ratio, meaning that a person who has littering habit are likely not to follow by 0.809 times lower probability. This finding confirms previous studies that it's quite difficult to reshape behavior on littering people. Persistent good habits and exercises are needed to help improve littering behavior on urban citizens.

The research results based on Table 3 show that someone who has bad behavior towards throwing away rubbish tends not to follow the habit of throwing rubbish in the right place. Meanwhile, other research explains that researchers used the ISO 14001 Environmental Management System. The results of the research also explain that there is a positive relationship between the ISO 14001 Environmental Management System and environmental care behavior (Supangkat et al., 2023).

Based on other research conducted in the Soekarno-Hatta Airport area, Tangerang, Banten, 95.3% of respondents were quite good at behaving well towards the environment (Supangkat, 2023). The innovation carried out by other research in Riau City, Riau Province, is managing waste using the term eco-bricks, which will turn plastic waste into agro-tourism (Zumira et al., 2023).

In general, waste management needs to consider environmental impacts. In Murotai Island Regency, the government carries out waste management using open dumping or open management. The waste that is transported to the landfill is carried out in the existing waste management stage by means of the waste that

arrives, then it is piled up and then removed, and the next stage is burning it (Kusman et al., 2023).

Conclusion

According to the statistical summary, results, and discussions, this study ended up with several point of conclusions. From this study, it can be concluded that education—regardless the formal status—will significantly affect the probability of an individual to follow put waste in righteous place. People who have been taught on environment will most likely follow instructions or actions in correct waste-handling. Peers' socialization environment is also significant to affect people's probability on probability of a person to follow put waste on correct place. Examples, advises and repressive actions from peers are significantly impact the probability to put waste on correct place. Good habits formed since childhood and self-initiative are not the main factors to increase people's awareness on waste-handling. It's shown by not many people who already followed to put waste righteously aren't having such good habit, or self-initiative. Yet, both good habits since childhood and self-initiative is still important on making people to care to their living environment. Littering habit does affect the probability of to follow put waste righteously. A littering person tends to not follow that kind of instruction or action done by other people in their environment.

Acknowledgments

Thank to Arty Dwi januri who have helped become readers of this research.

Author Contributions

Conceptualization, H.A. and H.H.; methodology, H.A.; software, H.A.D; validation, H.H.; formal analysis, H.A.D.; funding acquisition, H.A. All authors have read and agreed to the published version of the manuscript."

Funding

This research received no external funding.

Conflicts of Interest

The authors declare no conflict of interest.

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