

# Norm Activation Model Variable Relationship: Awareness of Consequences, Ascription of Responsibility and Personal Norm

Meilani Putri Winingsih<sup>1\*</sup>, Henita Rahmayanti<sup>1</sup>, Budiaman<sup>1</sup>, Mieke Miarsyah<sup>2</sup>

<sup>1</sup>Program Studi Pendidikan Lingkungan, Universitas Negeri Jakarta, Indonesia.

<sup>2</sup>Program Studi Pendidikan Biologi, Universitas Negeri Jakarta, Indonesia

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**Abstrak:** The purpose of this study was to determine the relationship between the norm activation model variables (NAM) namely awareness of consequences (AC), ascription of responsibility (AR) and personal norms (PN) in growing pro-environmental behavior. This type of research is a meta-analysis of 3 journals related to the correlation between norm activation model variables. The results of the study with a combined number of 8277 respondents showed that AC was positively correlated to PN with  $r_{AC-PN} = 0.6866$ , AR was positively correlated to PN with  $r_{AR-PN} = 0.6731$ , and AC was positively correlated to AR with  $r_{AC-AR} = 0.6005$  is included in the high category and the significance value is  $p < 0.001$ . In addition, the 3 journals are heterogeneous and not publication biased. Based on these facts, it can be said that there is an interrelated relationship between the norm activation model variables.

**Keywords:** Norm activation model; Awareness of consequences; Ascription of responsibility

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## Introduction

Environmental problems in the form of pollution in the sea, forests, atmosphere, water, soil and others are now a major concern for the world. Human behavior that ignores waste, consumes natural resources without preserving it and is indifferent to the destruction of ecosystems is the main cause of environmental damage. Every human being has different behavior depending on how humans or individuals interact with their environment. Environmental conditions determine human behavior, where the environment will determine how a person responds to the environmental conditions encountered (Pinto, 2016). Various pollutions in the sea, forest, atmosphere, water, land and others originate from irresponsible, uncaring and selfish human behavior.

Humans have a role as promoters, triggers the evolution of an environment. In order to meet human needs and facilitate their lives, the environment is changed according to their wishes by ignoring environmental sustainability. Though changes that occur in the environment have an impact on humans. Ecosystem changes have an impact on humans. Awareness of environmental change peaked in 1992 with the SDG agreement in Rio De Jenario, Indonesia has also implemented several habits to increase public awareness with green school programs to change attitudes and behavior (Basri, 2013). To increase environmental awareness in schools, it is realized through the science learning process. Science learning directs students to understand more about the importance of protecting the environment, skilled in managing the environment and becoming a habit in their lives (Jeramat, et al., 2019). Awareness of the importance of the environment needs to be internalized

\* Corresponding Author: [osiedyanti94@gmail.com](mailto:osiedyanti94@gmail.com)

in humans and carried out from an early age so that the values of love for the environment are embedded (Siswanto et al., 2019).

This environmental pollution and damage are an antecedent of the emergence of factors forming environmentally friendly behavior. Disaster events positively affect pro-environmental behavior if the community is aware of the consequences and considers the responsibility to reduce the impact of disasters according to NAM theory as empirical research on disaster preparedness (Zhang et al., 2020)

Many theories have emerged regarding the factors that influence environmentally friendly behavior. Moral theory considers pro-environmental behavior as a choice of moral situations when individual actions have consequences for the welfare of others (Nordlund & Garvill, 2003). Moral theory suggests that behavior, particularly prosocial behavior (e.g., helping others or pro-environmental behavior such as throwing trash in the trash) is influenced by feelings of moral obligation or personal norms. According to the Norm Activation Theory (NAT) presented by Schwartz, the intensity of personal obligation occurs when a person feels to take behavioral actions that affect the surrounding environment (Harland et al., 2007). Likewise, personal norms are the main driver of behavior in the value-belief-norm theory (VBN) (Stern, 2000).

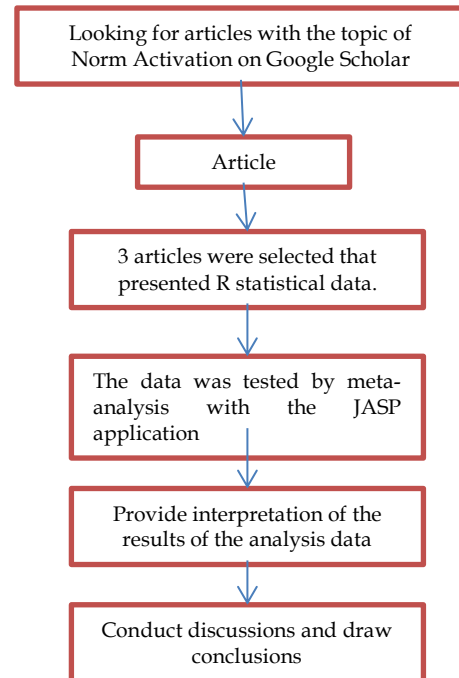
Activation of environmentally friendly behavior through the Norm Activation model approach (NAM; Schwartz, 1977) or the so-called altruism model. This model explains the behavior of helping fellow human beings or altruistic behavior that tends to target social norms consisting of three variables, namely awareness of consequences (AC), ascription of responsibility (AR) and personal norm (PN).

In this regard, the Norm Activation Theory (NAT) which has three variables is one of the theories on the factors that shape people's environmentally friendly behavior. Based on this description, the focus of this research is on the relationship between the norm activation model variables in several studies related to environmentally friendly behavior and re-proven it with the meta-analysis method.

**Method**

This study uses a meta-analysis method. The data were obtained from articles that took survey data for the norm activation model variable, namely awareness of consequences, ascription of responsibility and personal norm to get the correlation coefficient (R). Journals and articles are obtained through scientific article searches on Google Scholar. The keywords used are norm activation theory, norm activation model, awareness of consequences, ascription of responsibility and personal norm. The articles obtained first were selected according

to the criteria, namely (1) scientific articles used were limited from 2018 to 2021, (2) scientific articles that had the required statistical data, namely the regression coefficient (r) and (3) the awareness of consequences (AC), ascription of responsibility (AR) and personal norm (PN).



**Figure 1.** Research flow chart

Of the 10 scientific articles that were collected, they were then re-elected against the statistical data presented because not all of them showed regression coefficient values but used standardized loading factors (slf), Significant effect (SE) and others. So that 3 articles were selected that presented R statistical data. The selected articles were Personal Norm and Pro-environmental consumer behavior: an application of norm activation theory by Budi Setiawan, (2021). Using the norm activation model to predict the pro-environmental behavior of public servants at the central and local governments in Taiwan by Fang et al., (2019) and Explaining farmers' response to water crisis through theory of the norm activation model: Evidence from Iran by Savari et al., (2021).

From the 3 selected articles, the data from the correlation coefficient or regression coefficient and the number of respondents involved were taken and then entered into the JASP software for a meta-analysis test. It aims to determine the consistency between one study and another, based on location, subject characteristics, bias and correlation of the research. The correlation coefficient between the variables in the three journals is in table 1.

**Table 1.** Research Base Data

Researcher	Variabel	N	R
Budi	AR → PN	300 residents	0.450
Setiawan	AC → PN	sorting waste	0.450
Wei-Ta Fang	AC → AR	3405 Central	0.533
	AR → PN	government	0.788
(there are	AC → PN		0.511
two	AC → AR	4162 public	0.632
samples)	AR → PN	servants Local	0.592
	AC → PN	government	0.846
Moslem	AC → AR	410 farmers	0.420
Savari etc	AR → PN		0.420
	AC → PN		0.420

From the three articles, then the value of the correlation coefficient and the number of samples was

**Table 2.** Result of calculation of effect size (z)

AC → PN	Researcher	N	R	z	Vz	Sez
	Budi Setiawan (2021)	300	0.450	0.485	0.0034	0.06
	Wei-Ta Fang etc (2019)	3405	0.511	0.564	0.0003	0.02
	Wei-Ta Fang etc (2019)	4162	0.846	1.242	0.0002	0.02
	Moslem Savari etc (2021)	410	0.420	0.448	0.0025	0.05
AR → PN	Researcher	N	R	z	Vz	Sez
	Budi Setiawan (2021)	300	0.450	0.485	0.0034	0.06
	Wei-Ta Fang etc (2019)	3405	0.788	1.066	0.0003	0.02
	Wei-Ta Fang etc (2019)	4162	0.592	0.681	0.0002	0.02
	Moslem Savari etc (2021)	410	0.420	0.448	0.0025	0.05
AC → AR	Researcher	N	R	z	Vz	Sez
	Wei-Ta Fang etc (2019)	3405	0.533	0.594	0.0003	0.02
	Wei-Ta Fang etc (2019)	4162	0.632	0.745	0.0002	0.02
	Moslem Savari etc (2021)	410	0.420	0.448	0.0025	0.05

In Budi Setiawan's research on Personal norm and pro-environmental consumer behavior: an Application of Norm Activation Theory, data on the r-value of the AC-AR relationship did not exist because the researcher did not measure the relationship between these variables (Setiawan et al., 2021).

**Table 3.** Heterogeneity Test Results (Fixed and Random Effects)

AC - PN	Q	df	p
Omnibus test of Model Coefficients	13.29	1	< .001
Test of Residual Heterogeneity	1004.48	3	< .001
AR - PN	Q	df	p
Omnibus test of Model Coefficients	22.35	1	< .001
Test of Residual Heterogeneity	376.56	3	< .001
AC - AR	Q	df	p
Omnibus test of Model Coefficients	22.35	1	< .001
Test of Residual Heterogeneity	376.56	3	< .001

Note. p-values are approximate.

Based on the results of the analysis, the relationship between AC to PN, AR to PN and AC to AR is heterogeneous (QAC-PN = 1004.48, QAR-PN = 376.56,

carried out with a meta-analysis test using the JASP application and given an interpretation of the results of the analysis data.

## Result and Discussion

Because the studies to be discussed use different methods, they must be coded in a way that allows them to be combined and statistically compared using effect sizes (Retnawati et al., 2018). Effect size data is a statistical standard that can be interpreted consistently across all variables and measures involved so that it can be included in JASP applications. The calculation is in table 2.

and QAC-AR = 62.66 p<0.001). Thus, the Random Effect model is more suitable to be used to estimate the average effect size of the three relationships. The results of the analysis also indicate that there is potential to investigate moderating variables that affect the relationship between variables.

**Table 4.** Calculation Results Summary Effect/Mean Effect Size

Interc	Estimate	Standard Error	z	P	95% Confidence interval	
					Lower Bound	Upper Bound
AC - PN	0.6866	0.1883	3.6456	< .001	0.3175	1.0558
AR - PN	0.6731	0.1424	4.7277	< .001	0.3940	0.9521
AC - AR	0.6005	0.0844	7.1174	< .001	0.4352	0.7659

The results of the analysis using the random effects model showed that there was a significant positive correlation between AC to PN, AR to PN and AC to AR (zAC-PN = 3.6456; zAR-PN = 4.7277; zAC-AR = 7.1177 p< 0.001; 95%). According to Cohen (2007), the size for

the effect is low if the r value varies around 0.1, moderate if r varies about 0.3 and large if r varies more than 0.5 (Cohen et al., 2020). This means that the influence between variables is included in the high category with the value of  $r_{AC-PN} = 0.6866$ ;  $r_{AR-PN} = 0.6731$ ;  $r_{AC-AR} = 0.6005$ .

The estimation results of the lower and upper limits are then used to draw a forest plot which is used to interpret the results of the meta-analysis, both trend and magnitude.

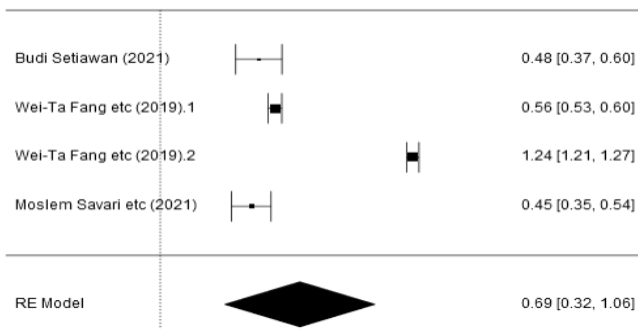


Figure 2. Forest plot Hedges-Olkin Random Effects (Meta-analysis Plot) AC - PN

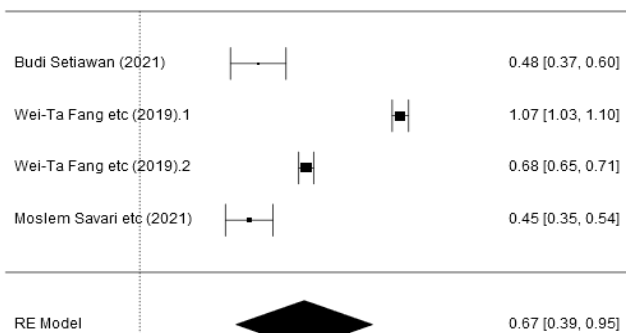


Figure 3. Hedges-Olkin Random Effects (Meta-analysis Plot) AR - PN

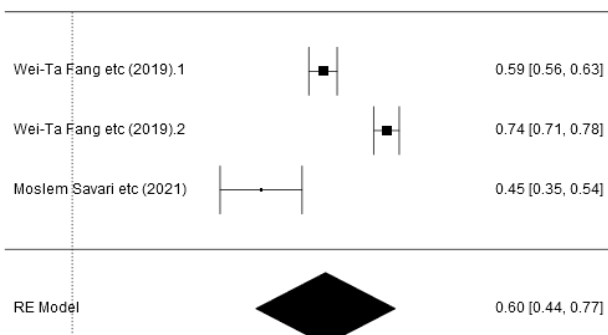


Figure 4. Hedges-Olkin Random Effects (Meta-analysis Plot) AC - AR

From the forest plot of the three variable relationships, it can be observed that the effect size of the analyzed data varies.

Evaluation of Publication Bias

Furthermore, to evaluate publication bias, three methods were used, namely funnel plot, egger test and file safe N. After doing the funnel plot method, it turns out that the results are difficult to conclude whether it is symmetrical or not, so an egger test is needed to test whether the funnel plot is symmetrical or not. The results of the egger test calculation can be seen in table 5.

Table 1. Hasil Perhitungan Egger Test

Regression test for Funnel plot asymmetry ("Egger's test")		
AC - PN	z	p
sei	-1.3012	0.193
AR - PN	z	p
sei	-1.8039	0.071
AC - AR	z	p
sei	-1.7634	0.078

Because the p value > 0.05 indicates that the funnel plot is symmetrical. Thus, it can be concluded that there is no publication bias problem in the meta-analysis data. Publication bias is also proven through the safe N file method as shown in table 6.

Table 6. Calculation Results for Safe N File Drawer Analysis

AC - PN	Fail-safe N	Target Significance	Observed Significance
Rosenthal	6279	0.0500	0
AR - PN	Fail-safe N	Target Significance	Observed Significance
Rosenthal	5631	0.0500	0
AC - AR	Fail-safe N	Target Significance	Observed Significance
Rosenthal	3107	0.0500	0

To determine the publication bias, the value of fail safe N > 5K + 10. The value of 5K + 10 AC to PN is 30, AR to PN is 30 and AC to AR is 25. Based on this, the value of fail safe N > 5K + 10, it can be concluded that there is no problem of publication bias in the meta-analysis study and can be justified scientifically.

Based on the results of a review of 3 articles, it can be concluded that between AC to PN, AR to PN and AC to AR have a positive influence.

AC which has a positive influence on PN is in line with the statement (Liu et al., 2017) namely Individuals who are aware of the problems caused by certain behaviors, their awareness will be followed by considerations of self-contribution to solve the problem and whether it can help solve the problem or not. Awareness of consequences can also anticipate negative emotions if mediated by personal norms (Rosenthal & Ho, 2020). In responding to the increasing threat of environmental problems and global efforts, it is necessary to increase awareness and efforts to reduce negative impacts, it is necessary to understand the



factors that increase the disposition and pro-environmental behavior of the community for better environmental protection (Rodríguez-casallas et al., 2020). Such as environmentally friendly behavior in choosing eco-friendly packaging in online shopping (Guath et al., 2022), environmentally friendly travel (Ashraf et al., 2021), choosing environmentally friendly pesticides (Rezaei et al., 2019) and others.

Science learning is very necessary to raise awareness of the environment (Susongko & Afrizal, 2018). Instilling awareness and concern for the environment is by educating the importance of caring for the environment (Mithen et al., 2021). Because schools are the main driver of general public awareness about environmental changes such as climate change (Competente, 2019).

Consequence awareness (AC) will foster the assumption that their actions can prevent the consequences that will arise (AR), then with that someone will feel a moral responsibility to take an action (personal norms) towards the environment (Stern 2000). In research (Setiawan et al., n.d.) when someone considers that they have a responsibility (AR) to protect the environment, the values that will be internalized will be active as moral obligations so that they will carry out environmentally friendly behavior.

AR which also has a positive effect on PN shows that feelings of responsibility activate norms in a person to take pro-social actions such as environmentally friendly behavior. In the study, De Groot and Steg, who conducted five studies comparing the two approaches, found that people tend to be aware of their behavior before taking responsibility. So that when the feeling of responsibility has arisen, it will activate prosocial norms (De Groot & Steg, 2009). This also explains the relationship between AC and AR which has a positive correlation. In the study results of Wei Ta Fang et al, showed that their awareness of consequences (AR) had a direct effect on their responsibility and pro-environmental behavior. Central civil servants are more aware of environmental problems and their consequences than their counterparts in local government. They are more aware of the consequences and directly influence their perception of the responsibility of environmentally friendly behavior (Fang et al., 2019).

Personal norm activation occurs when individuals realize the consequences of their behavior on others and accept responsibility for themselves (Schwartz, 1977). A person is motivated to act according to personal norms to feel good from feeling guilty. Personal norms are conceptualized at a certain level, reflecting personal norms for recycling and engaging in environmentally friendly behavior (Geiger et al., 2019). Sonny Rosenthal (2020) also argues that community attachment can increase personal norms to avoid actions that are

detrimental to society and can motivate pro-environmental behavior.

If it is associated with efforts to increase environmental awareness that is integrated through education, especially in science learning. Learning is needed that uses steps that have a process of instilling awareness of the consequences so that it affects student responsibility, so students' personal norms emerge to care about the environment. This is also in line with the Eufrasia study (2019), a method of habituation of caring attitudes so that students are aware and have responsibility for the environment as well as facilities that support the cultivation of the value of caring for the environment. According to Taufiq (2014), the character of caring for the environment is integrated in all subjects taught from elementary to middle school levels but is more emphasized in integrated learning of science or Natural Sciences (IPA) because it has a close relationship with the study of the science field. The character of environmental care needs to be developed in the world of education, in order to maintain and improve the existing environmental conditions (Taufiq et al., 2014).

## Conclusion

Based on the results and discussion, it is concluded that the norm activation model variables have a positive correlation. Awareness of consequences has a positive correlation with personal norm, ascription of responsibility has a positive correlation with personal norm, and between awareness of consequences and ascription of responsibility also has a positive correlation. Although many previous studies have examined the effect of the three norm activation model variables on environmentally friendly behavior, the research is still limited to the focus of research respondents. Therefore, the effect of the three variables can be investigated further in other research focuses.

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