

# Predicting Environmental Leadership Based on Personality and Its Construct Validity

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## Abstract

Environmental issues nowadays have been an interesting topic discussed by any institutions in most countries. One of them is concern with environmental management determined by leadership. How environmental leadership (EL) be explained and predicted by personality (EP) and how their construct validity are research problems. A survey method has been applied by involving 237 employees of government official in environmental sector, in Jakarta city, as sample selected randomly. Two instruments have been developed; Environmental Leadership (EL) and Environmental Personality (EP). Its reliability was respectively .991 (EL) and .907(EP). Data has been analyzed by regression & correlation analysis and confirmatory factor analysis (CFA) as well. Research results revealed that only two factors of big-five personality have a positive and significant contribution toward environmental leadership, extraversion and openness to the experience, even though it has been applied by fourth-order correlation, it was only emotional stability did not support it. Considering to factor analysis results, either of environmental personality or environmental leadership, has a high construct validity since all factors loading did confirm theoretical dimensions empirically. There is no doubt that both instruments could be taken into consideration to be implemented scientifically, concern with environmental research.

**Keywords:** *Environmental Leadership, Environmental Personality, Confirmatory Factor Analysis, Big-Five Personality.*

## 1. Introduction

Development in any countries has been viewed as a dilemmatic. It means that in order to meet with the basic human needs, development in term of industrialization should be conducted fast, on the other hand, the natural ecosystem, like or not, have to be exploited to meet with manufacture requirements as a one of input factor. If there is no development action, what should be consumed by people in the world.

Therefore, since 1987/1988, it has been declared a development concept what was called sustainable development (SD) which guided each country to carry out a more rational development by combining three important components, social, economic, and ecology. This perspective concept in development would direct into action which three of them could not be separated.

Based on this concept, it could be predicted that our planet will not be getting hotter or warmer from year to year, however, conversely the annual earth temperature is not even lower. Its success of sustainable development implementation in any country depends on promising to cut the emissions of greenhouse gas. However, it is hard to control that promising when it is not achieve the target. In this case, personality of the leaders (environmental personality and leadership) would be staked.

Therefore, there were two problems have been addressed on this research (a) how is construct validity of environmental leadership and environmental personality when those instruments were developed? And (b) could environmental leadership be predicted by personality, if yes, (c) which factors of big-5 personality factors mostly contribute to environmental leadership?

Leadership, generally, always be discussed in its relation to traits, behavior, influence, interaction pattern, role relationship, and transformational relationship between leaders and staffs. In integrative model developed by Colquitt et al. (1), it is depicted that leaders and followers as an individual, could be evaluated its performance and its organizational commitment as affected by leadership style, leaders behavior or leadership power and negotiation.

Mullins (2) defined that leadership is a relationship through which one person influences the behavior or action of other people. George et al. (3) defined leadership as the capability of an individual to exercise influence and control over other members to help a group or organization achieve its goals.<sup>3</sup>

On the other occasion, Robbins et al. (4) stated that leadership is an ability in influencing a group of people in accomplishing its vision and organizational goal. In trait theories of leadership, leadership viewed as an individual quality and character. Based on behavioral aspect (behavioral theories of leadership), it is perceived as an individual which has an initiating structure that is good relation with followers (mutual trust and respect for employees). Based on research, it was around 66% of staffs felt motivated by their leader when the leader pay attention on them.

According to Robbins et al. (4), transactional leadership style based on Fiedler's and path-goal theories, helps the followers to achieve their goals and try also to explain their roles and tasks. On the other hand, transformational leadership style helps followers to be inspired by their leader and try to strengthen their motivation in achieving their goals.

Colquitt et al. (1) as depicted by figure 1 below identified 8 dimensions starting from (i) Laissez-Faire; (ii) Passive management by exception; (iii) Active management by exception;

- (iv) Contingent reward; (v) Individual Consideration; (vi) Intellectual Stimulation); (vii) Inspirational motivation; (viii) Idealized influence or charisma.<sup>1</sup>

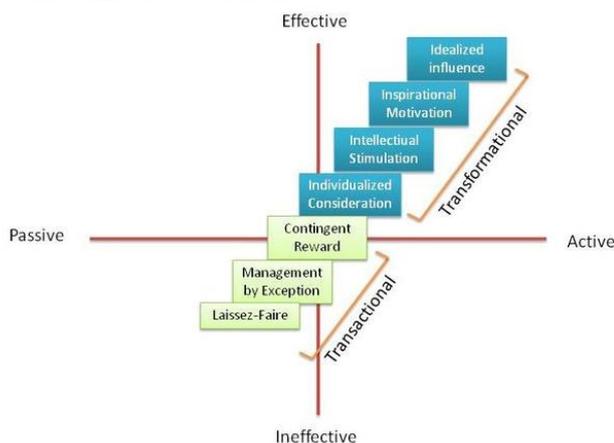


Fig. 1: Transactional and Transformational Leadership(1)

In addition to this, Gibson et al. (5) defined transformational leadership as an ability to inspire and motivate followers in accomplishing their goals in a given organization. Moreover, McShane et al. (6) described that transformational leadership is a leader who has a perspective in changing followers and organization by creating, communicating, figure it out the organizational vision and inspire them to achieve this vision. Ivancevich et al. (7) defined leadership as the process of influencing others to facilitate the attainment of organizationally relevant goal. There are four leadership characteristics to achieve the organizational goal; (a) directions; (b) trust; (c) favor action and risk taking, and (d) provide hope. Yulk (8), on the other occasion, defined leadership “as the ability of an individual to influence, motivate, and enable others to contribute toward the effectiveness and success of the organization.” Needless to say, Gallagher (9) opinion regarding with why it is required an environmental leadership” should be taken into consideration. Gallagher stated that nowadays we are facing with kinds of environmental degradation such as diminishing of biodiversity, loss of water resources, deforestation, environmental injustice, carbon-emitting fossil fuels, pollution, etc. ... these are critical issues that must be confronted to set the field of Environmental Leadership. Then environmental leadership was defined as “a process by which Earth’s inhabitants apply interpersonal influence and engage in collective action to protect the planet’s natural resources and its inhabitants from further harm.” Nevertheless, how people behave as a leader mostly influenced by its character or traits as described earlier on this paper. Talking about traits, it is related to personality and it has been theoretically reported that leadership has been affected by personality, ability and intelligence as shown at table 1 below.

Table 1. Traits Associated with Leadership Effectiveness (Ivancevich et al. (7))

Intelligence	Personality	Abilities
Judgement	Adaptability	Ability to enlist cooperation
Decesiviness	Alertness	Cooperativeness
Knowledge	Creativity	Popularity a prestige
Fluency of Speech	Personal integrity Self-confidence Emotional balance and control Independence (nonconformity)	Sociability (interpersonal skills Social participation Tact, diplomacy

It is logic since by arguing that followers can not be more intelligence, have a good personality and high ability than their leaders. That is why, one of the most important factors that could be paid more attention is on personality due to this factor is rather hard to be built or changed, especially concern with environmental problems.

Environmental personality is an idiosyncratic category in personal traits which has been studied by researchers to explain and understand the interrelationship between individual personality with environmental concern (10-11).

Larsen (12) stated that personality is “the set of psychological traits and mechanisms within the individual that are organized and relatively enduring and that influence his or her interactions with and adaptation to the intrapsychic, physical, and social environment”, and then, Roberts & Mroczek (2008, quoted by p Feist et al. (13) defined personality as “a pattern of relatively permanent traits and unique characteristics that give both consistency and individuality to a person’s behavior”.

Robbin et al. (14), on the other occasion defined personality as “the dynamic organization within the individual of those psychophysical system that determine his unique adjustments to his environment”. According to Colquitt et al. (1), defined personality as “the structure and propensities inside people that explain their characteristic pattern of thought, emotion, and behavior.”<sup>1</sup>

There are 5 factors which derived from a million of traits that has been simplified into 5-factors, it is called big-five personality, (a) conscientiousness; (b) agreeableness; (c) neuroticism; (d) openness to experience; and (e) extraversion (1). Ivancevich et al. (7) defined personality is “a relatively stable set of feelings and behaviors that have been significantly formed by genetic and environmental factor.”<sup>7</sup>

Moreover, George et al. (3) defined personality as “the pattern of relatively enduring ways that a person feels, thinks, and behaves.” In a research conducted by Andersen (15), it was found that the relationship between personality (big-five personality) and leadership was indicated by low correlation, but it was still significant. The same finding has been also found by Kalshoven et al. (16) related to the relationship between big-five personality and leader behavior, it was low correlation, but it was significant.

Boiral et al. (17) found also that EL has a commitment in influencing human being awareness that they should aware toward type environment among small business sectors which powered by EL to be more conscious. It was found out also there was an association between key values and abilities with EL based on 63 interviewers from 15 industries. Hirsh (18) Test the relationship between personality traits around 2690 adults which it has been found that there was an effect of personality on environmental concern especially affected by agreeableness and openness. Milfont (11), found out about the relationship between personality and environmental engagement.

## 2. Methodology

A survey method has been applied for this research by involving 237 sample which derived from employees at office of environmental division in Jakarta province. There were two instruments which measured environmental leadership (EL) and environmental personality (EP). Instrument for measuring EL consisted of 18 items based on 4 dimensions of transformational leadership styles, individual consideration, intellectual stimulation, inspirational motivation, and idealized influence (1). Environmental personality has been measured by instrument which consisted of 30 items and with scoring of 5-4-3-2-1, from most accurate to least accurate based on 5 factors i.e. extraversion, agreeableness, conscientiousness, emotional stability, and openness (1, 4). Data has been analyzed by correlation and confirmatory factor analysis (CFA).

## 3. Results and Discussion

Based on calculation, it was found that all items for measuring EL were valid (18 items) and it was found also that 9 items for measuring EP were not valid, so items was still 21 to be used for research. Its reliability was respectively .991 (EL) and .907 (EP).

Moreover, factor analysis results indicated that all factors, both for measuring environmental leadership (EL) or environmental personality (EP) were loading significantly at theoretical dimensions (see table 2 for EL and table 3 for EP).

For instrument EL, eigen value was only one which was fix with the criteria of > or equal to 1.00, therefore it could not be rotated, then all factors have factor loading > .30 (Hair, et.al.,19), so all factor supported theoretical dimensions (4 dimensions) meant that EL instrument has a strong construct validity (see table 2). The same result also found when big-five factor personality has been verified its construct validity, but by involving senior high school students (20).

Compare to EL instrument validity above, instrument for measuring environmental personality was also valid in term of its construct validity which indicated by its factors loading (see table 3 below). Those findings could be an evidence empirically that those dimensions which was theoretically supported by each factor can be proven that two instruments have been developed based on strong theoretical framework. It could be implemented on the same setting of environmental research.

**Table 2.** Factor Loading (EL)

	Component	
	1	
VAR06	.808	
VAR07	.871	
VAR08	.916	
VAR09	.869	
VAR10	.886	
VAR11	.885	
VAR12	.872	
VAR13	.903	
Extraction Method: Principal Component Analysis.		
a. 1 components extracted.		

It could be interpreted that those factors was developed based on leadership dimensions and big-five personality factors which was proven by looking at their inter-correlation. These results indicated that items which have been developed have a strong correlation with those factors and then strong factor loading also on their dimensions to be uni dimensional instruments.

**Table 3.** Rotated Component Matrix<sup>a</sup>

	Component	
	1	2
VAR03	.899	-.019
VAR02	.886	.099
VAR01	.850	.171
VAR05	.788	-.341
VAR04	.037	.970
Extraction Method: Principal Component Analysis.		
Rotation Method: Varimax with Kaiser Normalizayion.a		
a. Rotation converged in 3 iterations.		

Therefore, if those two dimensions and factors were interrelated to each other, it would come up with a strong prediction of environmental leadership (transformational or transactional) based on personality theories (1, 4).

Based on table 4 below, it was only emotional stability negatively correlate with environmental leadership (EL, - .075). It was a zero correlation which it was sound spuriously.

**Table 3.** Correlation Matrix\*VAR 01 is dependent variable = EL

	VAR01	VAR02	VAR03	VAR04	VAR05	VAR06	
Pearson Correlation	VAR01*	1.000	.590	.484	.517	-.075	-.547
	VAR02	.590	1.000	.694	.692	.126	.513
	VAR03	.484	.694	1.000	.731	.095	.592
	VAR04	.517	.692	.731	1.000	.013	.645
	VAR05	-.075	.126	.095	.013	1.000	-.186
	VAR06	-.547	.513	.592	.645	-.186	1.000
Sig. (1-tailed)	VAR01	.000	.000	.000	.125	.000	
	VAR02	.000	.000	.000	.026	.000	
	VAR03	.000	.000	.000	.073	.000	
	VAR04	.000	.000	.000	.422	.000	

N	VAR05	.125	.026	.073	.422		.002
	VAR06	.000	.000	.000	.000	.002	
	VAR01	.237	.237	.237	.237	.237	.237
	VAR02	.237	.237	.237	.237	.237	.237
	VAR03	.237	.237	.237	.237	.237	.237
	VAR04	.237	.237	.237	.237	.237	.237
	VAR05	.237	.237	.237	.237	.237	.237
VAR06	.237	.237	.237	.237	.237	.237	

Other factors such as extraversion, agreeableness, conscientiousness, and openness have a positive and significant zero-order correlation with EL with coefficient correlation respectively .590, 0.484, 0.517, and 0.547 (see table 4). Moreover, its multiple regression, where those big-five factors were predictors, was also highly significant based on zero-order correlation (see table 5). However, when it was calculated by partial correlation (fourth-order correlation), kit was found only two factors, extraversion and openness have positive and significant correlation with EL (.352 and .268, see table 6).

Agreeableness and emotional stability were negatively correlate with EL and conscientiousness to be non-significant correlated with EL (.030) after the rerst four factors has been controlled. Therefore, environmental leadership could only be strongly predicted by extraversion and openness, even though it was still small contribution as not to far from research carried out by Kalshoven et al. (16).

These findings were not met with Judge et.al. (21) where they found out that all five-factor model contributed around 90% to leadership. However, Sami et al. and De Hoogh, et.al. (22-23) found that all big-five factors did not have positive and significant correlation with neither charismatic nor transactional leadership styles. In additional to other findings, conducted by Judge & Bono (24) found that Extraversion and Agreeableness predicted transformational leadership positively, openness to experience was also positively correlated with transformational leadership but its effect disappeared when other traits was controlled. It was not met with this finding where extraversion and openness as a good predictors to transformational leadership. Other results also found that neuroticism and conscientiousness did not correlate with transformational leadership.

Its characteristic of extraversion such as assertive, socialable, talkative, high in social skills and openness such as high curious, like to find new experiences, cosmopolite, would be mostly matched with transformational leadership style such as idealized influence, inspiration motivation, intellectual stimulation and individual consideration as an entity described comprehensively by Colquitt et al. (1) in their integrative model of organizational behavior. It was expected as well by Ivancevich et al. (7, 25) when those characteristics were combined into a strong factor which might determine someone who lead a group of people in facing a complex environmental problem.

**Table 5.** ANOVA for Multiple Regression

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	69539.968	5	13907.994	35.596***	.001
	Residual	90256.057	231	390.719		
	Total	159796.025	236			

Dependent Variable: VAR01; \*\*\* p < .001

**Table 6.** Partial correlation

Model	Unstandardize d Coefficients	Standar dized Coeffi cients	T	Sig.	Correlations					
					B	Std. Error	Beta	Zero-order	Parti al	Part
VAR0 2	4.607	.807	.428	5.710	.000	.590	<b>.352</b>	.282		
VAR0 3	-.089	.858	-.008	-.104	.917	.484	-.007	-.005		

VAR0 4	.408	.890	.038	.458	.647	.517	.030	.023
VAR0 5	-1.006	.718	-.074	1.401	.163	-.075	-.092	-.069
VAR0 6	2.757	.653	.295	4.221	.000	.547	<b>.268</b>	.209

Dependent Variable: VAR01 = EL

## 4. Conclusion

Based on those research findings, it could be concluded that environmental leadership and environmental personality instruments could be implemented scientifically. However, it is too early to state that those instruments have been judged to be standard. It should involve more sample and more try out if those instruments could be said standard, therefore it will take much time and it could not be reported as a copy right holding.

Nevertheless, these findings could not be confirmed theoretically since big-five personality factors as an entity did not support predicting environmental leadership dimensions. Based on research findings, there were only two factors of big-five personality have a positive contribution on environmental leadership dimensions i.e. extraversion and openness (see table 6). The other factors such as Agreeableness and Emotional stability were negatively contribute toward EL. But for Conscientiousness has a small and not significant coefficient correlation with EL (.030). Therefore, it could be concluded that in recruiting employees which should might have a transformational leadership style in managing the environment, their personality should not be neglected.

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## References

- [1] Colquitt, et. al., *Organizational Behavior*. New York: McGraw-Hill (2017).
- [2] Mullins, Laurie J., *Management & Organisational Behavior*. Ninth Edition, Great Britain: Prentice Hall (2010).
- [3] George, Jennifer M and Jones, Gareth R., *Contemporary Management*. Eighth Edition. The United State: McGraw-Hill (2014).
- [4] Robbins, Stephen P. and Judge, Timothy A., *Organizational Behaviour*, USA: Pearson, (2017).
- [5] Gibson, James L. John M. Ivancevich, and James H. Donnelly Jr. *Organizational Behavior and Management*. New York: McGraw-Hill (2014).
- [6] McShane, Steven, Mara Olekalns, and Tony Travaglione, *Organisational Behavior*. Emerging Knowledge, Global Insights, Australia: McGraw-Hill (2013).
- [7] Ivancevich, John M. Robert Konapaske and Michael T. Matteson. "Leadership." In *Organizational Behavior and Management*, 433-459. New York: McGraw-Hill (2014).
- [8] Yulk, G. (2010). *Leadership in Organization*. New Jersey: Prentice Hall .
- [9] Gallagher, Deborah Rigling. *Environmental Leadership*, Los Angeles: Sage (2012).
- [10] Solino and Farizo. "Personal Traits Underlying Environmental Preferences" *PLOS ONE* (2014).
- [11] Milfont and Sibley. "The big five personality traits and environmental engagement: Associations at the." *Journal of Environmental Psychology*, (2012), pp. 187-195.
- [12] Larsen, Randy J. and Buss, David M., "Personality Psychology. Domain of Knowledge Human Nature. Fifth Edition, New York: McGraw-Hill Education (2014), pp. 4-9.
- [13] Feist, Jess; Feist, Gregory J. and Roberts, Tomi-Ann, *Theories of Personality*, New York: McGraw-Hill Education (2013).
- [14] Robbins, Stephen P.& Timothy A. Judge. "Personality and Values." In *Essentials of Organizational Behavior*. Global Edition, England: Pearson, (2013), pp. 167-192.
- [15] Andersen, Jon Aarum, "Leadership, Personality and Effectiveness", *Journal of Socio Economics*, Vol. 35, Elsevier (2006), pp. 1078–1091.
- [16] Kalshoven, Karianne; Den Hartog, Deanne N., and De Hoogh, Annebel H. B., "Ethical Leader Behavior and Big Five Factors of Personality", *Journal of Business Ethics*, Vol. 100, Springer (2011), pp. 349–366.
- [17] Boiral et al. "Environmental Leadership and Consciousness Development." *Journal Business Ethics*, (2014) pp. 363–383.
- [18] Hirsh, Jacob B. "Personality and Environmental Concern," *Journal of Environmental Psychology*, Vol. 30 (2010), pp. 245-248.
- [19] Hair Jr., Joseph F., et.al., *Multivariate Data Analysis*, Pearson (2010).
- [20] Putrawan, I Made, "Predicting Students REB based on Personality, Students NEP and Naturalistic Intelligence," *Advanced Science Letters*, Vol 23 (9), Sept 2017, pp.8586-8593.
- [21] Judge, Timothy A., et.al."Personality and Leadership: A Qualitative and Quantitative Review," *Journal of Applied Psychology*, vol. 87, No. 4 (2000), pp.765-780.
- [22] Sami, A., Jusoh, A., & Qureshi, M. I. (2016). Does Ethical Leadership Create Public Value? Empirical Evidences from Banking Sector of Pakistan. *International Review of Management and Marketing*, 6(4S).
- [23] De Hoogh, Annebel H., et.al. "Linking the Big Five-Factors of Personality to Charismatic and transactional leadership; perceived dynamic work environment as a moderator," *Journal of Organizational Behavior*, 26 (2005), pp.839-865.
- [24] Judge, Timothy A, & Joyce E. Bono, "Five-Factor Model of Personality and Transformational Leadership," *Journal of Applied Psychology*, Vol.85, No. 5 (2000), pp. 751-765.
- [25] Putrawan, I Made, "Leadership and Self-Efficacy: Its Effect on Employees Motivation," *Advanced Science Letters*, Vol. 23 (1), January 2017, pp.173-176.