


Article

Employee Pro-Environmental Behavior: The Impact of Environmental Transformational Leadership and GHRM

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Abstract: We investigated the impact of environmental transformational leadership (ETL) on pro-environmental behavior (PEB) of employees in Kazakhstan. The study also examined the potential mediating effect of environmental awareness and green human resource management (GHRM) as a moderating effect, using the theory of planned behavior. An online cross-sectional survey was conducted with 268 Kazakh employees from private and public organizations. Structural equation modeling was used to test the theory-driven model. The results show that environmental leadership predicted employees' PEB, environmental awareness mediated the relationship, and GHRM partially moderated the relationship. The results of bootstrapping tests reveal that environmental awareness played successive mediating roles in the link between ETL and PEBs, but the simple slope test did not support the moderating effect of GHRM. Environmental awareness and GHRM were identified as fundamental mechanisms that accounted for the connection between ETL and PEBs.

Keywords: environmental transformational leadership; pro-environmental behavior; green human resource management



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1. Introduction

“You cannot protect the environment unless you empower people, you inform them, and you help them understand that these resources are their own, that they must protect them.”

Wangari Maathai

Given the ongoing major environmental crises, governments and organizations must take action to reduce negative environmental impacts. Climate change, ozone depletion, deforestation, ecosystem devastation, and biodiversity loss have all received considerable attention. However, businesses and organizations must assume greater responsibility for environmental protection and adopt business practices that include environmental protection and natural resource management [1]. Companies must also encourage their workers to become more actively involved in environmental protection to promote environmental management practices. However, the effectiveness of these practices is determined by employees' perceptions of environmental problems and subsequent behavior [2,3]. If employees widely adopt pro-environmental behavior (PEB), it can have a significant influence on decreasing negative environmental impacts, including climate change [4–7]. Workplace PEB refers to a wide variety of environmental actions related to climate change including exploring more about the environment [4], developing eco-friendly processes and products, separating items for recycling, reusing items, and asking about environmentally destructive actions. Organizations that promote such behaviors and reward employees' actions will decrease their negative environmental effect.

Despite the importance of organizational participation in environmental protection, research on employees' PEB has been limited [2,8]. Rather than employee behaviors, researchers have concentrated on environmental performance and strategies at the organizational level. Therefore, by investigating the processes that enable such behaviors, we hoped to improve both the scholarly and practical understanding of employees' PEB at the

individual level. This study specifically investigated the role of environmental transformational leadership, employees' perceptions of environmental awareness, and green human resource management (GHRM) in fostering PEB. Because one's behavior is influenced by what others do, we also predicted that employees' PEB could be encouraged by environmental transformational leadership (ETL), because a transformational leader is someone who broadens the interests of their followers and persuades them to achieve more than they originally expected [2,8–10]. Transformational leadership (TL) has received tremendous interest and earned a significant reputation within the field of organizational management; TL has also been determined to effectively predict numerous employee behaviors. [11–13].

The theory of transformational leadership has been mainly applied to leaders' expertise in environmental sustainability since transformational leaders have powerful influence in promoting the overall environmental performance of their companies [14,15]. In line with this literature stream [16], we shift the point of interest to ETL, which refers to the implementation of TL that encourages pro-environmental initiatives. Pioneer research has shown that ETL facilitates PEB above and beyond a preferred management style [10,17–19]. Characteristics associated with a transformational leader (e.g., idealized impact, inspirational motivation, intellectual stimulation, and personal attention) are critical to reach the company's goals [20]. Leaders with these abilities are more likely to inspire followers by influencing, inspiring, motivating, and stimulating them to recognize the significance of protecting the environment and engaging in environmentally orientated attitudes and behaviors. Followers look to transformational leaders as their role models so followers are likely to pay greater attention to these leaders' attitudes about the environment [20]. Pioneering research has recognized several factors that could connect ETL to employee environmental behavior: environmental passion [16], autonomous and external motivation [10,21], environmental concern [22], perceived pro-environmental climate of coworkers [17], value congruence [23], environmental beliefs [24], autonomous motivation, and environmental passion [13].

Being aware of the significance of environmental protection (i.e., people's behavior that shows concern for and an understanding of environmental outcomes) is widely recognized as the first step in solving environmental issues [25]. People with a high degree of environmental awareness are much more likely to engage in environmentally sustainable conduct [26]. In comparison, less environmental awareness may lead to apathy, minor modifications in personal behavior, and reliance on government actions [27]. Thus, environmental awareness is a primary prerequisite to engaging in pro-environmental behavior. Several empirical studies have also investigated the relationship between environmental awareness and behavior in various groups, including students, contractors, project managers, citizens, households, consumers, and manufacturing companies [28–33].

In this study, we investigated the mediating role of environmental awareness between the independent and dependent variables ETL and PEB. The goal of this research was to investigate how ETL affects employee environmental awareness (EA), which leads to pro-environmental behavior. This research also sheds light on a critical aspect of green human resource management (GHRM) in moderating the relationship between ETL and EA. GHRM refers to HRM practices aimed at firms' influence on environmental and ecological change and is linked to firms' environmental strategies and employees' green behaviors [34]. However, few studies have examined how ETL interacts with an organization's GHRM to influence employees' PEB. This study also examines whether the relationship between ETL and EA has improved.

Finally, while similar studies have discussed GHRM in developed countries, it is important to investigate GHRM in emerging and developing countries since environmental changes have caused serious issues around the world. Kollmuss and Agyeman [35] also observed that economic factors and cultural norms around the world have a significant impact on people's decisions and behaviors. Thus, this cross-sectional investigation of employee pro-environmental behavior was conducted in Kazakhstan, a developing country in Central Asia.

2. Theoretical Background and Hypothesis Development

2.1. Environmental Transformational Leadership

Transformational leadership is an energetic and effective leadership style characterized by four associated behaviors: (a) idealized impact (i.e., that specializes in and inspires ethical behavior), (b) inspirational motivation (i.e., elevating employee motivation and optimism), (c) intellectual stimulation (i.e., encouraging employees to assume novel approaches for themselves), and (d) individualized consideration (i.e., demonstrating situations related to individual desires) [36].

Researchers have historically investigated the consequences of the four sub-dimensions of transformational leadership behaviors in diverse contexts. However, they have recently shifted their focus to behaviors that influence a specific target. For example, Turner et al. [37] observed that protection-specific transformational leadership resulted in numerous safety effects. Conchie and Donald [38] also found that safety-specific transformational leadership resulted in a variety of safety outcomes. Recently, Morton et al. [39] also applied transformational leadership to parenting behaviors.

Primarily based in this line of research, Robertson and Barling [16] broadened the scope of target-specific transformational leadership by applying TL to the environmental context. Environmental transformational leadership (ETL) is defined as transformational leaders that focus on influencing corporate environmental obligations. Using a sample of North American leader–subordinate dyads, these authors identified four transformational leadership behaviors related to companies' environmental obligation that could inspire their subordinates to engage in pro-environmental behaviors. Corroborating previous preliminary findings, Graves et al. [10] found that Chinese employees' ratings of their managers' ETL stimulated their own personal pro-environmental workplace behaviors. An experimental study also observed that business students who were exposed to ETL via a video clip rated (1) the transformational leaders' environmental values higher, (2) identified the in-function behaviors their leaders prioritized, and (3) demonstrated better engagement in pro-environmental behaviors than individuals who had been less exposed or not exposed to ETL [18]. In the same study, environmental transformational managers acted as role models as they communicated environmentally focused ideas to their divisions by emphasizing environmental values and taking appropriate actions. Environmental transformational leaders also encourage employees to engage in environmentally friendly behavior by improving environmentally friendly working practices. Environmental transformational leaders can also nurture their employees, instill a strong sense of morality and motivation, and inspire them to prioritize long-term goals over short-term economic interests [10,16].

In terms of environmental transformational leaders' roles in environmental issues, transformational leaders are expected to be strong role models for their followers by providing a clear vision of the importance of environmental issues. Environmental transformational leaders must also engage their followers in the process and solicit their assistance in resolving environmental issues [40] such as encouraging new ideas and increasing intrinsic motivation [10]. When followers encounter a supportive and less controlling work environment created by environmental transformational leaders, they are more likely to work creatively and take a genuine interest in the organization's well-being by being committed to the organization's long-term sustainability goals [41,42].

2.2. Employee's Pro-Environmental Behavior

PEB is described as a person's voluntary behavior that contributes to organizational sustainability (e.g., saving office materials, separating trash based on type, open conversation, and information sharing among personnel concerning environmental sustainability) [43,44]. PEB has been a relevant topic in academia for many years [45–48], but especially since 2020, when the COVID-19 epidemic significantly harmed international macrofinancial systems. COVID-19 has compelled people to rethink the connection between humans and

the ecological environment and caused people to judge the effect of their personal activities on the ecological environment [49]. As such, PEB is a crucial subject that impacts the future.

The concept of PEB emerged from scholars' reflections on environmental problems in the 1960s. Maloney and Ward [50] described an ecological disaster as a crisis of maladaptive behavior and emphasized the importance of human behavior within the ecosystem. They advised researchers to take note of human environmental behavior and changes in such behavior. More recently, scholars have described PEB as environmentally responsible behavior [51–53], environmentally sustainable behavior [54–56], environmentally significant behavior [45,57,58], green behavior [59–61], ecological behavior [62–64], and environmentally friendly behavior [65–67]. These phrases have an equal or roughly similar meaning as they imply that PEB helps improve the ecological environment.

Many scholars have also investigated other PEB-related issues. Exogenous variables that have been recognized as antecedents of PEB include institutional factors, monetary factors, and social norms [68,69], in addition to endogenous variables, including motivation, environmental knowledge, focus, values, attitudes, feelings, and responsibilities [70,71]. Researchers have also investigated PEB in expanded contexts [23,72–74] and various motives even when using the same constructs [75–77]. Scholars have also examined PEB aimed at protecting specific resources such as marine resources, energy, water, climate resources, and land. To investigate PEB, researchers have used multidisciplinary research techniques and theoretical models from numerous disciplines. The Rasch model of psychology, for instance, has been used to optimize the scales of standard PEB attitudes or different subjective values. The external traits and inherent concept of PEB have also been determined using the bibliometrics technique. In particular, the study of psychedelic tablets in medications yielded important findings about PEB [78].

Organizations are under increasing pressure to comply with new environmental regulations such as the Paris Agreement or the European Green Deal to help reduce negative environmental impacts. Following these agreements has resulted in organizations achieving their sustainability goals, higher firm performance, and a better reputation. These accomplishments have also prompted more organizations to incorporate environmentally friendly behavior into their operations and to promote PEB among their employees. They have also recognized the significance and role of employees in addressing the environmental issues of their organizations [78].

2.3. Development of Hypotheses

We predicted that the behavior of environmental transformational leaders influences organizational environmental sustainability because these leaders choose to take the right actions and act in a way that benefits the natural environment [20]. They also serve as role models for their followers, who will most likely imitate their leaders' actions. Environmental transformational leaders motivate their subordinates to engage in pro-environmental workplace behaviors when the leaders have a close relationship with their followers. As a result, followers are more likely to find it valuable and meaningful to voluntarily participate in environmentally friendly activities rather than feeling obligated to do so [16]. As a result, employees who are inspired by environmental transformational leaders will encourage others to engage in green behavior and initiate pro-environmental practices and policies such as recycling and reusing products, developing sustainable products, and preventing pollution [79].

Based on previous findings, we hypothesized that environmental transformational leadership plays an important role in improving employees' PEB. Transformational leaders understand how to meet their followers' needs. The characteristics associated with TL (e.g., promote employee motivation, intellectual stimulation, and individual attention) are conducive to the development of a good leader–follower relationship [80]. These characteristics are also necessary to promote employees' behaviors because people learn by observing and imitating the behavior of others, so leaders must be role models in order to transfer PEB to

their followers [81]. Thus, we hypothesized that there is a significant relationship between transformational leadership and employee pro-environmental behavior in this study:

Hypothesis 1. *Environmental transformational leadership positively affects employee pro-environmental behavior.*

Environmental awareness refers to the degree to which individuals are concerned and informed about environmental problems, encourage endeavors to resolve the problems, and/or suggest a willingness to make contributions individually to the solutions [82]. Awareness of environment issues has been identified as a critical prerequisite for fostering long-term pro-environmental workplace behavior and, as a result, reducing the increasing danger of climate change [83]. The findings indicate that environmental awareness is a multi-dimensional construct comprising affective (concern or attitude), cognitive (knowledge), and conative (behavioral intention) factors [33,35,84]. Despite extensive research, there is still debate about whether environmental concern (EC) is a component of environmental awareness. Zsoka [33], for example, argued that environmental value is an important component of environmental awareness.

Environmental awareness includes several components, one of which is an environmental attitude, which refers to people's value judgment of environmental protection [85]. According to Schultz et al. [86], environmental attitude includes people's beliefs and behavioral intentions regarding environmental activities or issues. In short, an environmental attitude can be defined as a positive or negative attitude toward environmental problems and behaviors, and it is often used interchangeably with environmental value [87]. However, Olson and Zanna [88] noted that an environmental value can be distinguished from an environmental attitude. Environmental value refers to an organized system and acts as a predictor of environmental attitude. To predict pro-environmental behavior, the literature has identified two types of measures: general and specific environmental attitudes (EAs) [89,90]. The new environmental paradigm scale measures general EA, also known as environmental concern, and is an attitude toward the larger environmental contexts and problems [91]. Specific EA is an attitude toward a specific environmental behavior, which is a specialized attitude frequently referred to as an environmental behavior attitude [89].

The cognitive aspect of environmental awareness is environmental knowledge [33,92–94]. This term refers to a person's level of environmental knowledge and the essential relationships that lead to adjusted environmental perspectives and large ecological effects [95]. Zsoka et al. [92] defined environmental knowledge as knowledge and awareness of environmental issues as well as the ability to find answers to problems. Thus, we hypothesized that the environmentally oriented leadership can boost employees' knowledge and awareness about environmental issues and significance [96]:

Hypothesis 2. *Environmental transformational leadership is positively related to employee environmental awareness.*

One's willingness to engage in specific behavior is known as behavioral intention. The theories of reasoned action (TRA) and planned behavior (TPB) suggest that intention is one of the most relevant motivating factors influencing a given behavior [97]. These theories posit that human behavior is a reflection of intention, which refers to the degree to which voluntary efforts are made to perform an action, and is determined by one's attitude, subjective norms, and perceived behavioral control [97]. Hines et al. [98] advanced an environmental behavior model in which the purpose to act is a primary determinant of pro-environmental behavior. Their model was later reflected in Bamberg [91]. Qu et al. [99] also introduced evidence that purchase intention is the greatest predictor of purchase behavior. According to Ajzen's [97] TPB model, attitude, subjective norms, and perceived behavioral control are all positively related to behavioral intention, which affects behavior [100]. Based on this logic, people are more likely to engage in pro-environmental behavior when they have the corresponding intention.

Based on previous research related to intention and awareness, the following components of environmental awareness are presented in this study: environmental concern, environmental attitude, environmental knowledge, and behavioral intention [26,32,101]. Individuals with a high degree of environmental knowledge are much more likely to report higher levels of concern for the environment, have an effective attitude towards environmental protection, have better behavioral intention, and behave in an environmentally sustainable way [28,101].

Some research, theories, and empirical proof have suggested a positive relationship among ETL and PEB in work settings [10]. However, few studies have analyzed the mechanisms and strategies through which environmentally transformational leaders have an impact on their followers' likelihood of engaging in pro-environmental behavior at work. Thus, more research is needed to better recognize the fundamental causes of how and why environmentally transformational leaders influence pro-environmental behavior at work [102,103]. Employees' perceptions may also play a significant role in explaining the relationship between environmental transformational management and pro-environmental behavior in organizations.

Environmental awareness has also been shown to be a strong predictor of workplace environmental behavior [104–106]. For example, one study found that environmental knowledge and awareness significantly encouraged favorable attitudes of business school students in Malaysia toward environmentally friendly cars [106]. TPB [97] supports this prediction, claiming that individuals who are deeply concerned about the natural environment are more likely to engage in PEB at work. Since TPB [97] implies that attitudes predict actual behaviors, it is reasonable to argue that environmental awareness is a primary reason ETL impacts employees' pro-environmental behavior at work. Thus, we assume that environmental awareness helps mediate the relationship between ETL and employees' PEB at work. Therefore, we present the following hypothesis primarily based on previous studies on transformational leadership, environmental awareness, and employees' pro-environmental behavior:

Hypothesis 3. *Employee environmental awareness mediates the relationship between environmental transformational leadership and employee pro-environmental behavior.*

Environmental management systems such as green purchasing, eco-design, recycling, and energy conservation have begun to be implemented by organizations to take the lead on environmental issues. Employees in these organizations play an important role because their willingness to actively practice environmentally friendly behaviors is critical for organizations' success [10,107]. Furthermore, the effective development of green products is extremely beneficial in terms of developing effective environmental policies and achieving environmental sustainability [108].

GHRM is viewed as a moderating factor. GHRM refers to HRM practices that aim to increase a company's environmental and ecological influence and is linked to the company's strategy and employees' behaviors towards the environment [34]. GHRM reflects the organization's strategic direction toward environmental protection and requires that managers at the top level pay attention to the practices and processes that encourage people to engage in pro-environmental behaviors to reduce environmental pollution at work [109,110]. In other words, GHRM incorporates the organization's environmental management objectives into its HR processes such as recruitment and selection, training and improvement, performance and evaluation, and rewards and recognition [111,112].

HRM helps the organization meet its environmental objectives. As a result, by implementing GHRM practices, the organization sends a clear message to employees that it highly values ecological and environmental values [34]. In return, employees are more likely to respond positively to perceived GHRM practices given their motivation to engage in self-improvement practices [113,114]. Rangarajan and Rahm [115] also suggested that when companies adopt GHRM practices, they demonstrate to current and prospective

employees that they have a strong corporate social agenda and value the environment and social priorities. These messages increase the firm's external prestige, making it more appealing to employees.

Adopting GHRM practices (e.g., providing green training and recognizing and rewarding green behavior) also encourages employees to take part in pro-environmental actions and provides opportunities for them to do so. Based on these findings, this study investigates the role of GHRM as a moderator in the relationship between environmental transformational leadership and employee environmental awareness. Thus, we propose the fourth hypothesis. Figure 1 presents the framework of the hypothesized model.

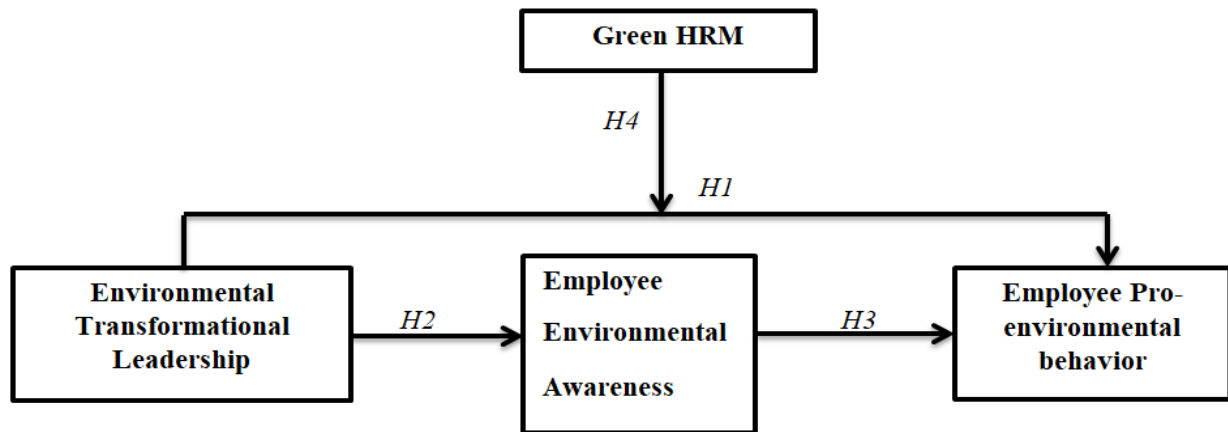


Figure 1. Framework of the hypothesized model.

Hypothesis 4. *GHRM moderates the effect of ETL on employee PEB such that the effect of transformational leadership on employee pro-environmental behavior is stronger when the organization has adapted GHRM.*

3. Method

3.1. Data Collection, Procedure, and Sample

The sample for this cross-sectional study included employees from public and private organizations in Kazakhstan. The sample included employees from the Ministry of Ecology and non-profit environmental organizations. This choice was based on the likely knowledge, attitudes, and intentions toward environmental problems and protection of these groups. Random sampling was used to select the participants from each organization. Data were collected from an online survey that took participants 10–15 min to fill out. The survey was conducted online because the COVID-19 pandemic continued to be a cause for concern. Online surveys have been shown to have better efficiency and similar validity to conventional methods [116].

The procedure was as follows. We sent 400 employees an email describing the purpose, procedure, and criteria for inclusion in the study. The email included a link to the survey along with the survey package. Participants were asked to follow the link to take part in the survey, which included general information, research measures, an informed consent form, and a summary. Participants were assured complete anonymity if they agreed to participate in the survey. A total of 268 out of 400 questionnaires (67% response rate) were returned. After deleting entries with missing data, 218 responses were included in the analysis. In terms of gender, 164 respondents were women, and 54 were men. The mean age of the participants was 37 (SD = 3.00), the average organizational tenure was 7 years (SD = 3.12), and the average length of education was 15 years (SD = 3.02). Table 1 presents the demographic characteristics of the respondents.

Table 1. Demographic characteristics of the respondents.

Characteristics		Frequency	Percentage
Gender	Women	164	75.2
	Men	54	24.8
Age (years)	18–25	23	10.5
	26–35	64	29.4
	36–45	54	24.8
	46–55	39	17.9
	56 and more	38	17.4
Education	High school	6	2.8
	Professional college	12	5.5
	Bachelor’s degree	177	81.2
	Master’s degree	22	10.1
	Doctorate degree	1	0.4
Tenure (years)	Less than 2 years	29	13.3
	2–5 years	54	24.8
	6–10 years	39	17.9
	11–20 years	40	18.4
	More than 20 years	56	25.6

3.2. Measures

For the environmental transformational leadership measure, we adopted 5 items [10] from the Multifactor Leadership Questionnaire (MLQ) 5x Short Form [117]. Bass and Avolio [117] proposed the MLQ to evaluate the scale of transformational leadership and studied the effective results of transformational leadership. However, from Graves et al.’s [10] studies on specific environmental transformational leadership, we included only the five items that best describe environmental transformational leadership: idealized influence behaviors, idealized influence attributes, inspirational motivation, intellectual stimulation, and individualized consideration. The statements asked employees to describe how often their managers implemented the behaviors on a 5-point scale (0 = not at all, 4 = frequently if not always; responses were recoded as 1–5 scores for evaluation). Sample statements include, “My supervisor shows confidence about environmental problems,” and “My manager talks about the importance of protecting nature.” In accordance with past transformational leadership studies [11], confirmatory factor analysis (CFA) of the items indicated that they formed a single factor ($\alpha = 0.97$).

We also adopted the Employee Environmental Awareness measurement from Fu et al. [84], which grouped environmental awareness into four aspects: environmental concern, environmental attitude, environmental knowledge, and behavioral intention. The instrument included 15 items for environmental awareness measured on a 5-point Likert scale (1—disagree; 5—agree). Sample items included, “I am concerned about energy scarcity,” and “I am worried about future environmental quality” ($\alpha = 0.86$).

We used Robertson and Barling’s [16] employee pro-environmental behaviors, which were measured with 7 items on a 5-point Likert scale (1—disagree; 5—agree). Sample items included, “I print double-sided whenever possible,” and “I take part in environmentally friendly programs” ($\alpha = 0.83$).

GHRM was measured with 6 items from Dumont et al. [118] on a 5-point Likert scale (1—disagree; 5—agree). The GHRM measurement aimed to measure the HRM green policy and green practices based on employees’ perceptions and the impact on employee workplace green behavior. Sample items included, “My company sets green goals for its employees,” and “My company provides employees with green training to develop employees’ knowledge and skills required for green management” ($\alpha = 0.86$).

To account for demographic differences in pro-environmental behavior, we included several control variables: age (years), education, company tenure (years), field, GHRM,

ETL, and environmental awareness. Age was measured in years. Gender was coded 0 for women and 1 for men. Education was measured as years of education.

4. Results

4.1. Descriptive Statistics

The correlations and standard deviations of the variables are summarized in Table 2. Considerable correlation emerged between PEB and age. PEB, EA, and GHRM had a significant correlation with ETL. PEB was also strongly correlated with EA and GHRM.

Table 2. Standard deviations, means, and correlations.

Variable	Mean	S.D.	1	2	3	4	5	6	7	8
1. Age	3.00	1.25								
2. Gender	0.24	0.43	−0.11							
3. Education	3.02	0.60	−0.15 *	0.03						
4. Tenure	3.12	1.40	0.66 **	−0.11	−0.05					
5. ETL	3.50	0.94	0.13	−0.03	−0.02	0.11	−0.18 **			
6. PEB	3.95	0.60	0.19 **	−0.07	0.01	0.09	−0.15	0.48 **		
7. EA	4.27	0.46	−0.00	−0.06	0.05	0.08	−0.14	0.23 **	0.46 **	
8. GHRM	3.38	0.95	0.14 *	−0.04	−0.13	0.18 **	−0.19 **	0.69 **	0.48 **	0.33 **

Note: N = 218, * $p < 0.05$, ** $p < 0.01$. Tenure and age are coded in years. Male is coded as 1, and female is coded as 0 for gender. ETL = environmental transformational leadership, PEB = pro-environmental behavior, EA = environmental awareness, GHRM = green human resource management.

4.2. Measurement Model

To determine the reliability and validity of the measured variables, we evaluated the reliability of the separate items, the convergent validity, the reliability of the inner consistency, and the discriminant validity [119–121], as shown in Table 3. First, single items were measured by examining the outer loadings of individual constructs [122]. We decided to retain items with loadings above 0.40. In the entire model, all items had loads between 0.484 and 0.927. Second, the reliability of internal consistency of the composite reliability coefficient was investigated as the upper limit for the actual reliability [121]. It is generally recommended that the composite coefficient of reliability (CR) for each latent construct exceed 0.7 [123].

As shown in Table 3, the composite reliability coefficients, which range from 0.915 to 0.922, demonstrate adequate internal consistency reliability, as each was above 0.70, as traditionally recommended by Bagozzi and Yi [123]. Average variance extracted (AVE) was analyzed to check convergent validity for each latent construct. In general, each latent construct AVE exceeded 0.70 [121,123]. As presented in Table 3, the AVE for each latent construct exceeded the threshold value of 0.50, indicating satisfactory convergent validity.

Table 3 shows the measurement model fit indices for the research variables. We examined CFA using STATA 14.2 to check the construct validity of the variable. The fit indices showed that the hypothesized four-factor model provided a better fit to the data with environmental transformational leadership, environmental awareness, GHRM, and pro-environmental behavior ($\chi^2 = 353$; $df = 217$; $RMSEA = 0.07$; $CFI = 0.95$; and $TLI = 0.9$). The CFA results confirmed the differentiation of the four variables for further analysis.

4.3. Hypothesis Testing

Table 4 shows the results of the regression analysis for hypothesis testing. We ran five regression models with environmental awareness (Model 1–3) and pro-environmental behavior (Model 4–5) as dependent variables. In testing Hypothesis 1, the standardized regression coefficient of environmental transformational leadership on pro-environmental behavior depicted a strong positive effect ($\beta = 0.16$ ***, $p < 0.001$; Model 5) after controlling for demographic variables. Thus, Hypothesis 1 is supported.

Table 3. Standardized factor loading, AVE and CRs.

Latent Variable	Item	Standardized Factor Loading	AVE	CR
Environmental Transformational Leadership	ETL1	0.891	0.77	0.943
	ETL2	0.894		
	ETL3	0.901		
	ETL4	0.847		
	ETL5	0.848		
Environmental Awareness	EA1	0.56	0.74	0.918
	EA2	0.725		
	EA3	0.773		
	EA4	0.634		
	EA5	0.687		
	EA6	0.798		
	EA7	0.838		
	EA8	0.61		
	EA9	0.657		
	EA10	0.747		
	EA11	0.764		
	EA12	0.756		
	EA13	0.726		
	EA14	0.714		
Pro-Environmental Behavior	PEB1	0.641	0.68	0.815
	PEB2	0.64		
	PEB3	0.704		
	PEB6	0.623		
	PEB7	0.712		
GHRM	GHRM1	0.824	0.75	0.947
	GHRM2	0.869		
	GHRM3	0.887		
	GHRM4	0.927		
	GHRM5	0.863		
	GHRM6	0.822		

Note: N = 218, AVE = average variance extracted. CR = composite reliability.

Table 4. Regression table.

	Environmental Awareness			Pro-Environmental Behavior	
	Model 1	Model 2	Model 3	Model 4	Model 5
Control Variables					
Age	−0.03	−0.03	−0.03	0.11 **	0.10 **
Gender	−0.05	−0.04	−0.04	−0.04	−0.05
Education	0.06	0.06	0.06	0.05	0.03
Job tenure	0.02	0.03	0.02	−0.06	−0.03
Independent variables					
ETL		−0.25 **	−0.25 **		0.16 ***
GHRM			−0.10		
Interaction					
GHRM × ETL					0.08 **
Mediator					
EA					0.44 ***
Model fit					
F	4.48 **	5.08 ***	5.08 ***	2.62 *	17.93 ***
R ²	0.12	0.16	0.16	0.06	0.41
ΔR ²	0.10	0.13	0.13	0.03	0.38

Note: N = 2018. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Standardized regression coefficients reported.

Hypothesis 2 predicted significant interconnection between environmental transformational leadership and environmental awareness. Unlike our hypothesis, regression analysis showed a strong negative coefficient ($\beta = -0.25, p < 0.01$). Thus, Hypothesis 2 is not supported.

To examine the mediating effect predicted by Hypothesis 3, we utilized the bootstrapping indirect effect [124]. We used 5000 replications and found support for a mediating impact on environmental transformational leadership on pro-environmental actions through environmental awareness. As shown in Table 5, the coefficient effect was 0.05, and the 95% bias-corrected bootstrap confidence interval did not contain zero [0.02, 0.09]. In addition, the Sobel test showed a significant effect ($z = 2.66, p < 0.01$) [125]. These results support full mediation. Thus, Hypothesis 3 is supported.

Table 5. Mediating effect of environmental awareness.

Indirect Effect	Estimate	SE	95% CI
ETL→EA→PEB	0.05	0.02	[0.02, 0.09]

Hypothesis 4 predicted that GHRM would moderate the connection between ETL and PEB, so that the relationship is stronger when GHRM is high than when it is low. In the regression table, the interaction variable between environmental transformational leadership and GHRM was significant. The interaction coefficient was positive ($\beta = 0.08, p < 0.05$; Model 5), which confirms Hypothesis 4. The interaction effect is illustrated in Figure 2. A post hoc simple slope analysis was conducted, and it failed to reveal that the difference of the effects of ETL on PEB in high GHRM (simple slope = 0.26, SE = 0.08, $p < 0.001$) and low GHRM (simple slope = 0.11, SE = 0.06, $p < 0.001$) was significant. Thus, the moderation effect of GHRM between ETL and PEB was not fully verified. Thus, Hypothesis 4 is partly supported.

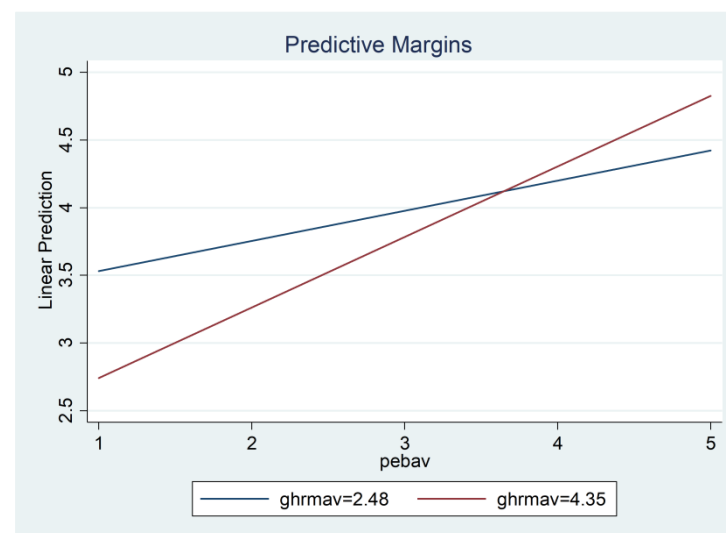


Figure 2. Moderating effect of GHRM.

5. Discussion

5.1. Theoretical Contributions

The findings of this study confirm the importance of a transformational leader who focuses on environmental issues in encouraging employees' green behavior in the workplace. Employees are influenced by and imitate leaders' behavioral patterns through close observation, and they internalize the values of their leaders. Thus, leaders may be role models who stimulate employees to perform desirable behaviors. As previous research

has reported, transformational leadership with idealized influence, inspirational motivation, individualized consideration, and intellectual stimulation affects and greatly changes employees' behavior [13,22,40,44]. These studies strongly suggest that environmental transformational leadership (ETL) can effectively promote pro-environmental behavior (PEB) of subordinates in the workplace. This study further investigated and confirmed the mediating effect of environmental awareness (EA) on the link between ETL and employees' PEBs found in previous studies [104–106].

This study also provides implications regarding the theory of planned behavior. We applied the theory to interpret the impact of leadership and awareness of environmental issues on pro-environmental behaviors. This framework helps us not only examine the impact of the individual factors but also understand the systematic mechanism that connects individual factors and intended behaviors. Previous studies on TPB have mainly focused on identifying and empirically confirming the antecedents that affect behavioral intentions, but they have been relatively indifferent to the possible relationships among the factors. This study significantly adds to the theoretical research by analyzing the relationship among the antecedents.

According to TPB, behavioral intention is influenced by attitudes as well as by social (normative) pressure. Intention is also influenced by an individual's perception of whether people can bring about change through their own behavior (locus of control). People with perceptions of internal control tend to believe that actions based on their own norms and values can bring about change. In contrast, those who are affected by external pressure tend to comply with the externally injected norms and values rather than developing their own.

Data used in this study were collected from Kazakhstan, which could have implications for the employees' norms and values. Until the 1990s, Kazakhstan was under Soviet Union control. Social pressure from communist values and norms was very strong for a long period, which affected peoples' attitudes and perceptions. Therefore, Kazakhstanis still tend to concentrate on the external locus of control and mostly believe that their small actions will not bring any change. Likewise, they may believe that environmental problems are too big and global for an individual to handle. This strong influence from leadership on employees' behaviors may reflect the unique characteristics of the country.

For behavioral intention, the amount of expected external support for certain behavior may also affect attitudes and perceptions. The more external support one expects, the stronger their intention to act will be [126]. For example, Borden and Francis [35] suggested that people who have satisfied their basic needs are more likely to be interested in the environment. In other words, the more resources they possess (e.g., time, money, and social status), the more they pay attention to environmental issues. In this sense, people from a lower social or economic status care less about the environment than those from higher classes.

This study confirms that these external factors including attitudes from leadership can affect personal attitudes and beliefs. However, the direction of the leadership effect does not support our hypothesis. While we predicted a positive impact of environmental transformational leadership on employees' pro-environmental behaviors (H2), the results show a negative relationship between the variables. This unexpected result encouraged us to further consider the role of leadership in influencing subordinates' attitudes. Although leadership may be able to impose values and norms that lead to certain behaviors, the influence of leadership on formulating subordinates' attitudes may be limited. People have their own values and attitudes outside of their workplaces, indicating that there are other influencing factors besides leadership. Employees' behavior may be affected but not fully controlled by leadership. We confirmed that the less control an individual has over his or her behavior, the greater the external impact.

We also examined GHRM as a moderator between environmental transformational leadership and employees' pro-environmental behavior. The findings of our research do not fully confirm that GHRM policies and practices enhance the effect on employees' behaviors that favor protecting the environment. Since our results show a weak moderating

effect of GHRM, there may be other moderating variables that have a stronger effect on the relationship between ETL and PEB. Another reason the moderating effect of GHRM was weak in this study is that many organizations in Kazakhstan have not yet embraced environmental considerations. Thus, more time is needed for GHRM to be established and adopted into organizations' HRM systems and policies from an environmental perspective and produce significant results.

5.2. Practical Contributions

This study provides several implications for leaders and managers on how to motivate employees to behave in an environmentally friendly manner in the workplace. In the current business environment with a greater emphasis on social issues and governance management, organizations should pay more attention to employees' PEB and invest in environmental leadership development initiatives.

The results of this study suggest that environmental transformational leadership is critical to promote employees' pro-environmental behavior. Thus, businesses that want to motivate workers to engage in PEB should make sure that the leaders model ETL. Environmental considerations may also be one of the most important factors for investors. Moreover, since leaders in the current business environment need to be environmentally sensitive, businesses must focus on guiding their leaders to acknowledge the significance of environmental protection and practice PEBs including separating (recycling) and manufacturing materials. Leaders need to act as role models and consequently enhance their environmental influence over their subordinates. Environmental transformational leaders may even inspire their subordinates to think in an environmentally friendly manner by (a) passionately describing the significance of being environmentally friendly, (b) encouraging employees to behave and think pro-environmentally at work and by showing interest in employees' unique suggestions, and (c) developing employees' potential to make contributions to the companies' environmental performance by sharing reviews about employees' environmental awareness of environmental protection.

Organizations that invest in developing ETL and GHRM policies may enhance their reputations among stakeholders, attract future talent, and increase their customer base by appealing to environmentally sensitive customers. In doing so, companies can build their environmentally friendly reputation to create a competitive advantage and increase their corporate value.

Finally, employees' positive perceptions of GHRM may encourage them to exhibit pro-environmental job behaviors to reduce the negative effect of corporate activities on the environment. Although all aspects of corporate functions must be environmentally friendly and sensitive, HRM initiatives directly associated with the environment are crucial because the impacts and influences on managers and employees are greater than the opposite functions.

Given society's growing interest in environmental issues, the findings of this study offer meaningful suggestions for organizations, managers, leaders, and employees to consider what efforts and initiatives they can make to protect the environment and enhance sustainability.

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