



Harmonious environmental passion and voluntary pro-environmental behavior at home and at work: a moderated mediation model to examine the role of cultural femininity

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Abstract

Employees' pro-environmental behavior can contribute to reduce organizations environmental impact, improving organizational sustainability. The primary objective of this work is to highlight the mechanisms that stimulate employees' voluntary pro-environmental behavior at work (Wpeb), paying attention to the role of harmonious environmental passion, private life voluntary pro-environmental behavior (PLpeb) and contextual factors as national culture. The model was analysed empirically by collecting data from 331 Kazakhstani and Ecuadorian bank employees. Covariance-based structural equation modelling (CB_SEM) is used to test the proposed relationships. Our findings demonstrate that harmonious environmental passion is positively related to Wpeb, and this relationship is mediated by PLpeb. In addition, the results show that cultural femininity strengthens the direct effects of harmonious environmental passion on PLpeb and Wpeb. These findings will help managers to promote such pro-environmental behaviors at work in different cultural contexts through the implementation of various practices inducing the atmosphere that stimulates the development of environmental passion.

Keywords Organizational greening · Sustainability · Harmonious environmental passion · Employees' voluntary pro-environmental behavior at work · Private life voluntary pro-environmental behavior · Cultural femininity

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1 Introduction

Since environmental problems stem in human actions (Corral-Verdugo et al., 2020), the interest in studying the pro-environmental behavior (PEB) of individuals is increasing (Tian & Liu, 2022). From the organizational perspective, employee' PEB can positively contribute to sustainability and the minimization of environmental organizational footprint of organizations (Saifulina et al., 2020). PEB can be described as actor's inclination to engage in actions aimed at environmental protection or reduction of detrimental effects on nature (Liao & Yang, 2022). The term was examined in prior literature basically in two primary domains: at work and in private life (Ones et al., 2018).

Employee PEB at work can be classified as extra-role and in-role (Boiral et al., 2015). Voluntary PEB at work (Wpeb) would be included in extra-role behavior (Boiral, 2009; Saifulina et al., 2020) because of: having a connection to the job, but without a requirement to be executed; being performed because of the intrinsic willingness to improve the organization; and being oriented towards the future and directly not benefitting the person engaged in such a behavior (Lülfes & Hahn, 2013; Yuriev et al., 2018).

Although there is an intuitive link between Wpeb and PLpeb, the relationship between voluntary PEB in the different domains is not exhaustively explored (Paillé et al., 2017). Private life behavior is formed through establishing the model of living (Muster & Schrader, 2011) by means of self-identity, which defines human being (Whitmarsh & O'Neill, 2010). Hence, voluntary PEB integrated to private life will probably be repeated in any domains a person is acting in (Tudor et al., 2007). Some authors (Muster & Schrader, 2011) also indicate that home-work domains are interdependent and performing PLpeb at home can be a key to perform same patterns at work, contributing to organizational sustainability.

Passion is a strong feeling that, due to upward spiral of positive emotions, causes strong attachment to the activity of passion and willingness to engage in a performed activity repeatedly. Positive emotions resulting from passion promote creative thinking when solving problems related to passion activity (Vallerand, 2015). As such, harmonious environmental passion (HEP) may contribute to more respectful attitude towards nature, emphasizing the importance of environmental problems (Junot et al., 2017). HEP may play a crucial role on promoting Wpeb (Saifulina et al., 2020). Nevertheless, research examining the role of HEP to promote Wpeb is still very scarce, with limited attention in previous research (e.g., Luu, 2022).

Demographic characteristics of the population such as age, sex, or cultural background, have drawn the attention of the scholars to understand their role to promote PEB. Many authors argue that cultural variances need to be considered when studying Wpeb (Fränkel et al., 2019). However, studies on how the cultural context can affect the engagement in PEB are still limited (Wang et al., 2016). Country culture includes values, symbols, rituals, standards that are passed from generation to generation that can determine the extent of pro-environmentalism (Fränkel et al., 2019). Prior literature notes that masculinity-femininity dimension of national culture can be crucial for understanding the extent of employee engagement in voluntary PEB (Saracevic et al., 2022).

High feminine cultures are distinguished for their cooperation, nurturing and overall care for well-being (Hofstede & Bond, 1984), prioritizing taking care for the greater good and higher living standards that benefit every member of the culture. Feminine societies may be more aligned to foster pro-environmentalism and sustainability than masculine ones (Zelezny et al., 2000), since taking care for the environment leads to better living

conditions such as cleaner air and better food. Nevertheless, previous studies have disregarded the impact of national cultural variations on PEB, specifically masculinity-femininity dimension (Yuriev et al., 2018).

Furthermore, there is a considerable gap on examining the antecedents of voluntary PEB across different countries (Yuriev et al., 2018). Existing research also represents low geographical dispersion, being carried out mostly in developed and English-speaking countries, such as United States (Kang et al., 2017), Canada (Boiral et al., 2018), Western European countries (Paillé et al., 2017). Central Asian countries and South American region were almost neglected by management research.

The primary aim of this work is to examine the intricate mechanisms that promote Wpeb, paying attention to the relationships between HEP, PLpeb, and Wpeb. The potential moderating impact of the masculinity-femininity dimension of national culture on the proposed relationships is also examined. Therefore, our research is focused on the following research questions:

1. What is the relationship between HEP and voluntary PEB, differentiating between private and work spheres?
2. To what extent the role of cultural femininity is important in the proposed relationships between HEP and voluntary PEB, differentiating between such behavior in private life and at work?

Hence, current article contributes to prior research as follows. First, we examine the relationship between voluntary PEB in private life and at work, which was overlooked by prior studies. Second, we analyse the influence of HEP on voluntary PEB, both at work and at home. While prior studies have paid attention to organizational antecedents of voluntary PEB, the role of individual antecedents as HEP has been largely ignored. Third, we add knowledge on mediating mechanisms in HEP-Wpeb relationship, examining the role of PLpeb. Since human behavior is mostly formed in private life by establishing models of living, it is interesting to trace whether the influence of HEP on home behavior is leading to repeat it at work in case of voluntary PEB. Fourth, by collecting data from different countries, we contribute to prior literature highlighting how certain aspects of national culture, specifically, masculinity-femininity, reinforce the relationship between passion and both Wpeb and PLpeb.

Finally, we answer a call to examine antecedents of voluntary PEB in different domains considering the setting of emerging economies, where the studies on such behavior is meagre. Considering that prior research has highlighted the contribution of bank activities to global environmental degradation (Ali et al., 2023), we have gathered surveys from bank employees.

2 Literature review

2.1 Empirical studies

Wpeb includes practices such as recycling paper, helping colleagues resolve eco-questions (Bissing-Olson et al., 2013), contributing to the organizational sustainability (Mahmud et al., 2023), minimizing organizational impact on negative environmental changes (Saleem et al., 2021), and bringing various pro-environmental benefits to the organization in

general (Zhang et al., 2024), such as affect efficient use of organizational resources directly (e.g., reduction in energy consumption), and indirectly (e.g., changing eco-harmful company practices) (Lülfes & Hahn, 2013).

Voluntary PEB performed in private life, include eco-consumption patterns, sustainable models of living and recycling habits (Muster & Schrader, 2011; Whitmarsh et al., 2018), resulting in specific traits of buying ecological products (Abbaszadeh, 2017), such as prioritizing purchases with eco-labeled packaging (Higueras-Castillo et al., 2019). Also, selection of more sustainable transportation options (Soderholm, 2013), recycling cans, bottles, paper and plastic (Robertson & Barling, 2013), using electricity and water efficiently (Mweemba & Wu, 2010) can be some examples of PLpeb. It can positively influence environmental situation, since the very nature of consumption behavior lies in resource usage (Muster & Schrader, 2011).

Very few studies have focused on specific private life behavior, such as recycling, affecting same behavioral patterns at work (McDonald, 2011). In this vein, a study performed among the workers from an office organization in Taiwan showed how PLpeb with regard to recycling positively influences similar behavior at work (Marans & Lee, 1993). Also, Tudor et al. (2007) found that employees recycling at home were more likely to do the same at work. However, the link between voluntary PEB in private life and at work is not exhaustively studied by prior literature.

Regarding the positive influence of HEP on PEB in private life and at work, prior research supports the relationship showing that HEP results in performance of voluntary PEB at work (Saifulina & Carballo-Penela, 2017), and in less extent PLpeb. In this line, Gousse-Lessard et al. (2013) found that HEP can lead to the development of PLpeb as mainstream environmental activism.

2.2 Theoretical background

2.2.1 Broaden-and-build theory of positive emotions

Broaden-and-build theory (BABT) is based on the concept of positive emotions (Fredrickson, 2001). The BABT was created to explain the individual engagement in certain behavior through understanding of positive emotions (Junot et al., 2017). According to the theory, positive emotions create upward spiral flows, that motivate individuals to engage in action once more to feel those emotions again, resulting in improved well-being (Fredrickson, 2001).

According to BABT, positive emotions broaden our awareness of the surrounding world, emphasizing the importance of intrinsic goals over extrinsic ones such as underlining the significance of environmental protection (Junot et al., 2017). Considered as a positive emotion (Vallerand, 2015), HEP may lead to the behavior that permits the individual to continue experiencing those positive emotions (Fredrickson, 2001). Hence, an individual with HEP would behave pro-environmentally to experience positive emotions resulting from their green behavior.

2.2.2 Cognitive dissonance theory

Cognitive dissonance framework (Festinger, 1957) explains dissonance as a state where an individual holds two completely inconsistent and controversial ideas simultaneously

(Aronson, 1969). Since people feel comfortable in a state of psychological consistency, the solution of the dissonance could be the change of cognition to make both of them fit (Aronson, 1969).

The individual roles in life come from various domains, private life domain being more important than working one (Lamm et al., 2015). Some work roles may be dissonant with private ones creating discrepancy and role conflict, that is tried to be avoided (Muster & Schrader, 2011). Contradicting PEB at work and at home would lead to the feeling of discrepancy and discomfort, provoking an individual to remove the situation immediately by being pro-environmental at work too, in this case.

2.2.3 Social identity theory

Social identity theory (Tajfel, 1974) is defined as “social psychological analysis of the role of self-conception in group membership, group processes, and intergroup relations” (Hogg, 2006, p. 111). The theory was developed to define intergroup behavior through the relationship between self and group processes (Hogg et al., 1995).

Expectations of society mark human behavior (Zelezny et al., 2000). In general, social behavior of individuals is shaped by role expectations within the context of cultural differences (Zelezny et al., 2000). This theory would help to understand the behavior of individuals considering different cultural dimensions described by Hofstede.

2.2.4 Theory of planned behavior

According to the theory of planned behavior (TPB) (Ajzen, 1985), the engagement in certain behavioral traits depends on the appraisal of the behavior as positive, perception of social importance of such, and perception of the self-ability of performance of certain actions (Ajzen & Fishbein, 1980).

As such, the general attitude towards that behaviors is formed (Bamberg & Möser, 2007; Tonglet et al., 2004; Willuweit, 2009). Some prior literature highlights that those attitudes may directly impact the performance of the behavior (Bissing-Olson et al., 2013), showing that positive attitudes towards the environment result in pro-environmental behavior (Bamberg & Möser, 2007; Kaiser et al., 1999).

2.3 Hypotheses development

2.3.1 Direct effects

Harmonious passion is a passion type that is generated through voluntarily internalized values. That means that the process of experimenting activities-object of passion generates positive emotions (Vallerand, 2015). According to BABT, positive emotions create upward spirals (Fredrickson, 2001), which produce a sense of contentment, resulting in well-being, willingness to learn more about the action being performed through creativity and engagement in related initiatives. Positive emotions from people with HEP would result in energy and positivity, encouraging a person to engage more in environmental activities and PEB (Gousse-Lessard et al., 2013; Robertson & Barling, 2013).

PEB performed as a result of HEP can be implemented in any setting comfortable for the individual, including private life and working setting (Gousse-Lessard et al., 2013).

Because environmental passion is harmonious and not obsessive, the PEB resulting from it would be voluntary (Vallerand, 2015).

Some authors in prior literature support the hypothesized relationship to some extent (Gousse-Lessard et al., 2013; Saifulina & Carballo-Penela, 2017). However, the studies examining the influence of HEP on PL_{peb} and W_{peb} are scarce. In this vein, we add knowledge to the field of pro-environmental behavior antecedents.

Based on those arguments, we propose next hypotheses:

Hypothesis 1 HEP is positively related to PL_{peb}.

Hypothesis 2 HEP is positively related to W_{peb}.

Individuals in life are assigned different roles derived from various domains (Lamm et al., 2015). PL_{peb} and W_{peb} are behavioral traits of common nature. The relationship between those behavioral types can be explained through cognitive dissonance theory (Festinger, 1957). According to the theory, individuals by nature try to minimize dissonance between working and private settings. Being pro-environmental at home and not doing so at work can represent a dissonance, which is needed to be eliminated to feel comfortable (Festinger, 1957). Because private life setting tends to influence individual behavior at work (Proshansky et al., 1983), performing PEB at work would be a way to eliminate cognitive dissonance (Muster & Schrader, 2011).

Performing voluntary PEB at home can also be a value representation of a person. From value congruence perspective (Tudor et al., 2007), engaging in the same behavior at work would result in such a value congruence (Lamm et al., 2015). Because of values, attitudes, and beliefs that encourage individuals to perform PEB at home, same behavior can also be performed at work (Tudor et al., 2007).

Also, the relationship between private life and workplace behavior can be considered from TPB perspective (Ajzen, 1991) that explains behavioral choices of individuals. According to this theory, if a person performs certain behavioral patterns at home that are positively valued, same behavioral patterns would be of a choice at work.

Prior literature argues that the overall atmosphere of the community could influence individual behavior at work (Proshansky et al., 1983) encouraging the repetition of the same actions when there are facilities at work available for the performance of such behavior (McDonald, 2015). Voluntary behavior patterns are stronger at a home than at work (Muster & Schrader, 2011), due to connectivity with nature (Dutcher et al., 2007), self-identity, the performance of such behavior freely (Fazio et al., 1992), and the influence of pro-environmental models of living (Roberts & Bacon, 1997). The existence of those elements forms a clear perception of behavioral traits in private life, which can be later performed at work (Muster & Schrader, 2011).

Some prior studies have confirmed the positive influence of recycling in private life on the same behavioral patterns at work (Marans & Lee, 1993; McDonald, 2011). However, prior literature largely ignored the relationship between named behavioral traits, which is covered by current research, contributing to the existing literature on PEB.

Based on those arguments, we propose next hypotheses:

Hypothesis 3 PL_{peb} is positively related to W_{peb}.

2.3.2 Mediating effects

Private life PEB can also mediate the relationship between HEP and W_{peb} . Since HEP motivates individuals to perform the activities to support the passion focus (Robertson & Barling, 2013), HEP can promote voluntary PEB in private life, which is in line with BABT (Fredrickson, 2001).

At home individuals may have more freedom and less limits when solving complications related to engagement in PEB: the absence of adequate facilities nearby may be solved by driving recyclable residuals to the closest recycling point. These issues at work can be more complicated to work out, because of insufficient infrastructure, general organizational culture or company goals that are not in line with sustainability (McDonald, 2011). Also, life habits are often formed precisely in private life through attitudes, values and other individual factors, forming person's self-identity that may establish general behavioral patterns in life (Paillé et al., 2017).

Such private life behavior can influence work behavior (Lamm et al., 2015). According to TPB and the life-to-work interventions, employees "bring in and develop their environmental values, ideas and private experiences to the workplace" (Muster & Schrader, 2011, p. 150), because life habits are often formed precisely in private life. Values formed in private experiences contribute to form a behavioral base, represent habits and guide of behavior at work (Muster & Schrader, 2011; Paillé et al., 2017). Prior literature did not mention proposed relationships, which highlight the importance of our study.

Based on those arguments, we propose next hypotheses:

Hypothesis 4 PL_{peb} mediates positively the relationship between HEP and W_{peb} .

2.3.3 Moderating effects

Behavior of human beings, including PEB, is conditioned by expectations induced by society on males and females and the cultural context where an individuals are socialized (Zelezny et al., 2000). If an individual is identified with the society, community culture would dictate roles to perform, shaping the behavior, as explains social identity theory (Hogg et al., 1995; Tajfel, 1974).

Hofstede's masculinity-femininity dimension is of a particular significance for organizational studies in the context of pro-environmentalism due to its ability to explain relationships between co-workers from the perspective of ethics and respect, and the extent of engagement in PEB at work (Carballo-Penela et al., 2023; Hofman & Newman, 2014).

Masculinity and femininity describe emotional roles of individuals in the society, indicating its dominant values (Li & Li, 2023). Masculine societies are defined in general as more self-determining and competitive (Hofstede & Bond, 1984; Zelezny et al., 2000), caring about self-gain and not paying attention to the general good and enjoying personal challenges (Li & Li, 2023).

On the contrary, feminine cultures are found to be more helpful and empathetic demonstrating the significance for the culture to care for others (e.g., family members, friends, environment) and increase the quality of life. Feminine societies are more concerned about health, safety, and environmental degradation than the masculine societies (Davidson & Freudenburg, 1996), because women statistically tend to be more cooperative and caring about the environment due to their roles of caregivers in general. As a result, feminine

societies acquire similar characteristics, caring more about their surroundings, including the environment (Hofstede & Bond, 1984).

In line with prior arguments, passion towards the environment may be easier developed and stronger manifested in feminine cultures due to the existence of pro-environmental values and caring towards nature (Davidson & Freudenburg, 1996) as a basic principle of society. Consequently, HEP-voluntary PEB relationship may also be stronger in such cultures.

Despite the importance of cultural context for PEB studies (Carballo-Penela et al., 2023; Hofman & Newman, 2014), in accordance to our knowledge, prior literature does not demonstrate exhaustive studies in this vein, which highlights the significance of including it to the current work.

In this vein, we propose next hypotheses:

Hypothesis 5a The cultural masculinity-femininity moderates the relationship between HEP and PLpeb. Specifically, the positive relationship between HEP and PLpeb is higher in countries with cultural femininity.

Hypothesis 5b The cultural masculinity-femininity moderates the relationship between HEP and Wpeb. Specifically, the positive relationship between HEP and Wpeb is higher in countries with cultural femininity.

The research model is shown in Fig. 1.

3 Methodology

3.1 Data and sample

The survey was conducted through online questionnaire among employees of banking sector in Ecuador and Kazakhstan. We obtained 331 valid answers. A pretest was implemented

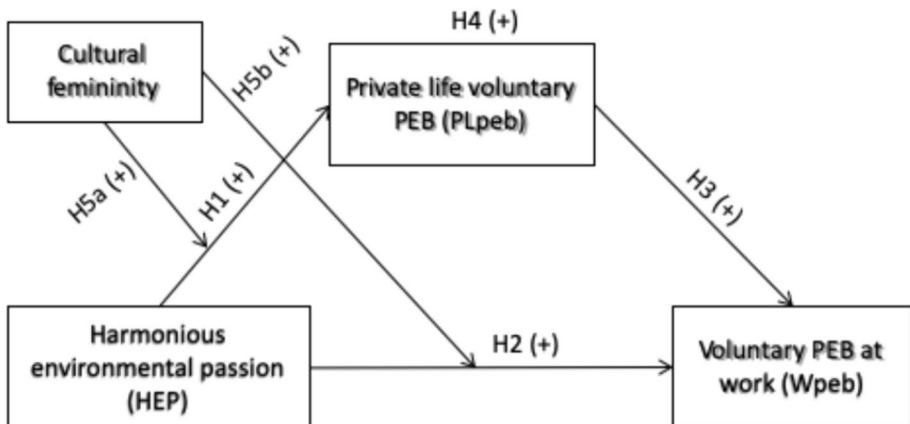


Fig. 1 Research model *Source:* Authors' own elaboration

among experts and academics with research interest in sustainability and green behavior with the aim of improving content validity.

The recommendations of Armstrong and Overton (1977) and Weiss and Heide (1993) were followed to test non-response bias by observing differences among 75% of early and 25% late respondents. The t-test resulted in following parameters: age ($p=0.227$), gender ($p=0.232$), education level ($p=0.411$) and years worked in the organization ($p=0.160$), rejecting possibility of non-response bias in this study.

The recommendations of Kock et al. (2021) and Podsakoff et al. (2003) were followed for limiting common method bias, including procedures such as clear recommendations for completing the survey, anonymity of responses and avoidance of long incomprehensible scales. Additionally, Harman one-factor test (Podsakoff & Organ, 1986) and Podsakoff et al. (2003) technique results demonstrated that common method bias was not an issue in this study.

3.2 Measures

Exhaustive literature review was performed together with consulting experts and academics in the field with the aim of establishing content validity. Therefore, previously validated scales were used to measure selected variables. Seven-point Likert-type scales were applied in this study. Four-item scale adapted from Robertson and Barling (2013) was chosen to measure HEP. PLpeb was operationalized and measured adapting three items from various sources (Bogner & Wilhelm, 1996; Mweemba & Wu, 2010; Whitmarsh & O'Neill, 2010). Wpeb was measured by three items from Robertson and Barling (2013). Cultural femininity (FEM) was measured based on Hofstede insights country comparisons. Studied countries were categorized with high cultural femininity if they score 50 or less points in Hofstede's masculinity dimension index (Hofstede Insights, 2023).

3.3 Data analysis approach

Data analysis was performed using Confirmatory Factor Analysis (CFA), Covariance-Based Structural Equation Modelling (CB-SEM) and Conditional Process Analysis (PROCESS). CFA estimation following Gerbing and Anderson (1988), Hair et al. (2022), and Hu and Bentler (1999) guidelines were applied to assess scale reliability, discriminant validity, and convergent validity. CB-SEM was used to test hypothesized relationships for direct and mediating effects using the guidelines of Kline (2015) and Hair et al. (2022) for direct and mediating hypotheses. Zhao et al. (2010) and Hayes (2022) recommendations were applied for moderation and moderated mediation analysis using bootstrapping.

For CFA and CB-SEM, we followed the recommended approach of considering a combination of key indices, the recommended thresholds for goodness of fit are $CFI \geq 0.90$, $IFI \geq 0.95$, $TLI \geq 0.95$, $NFI \geq 0.95$, and $RMSEA \leq 0.080$ (Byrne, 2016; Hair et al., 2022). For CFA analysis, firstly, with the aim of evaluating reliability, the recommended threshold values considered were the Cronbach's alpha coefficient ($CA > 0.70$), composite reliability ($CR > 0.60$), and average variance extracted ($AVE > 0.50$) for all the constructs (Bagozzi & Yi, 1988). Secondly, to assess convergent validity, all retained items should be related

to their specified constructs and demonstrate individual loadings significant and above the recommended threshold of 0.5 (Anderson & Gerbing, 1988). Thirdly, to evaluate discriminant validity, the explained variance per construct must be higher than the inter-construct correlations (Fornell & Larcker, 1981). Lastly, for PROCESS analysis, we estimated Hayes's Model #8 and reported confidence intervals computed with bootstrapping to assess significance of conditional effects and indices of interaction and moderated mediation (Hayes, 2022).

All the estimations were performed using IBM SPSS Amos 29.0 for CFA and CB-SEM (using Maximum Likelihood Method) and IBM SPSS Statistics 29.0 with PROCESS plugin for Conditional Process Analysis (Hayes, 2022).

4 Analysis and results

Conceptual model after the estimation demonstrated adequate fit indices (Vandenberg & Lance, 2000) (Table 1) and was considered acceptable.

CFA estimation (Table 1) have demonstrated chi-square of 152.485 with 49 degrees of freedom. Goodness of fit was established through the measurement of recommended

Table 1 CFA: summary measurement results, validity, and reliability

	Standardized loadings
HEP (CR=0.934; AVE=0.781; CA=0.933)	
I am passionate about the environment	0.836
I enjoy engaging in environmentally friendly behaviors	0.813
I enthusiastically discuss environmental issues with others	0.942
I passionately encourage others to be more environmentally responsible	0.937
PLpeb (CR = 0.864; AVE = 0.614; CA = 0.869)	
I save water by taking shorter showers	0.730
I use electricity and hot water efficiently	0.791
I make sure that during the winter the heating system in my room is not switched on too high	0.826
Whenever possible, I take a shower instead of a bath in order to conserve water	0.784
Wpeb (CR = 0.923; AVE = 0.749; CA = 0.925)	
I give suggestions to managers for improving pro-environmental behavior at my work	0.895
I take initiative to contribute to pro-environmental behavior of my company (trainings, conferences, debates, meetings, etc.)	0.873
I volunteer for projects or events that address environmental issues in my organization	0.843
I suggest new practices that could improve the environmental performance of my organization	0.849
Model fit summary	
Chi-square = 152.485 ($df=49$)	
CFI = 0.967; IFI = 0.967; TLI = 0.956; NFI = 0.953, RMSEA = 0.08	

HEP Harmonious environmental passion; PLpeb Private life voluntary pro-environmental behavior; Wpeb Voluntary pro-environmental behavior at work; CR Composite reliability; AVE Average variance extracted; CA Cronbach alpha

Table 2 CFA: measurement results and correlations

Construct	HEP	PLpeb	Wpeb	AVE	CR	CA
HEP	0.884			0.781	0.934	0.933
PLpeb	0.272	0.784		0.614	0.864	0.869
Wpeb	0.521	0.663	0.865	0.749	0.923	0.925

Diagonal is the square root of the AVE

AVE Average variance extracted; CR Composite reliability; CA Cronbach alpha

Table 3 Test of direct and mediating effects (CB-SEM): model fit summary, parameter estimates, and bootstrap confidence intervals

	Stand. coeff	<i>p</i>	Test	<i>LCI</i>	<i>UCI</i>
Path (direct effects)					
H1 HEP → PLpeb	0.272	0.000	***	0.124	0.384
H2 HEP → Wpeb	0.368	0.000	***	0.243	0.482
H3 PLpeb → Wpeb	0.563	0.000	***	0.465	0.671
Path (mediating effects)					
H4 HEP → PLpeb → Wpeb					
Direct effect	0.395	0.002	**	0.258	0.527
Indirect effect	0.164	0.001	***	0.083	0.264
Total effect	0.559	0.002	**	0.400	0.714
Model fit summary					
Chi-square = 152.482 (df = 49)					
CFI = 0.967; IFI = 0.967; TLI = 0.956; NFI = 0.953; RMSEA = 0.08					

p* < 0.05; *p* < 0.01; ****p* < 0.001; *ns*: Not significant

indicators, which were found inside conventional cut-off values as recommended by prior literature (Kline, 2015; Vandenberg & Lance, 2000), so we accepted the model as valid (Table 2). Since all latent variables exceed recommended 0.50 level of AVE (Table 2), composite reliability was also deemed as acceptable.

All proposed direct relationships were supported. In particular, HEP has a significant and positive impact on Wpeb, demonstrating 0.272 value at *p* < 0.001 (Hypothesis 1). Also, Hypothesis 2 demonstrated statistically meaningful result, depicting that HEP has a significant and positive impact on Wpeb (0.368; *p* < 0.001). Finally, PLpeb has a significant and positive impact on Wpeb (0.563; *p* < 0.001), which supported Hypothesis 3.

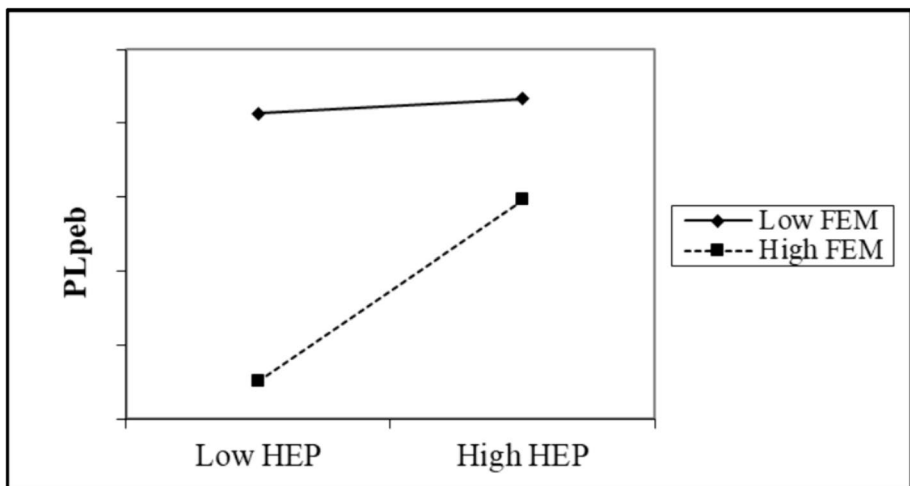
In addition, PLpeb positively mediates the relationship between HEP and Wpeb (Hypothesis 4). As both the direct effect of HEP on Wpeb (0.395; *p* < 0.01) and the indirect effect through PLpeb (0.164; *p* < 0.001) are statistically significant, results show partial mediation (0.559; *p* < 0.01), as shown in Table 3.

Moreover, results from test of moderation hypotheses, based on Hayes (2022) approach, reveal that cultural femininity moderates the relationship between HEP and PLpeb (H5a), and between HEP and Wpeb (H5b) such that both relationships are stronger for employees with higher femininity (Kazakhstan) than with lower femininity (Ecuador), in other words, for feminine cultures than for masculine cultures (Table 4). The interaction effects are depicted in Figs. 2 and 3, using guidelines of Aiken et al. (1991).

Table 4 Moderation-only effects and moderated mediation effects (conditional process analysis)

H5a: Conditional effects of HEP on PLpeb (at values of FEM)					
	Effect	SE	<i>p</i>	LLCI	ULCI
0 (low)	0.098 <i>ns</i>	0.067	0.146	-0.034	0.229
1 (high)	0.526***	0.059	0.000	0.409	0.643
Unconditional interaction		ΔR^2	F	<i>p</i>	
Test of interaction		0.048	22.905	0.000	
H5b: Conditional effects of HEP on Wpeb (at values of FEM)					
	Effect	SE	<i>p</i>	LLCI	ULCI
0 (low)	0.292***	0.063	0.000	0.169	0.415
1 (high)	0.517***	0.062	0.000	0.396	0.639
Unconditional interaction		ΔR^2	F	<i>p</i>	
Test of interaction		0.011	6.799	0.010	
Conditional indirect effects of HEP on Wpeb through PLpeb (at values of FEM)					
	Effect	BootSE	BLLCI	BULCI	
0 (low)	0.042 <i>ns</i>	0.028	-0.009	0.100	
1 (high)	0.228**	0.043	0.154	0.322	
Index of moderated mediation					
	Index	BootSE	BLLCI	BULCI	
PLpeb (Mediator)	0.186**	0.045	0.105	0.282	

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; *ns*: Not significant. Bootstrap confidence intervals derived from 5000 samples (95% level of confidence)

**Fig. 2** Moderation effect of FEM on the HEP–PLpeb relationship

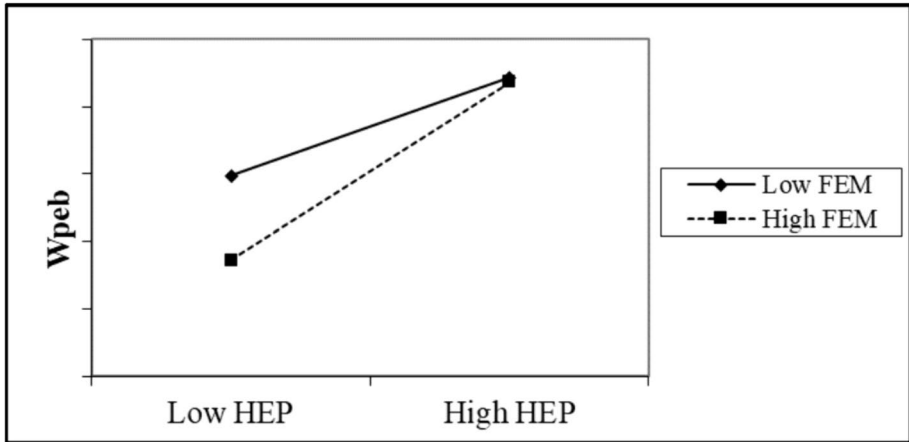


Fig. 3 Moderation effect of FEM on the HEP–Wpeb relationship

Besides, moderated mediation was also statistically significant stating that there is an effect of country culture on the relationship between HEP and Wpeb through PLpeb, such that the conditional indirect effects are stronger for employees with higher Cultural Femininity (Kazakhstan) than other with lower Cultural Femininity (Ecuador). As shown in Table 4, the moderated mediation index value was 0.186 (95% CI=(0.105, 0.282)), which was significant.

5 Discussion and implications

5.1 Discussion

This study contributes to the existing PEB literature by examining the relationship between HEP and voluntary PEB of employees both in private life and at work. Our findings support Hypotheses H1 and H2 showing that HEP positively affect engagement in PLpeb and Wpeb. These results are in line with theoretical assumptions of BABT (Fredrickson, 2001), which highlights the importance of upward spiral created by the engagement in the activity of passion, resulting in high willingness to engage in pro-environmental activities voluntarily regardless of the context. Very few studies support the aforementioned findings, claiming that HEP is positively related Wpeb. For instance, research conducted in the USA and Canada, found that HEP resulted in employee PEB (Robertson & Barling, 2017). Also, the study for public organization employees in Spain support the same results (Saifulina & Carballo-Penela, 2017). Unfortunately, the research on the effect of HEP on PLpeb is still more scarce and focused on very few behavior types such as environmental activism (Budzanowska-Drzewiecka & Tutko, 2021).

The results also show statistically significant and positive relationship between PLpeb on Wpeb (H3). In line with the framework of cognitive dissonance theory (Festinger, 1957), this result shows that repeating private life behavior at work contributes to eliminating dissonance. These findings were supported by prior literature

in case of recycling (Marans & Lee, 1993; McDonald, 2011) and energy conservation (Scherbaum et al., 2008). Some authors (Tudor et al., 2007; Whitmarsh et al., 2018) also support the transferability of recycling from home to work.

Besides, the findings show the mediating role of PLpeb between HEP and Wpeb (H4). The obtained findings reveal that cultural femininity moderates the relationship between HEP and PLpeb (H5a) and Wpeb (H5b). Prior literature stresses the importance of research regarding national culture (Yuriev et al., 2018). However, because most of the previous works are based on one culture samples, very few studies consider national cultural variables in the context of Wpeb (Yuriev et al., 2018), particularly, cultural femininity.

Finally, results also show that the conditional relationship between HEP and Wpeb via the mediation of PLpeb was found to be moderated by cultural femininity. Such moderated mediation model was not studied before in the context of voluntary PEB.

5.2 Research implications

A significant part of organizational greening is concentrated in hands of employees and depends on employee behavior at work (Lülfes & Hahn, 2013). Understanding complex mechanisms of promotion of such behavior can be a key to reach a more sustainable use of available resources of the organization and the minimization of environmental footprint. This research contributes to prior literature in the field of voluntary PEB, by examining the relationship between PLpeb and Wpeb and the role of HEP to promote both behaviors. Employees with HEP are creative and much more autonomous at work (Liu et al., 2011). Besides, our findings underline positive outcomes of HEP, related to encouragement of both PLpeb and Wpeb, having stronger influence on the latter.

HEP is a variable seemingly unrelated to the organizational context (Saifulina et al., 2020), and companies interested in promoting Wpeb commonly pay attention to other variables from organizational context such as perceived organizational environmental support, leadership of supervisors, and colleagues' PEB. Nevertheless, HEP still can have positive effects on PEB, contributing to the organizational sustainability (Tian & Robertson, 2017). As our findings demonstrated, HEP is positively related to PLpeb and Wpeb, having a bigger influence on Wpeb. Thus, promoting HEP may be a priority for the companies willing to promote Wpeb. Companies can create an organizational atmosphere where HEP is promoted by, for instance, encouraging employees to prioritize environmental responsibility in their daily work practices by emphasizing the significance and positive impact of such actions for future generations, social welfare (Soyez, 2012) and the company itself.

Moreover, our findings point out the relevance of PLpeb to promote Wpeb directly and as an underlying mechanism through which HEP influences Wpeb. Prior research emphasize that private life domain roles assigned to the individuals influence work roles (Lamm et al., 2015) and our results confirm that point. Since PLpeb is important factor in promotion of Wpeb, certain recruitment and selection strategies may involve giving preference to individuals who exhibit pro-environmental values, because such individuals are more likely to cultivate a sense of HEP and behave in environmentally responsible way at home. Such employees may create, evaluate and implement different pro-environmental activities at work (Muster & Schrader, 2011). This finding contributes to prior literature, as the exploration of the link between home and work green behavior is scarce (Paillé et al., 2017).

These findings can be explained from the point of view of spillover effect (Truelove et al., 2021), defined as an effect of encouraging the performance of the behavior without actual encouragement of it (Truelove et al., 2014). Such effect may be positive, when increase in one behavior is associated to the increase in another; and negative, when the successful increase in one behavior is related to the reduction of another (Truelove et al., 2014). The spillover effect has been examined in different spheres such as work-life balance research (e.g., Mennino et al., 2005), being also studied in PEB literature (Maki et al., 2019). In case of our work, we are talking about positive spillover effect (Truelove et al., 2014) between PLpeb and Wpeb.

By collecting data in two countries with different national culture, this research also provides knowledge regarding the role of cultural femininity on the relationship between HEP and voluntary PEB. Cultural values from feminine societies are cooperation, caring, interpersonal relationship and live improvement (Hofstede & Bond, 1984). Because caring may include caring for the environment (Davidson & Freudenburg, 1996), cultural feminine countries are intended to be more pro-environmental.

Our findings confirm this assumption, showing that cultural femininity reinforces the positive effect of HEP on both PLpeb and Wpeb. However, when considering PLpeb, the results show that the moderating effect only occur under high femininity conditions.

Other national-level factors (e.g., collectivism or governance) could also influence the relationship between HEP and some pro-environmental behaviors (Carballo-Penela et al., 2024). It seems that, in our study, when femininity is low, those factors can compensate the positive effect of cultural femininity, which would not be enough for having a significative effect on the relationship between HEP and PLpeb. On the other hand, when femininity is high, other national factors are not enough not to impede the reinforcement effect of cultural femininity. This difference between low and high femininity does not occur in the work domain. As private life behavior is more exposed to different external factors than work behavior, our findings suggest that other national factors are not as relevant at the work domain and femininity always reinforces the effect of HEP on Wpeb, even at low levels. Further research is needed to confirm this point.

Current research results are obtained in the context of two developing countries not studied before, which broadens the geographical scope of literature focused on voluntary PEB. The importance of such works is highlighted by prior studies (Yuriev et al., 2018). Finally, as far as we know, prior research did not examine proposed relationships with moderated mediation analysis, which provides a more comprehensive view of the set of studied relationships.

From the managerial point of view, those findings could help managers to develop strategies for promotion of PEB at work. In the context of countries with high cultural femininity, HEP can be developed in an easier way than in masculine societies. Managers from countries with low cultural femininity may require greater emphasis and attention on practices fostering HEP in order to engage employees in Wpeb than managers from feminine societies.

Also, while PLpeb may be considered an individual factor unrelated to the working environment, the organization can still emphasize the significance of certain behavioral traits at home with the aim of promoting Wpeb through PLpeb. One way to do this may be by providing concrete information on environmentally friendly actions such as energy-saving practices at home (Minelgaité & Liobikienė, 2021). This proactive approach may encourage employees to adopt PLpeb.

In case of banks, their ecological footprint may not be very evident, because the banking sector activity in terms of its environmental impact sometimes is neglected by research

(Zhou et al., 2022). This study spotlights the importance of the voluntary PEB in the context of banks, and highlights the role of the HEP to bank managers interested in reducing their environmental impact. Some pro-environmental programs and initiatives such as environmental education and training (Minelgaitė & Liobikienė, 2021) may raise employee awareness on eco-degradation through, for instance, educational speeches on environmental issues (Saulick et al., 2023). Such awareness increases environmental knowledge, which is a key to foster HEP and improve existing PEB (Saulick et al., 2023).

These findings can be considered relevant to Ecuadorian and Kazakhstani banking sector providing reinforcement for the prior literature evidence.

As for policy implications of the current study, in order to foster HEP, which leads to Wpeb, and, as a consequence, PLpeb and Wpeb, implementing green policies and practices should help organizations striving for sustainability. Some practices such as green recruitment, green training, green performance management, and green rewards may be considered an option (Li et al., 2023). Through those policies the process of fostering a green work climate may be achieved where employee Wpeb will be supported and encouraged by managers (Norton et al., 2014).

However, organizations wanting to promote voluntary PEB should be careful. Some obligatory policies or direct incentives for performance of certain behavior, may lead to negative spillover between PLpeb and Wpeb, because obliged behavior may lead to the unwillingness to perform PEB when not watched and controlled, or even unwillingness to have involved such behavior in self-identity (Vallerand, 2015).

In addition, organization can establish a policy of provision of psychological support for their employees for engagement in environmental sustainability (Li et al., 2023). Organizations striving to sustainability should ensure correct provision of all necessary support and resources to their employees at work in order to achieve sustainable goals.

5.3 Limitations and future research lines

Firstly, since gathered data is self-reported, the results may also capture variation in social desirability bias across studied cultures due to the desire to give answers that are socially acceptable (Cerri et al., 2019). Secondly, future research may include other Hofstede cultural dimensions (e.g., collectivism) and national factors as moderators in the proposed relationships. The findings regarding cultural femininity suggest that a more complete analysis of different moderators on the relationships between HEP and both PLpeb and Wpeb could provide interesting knowledge to understand how those relationships are reinforced. Thirdly, more variables from environmental literature could be added to the proposed model, such as environmental concern or the New Environmental Paradigm as the antecedents of HEP. Fourthly, since this research is focused on two countries and one sector of the economy, the generalizability of findings is potentially limited. Future research should collect data in more countries and sectors. Finally, cross-sectional nature of this work does not allow for drawing causal insights. Future research should perform longitudinal or experimental designs to gain a better understanding of causality in the context of this study. Notwithstanding aforementioned limitations, given the scarcity of research in the area of voluntary PEB, the findings of current study are hoped to contribute to better understanding the relationship between HEP and voluntary PEB both at home and at work.

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Data availability The datasets generated by the survey research during and/or analyzed during the current study are available upon reasonable request.

Declarations

Conflict of interest All authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

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