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The Relationship between Growth Mindsets and Climate Action Among Filipino Early Adults

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Abstract

Education is considered crucial for spreading awareness about climate change. By providing knowledge, skills, and values, it empowers individuals to become agents of change. However, transforming knowledge into action would require an understanding of its determinants. Emerging research on mindsets suggests a connection between growth mindsets and sustainability efforts; however, there are few empirical studies, particularly those focusing on young Filipino adults. Research indicates that individuals with a growth mindset are more aware of climate change, believe in mitigation, and are more likely to act sustainably. However, the influence of individual and group mindsets on climate action, particularly in diverse cultural contexts like the Philippines, requires further investigation. The purpose of the study was to examine the relationship between growth mindsets and climate actions. This study included 592 (263 male and 330 female) young Filipino adults (ages 18 to 26) in the National Capital Region (NCR). This study adapted and validated the measures for growth mindset and climate action from Rissanen et al. (2024). The CFA results indicated acceptable structural validity for the scales after the removal of poorly fitting items. The results of the descriptive statistics suggest that participants scored slightly higher on "Mindsets about groups" (ITG) than on "Mindset about persons" (ITP). In terms of climate action, "Willingness to build a sustainable world" (CARE) is slightly higher than "Inclination to discuss climate change" (DISC). The mean score for "Individual climate action" (IND) is higher than that of "Collective climate action" (COL). In terms of zero-order correlations, "Mindsets about groups" (ITG) and "Willingness to build a sustainable world" (CARE) were the only variables that exhibited significant relationships. Regression analysis revealed that "Mindsets

about groups" (ITG) significantly, though weakly, predicted "Willingness to build a sustainable world" (CARE), contrasting with Western research that suggests more individualistic tendencies in European youth. This divergence highlights potential cultural differences in climate action approaches.

Keywords: growth mindsets, climate action, Filipino early adults, implicit beliefs, construct validity

Introduction

The severe global challenge of climate change demands urgent and decisive action (Uras, 2025). Its impacts, including extreme weather events and rising sea levels, are becoming increasingly severe and widespread. The deterioration of air, water, and soil quality, coupled with the ongoing decline and damage to ecosystems and their impact on plants and animals, has led to environmental changes. These alterations pose both immediate and future dangers and risks to human health (Quilon, 2024). The United Nations (n.d.) warns that delaying action on climate change will result in more difficult and costly consequences to manage in the future. Indeed, climate change poses severe threats to the environment and all life, which points to the importance of immediate solutions (Uras, 2025). As a crucial step in this urgent effort, the Paris Agreement, a significant international treaty adopted in 2015 and implemented in 2016, legally binds United Nations (UN) member countries to combat climate change (Uras, 2025).

Uras (2025) highlights that in 2015, United Nations (UN) member countries adopted the 2030 Agenda for Sustainable Development, which encompasses the Sustainable Development Goals (SDGs). These SDGs represent global targets aimed at tackling pressing issues such as global warming, human rights, inequality, and power imbalances. Recognizing that no single nation can achieve these global goals independently, Uras (2025) emphasizes the critical importance of international cooperation.

Barreda (2018) notes the high vulnerability of the Philippines to climate change, attributing it to the nation's reliance on climate-sensitive agriculture and limited resources for adaptation. The United Nations Framework Convention on Climate Change (UNFCC) 2007 report (as cited in Barreda, 2018) further emphasizes that developing nations like the Philippines are particularly susceptible due to fewer social, technological, and financial resources, a situation expected to hinder their sustainable development severely. Consequently, the youth are identified as a demographic group that will be significantly impacted.

Cabrera and associates (2023) argue that education is important for raising awareness about climate change and inspiring individuals to take action. Education empowers them to become agents of change in addressing the climate crisis by equipping them with the necessary knowledge, skills, and values (United Nations, n.d.). Hence, educational institutions play a crucial role in encouraging the youth to engage actively in addressing the adverse effects of climate change.

Educational Programs and Policies on Climate Change in the Philippines

According to De Leon (2023), the Philippine government has consistently implemented policies to align the education system's standards with the principles of Education for Sustainable Development (ESD). The UNESCO-recognized Southeast Asian Center for Lifelong Learning for Sustainable Development (SEACLLSD), based in the Philippines, serves as a framework for lifelong learning in conjunction with ESD standards, prioritizes research, and acts as a regional management hub in Southeast Asia (Valencia, 2018).

The Philippines has consistently supported climate change education, driven by the Republic Act (RA) No. 9729, also known as the "Climate Change Act of 2009" (DepEd, n.d.). This law, enacted to integrate climate change considerations into government policy and establish a framework for national strategies, mandates the Department of Education (DepEd) to incorporate climate change into the basic education curricula.

DepEd has strengthened these initiatives through the Enhanced Basic Education Act of 2013, or the K-12 Act. This law integrates important concepts related to Disaster Risk Reduction and Management (DRRM) and Climate Change Adaptation (CCA) across various subjects from kindergarten through junior high, including Health, Science, Araling Panlipunan (Social Studies), and Edukasyon sa Pagpapakatao (Values Education).

Moreover, senior high school students in the STEM strand study a special subject on disaster risk reduction and learn about climate change in Earth Science and Life Science. In addition to these, DepEd has also pushed for caring for the environment through different school activities, like the "Youth for Environment in Schools Organization (YES-O)" (Department of Education, 2011, p. 1). This initiative includes programs like "Gulayan Sa Paaralan," ecological solid waste management, and tree growing and caring as part of the National Greening Program (NGP) (Department of Education, 2014, p. 1). Furthermore, DepEd has even allowed students In line with international Disaster Risk Reduction (DRR) standards, the Philippine government is dedicated to mitigating disaster risks. This dedication resulted in the establishment of Republic Act 10121, commonly referred to as the “Philippine Disaster Risk Reduction and Management Act,” which was enacted on May 27, 2010, during the administration of President Gloria Macapagal Arroyo (Republic Act No. 10121, 2010, p. 1; Mamon et al., 2017). This legislation strengthens the Philippine DRRM system by formalizing the National DRRM Plan and mandates the National Disaster Risk Reduction and Management Council to develop the National Disaster Risk Reduction and Management Framework, the key guide for DRR activities across the Philippines.

At the tertiary level, these efforts continue. There are university-initiated environmental programs, such as the Project SWITCh program at Bicol University (Perez, 2021). This program demonstrated that educational initiatives can improve students' understanding of environmental concepts and issues. Although the program produced positive outcomes in these areas, it also indicated a need for further skill development in reducing, reusing, and recycling.

Another study conducted at the university level by Edralin and Pastrana (2019) analyzed global university sustainability reporting practices, finding high disclosure levels, especially among European universities. The study recommends that Philippine universities benchmark their practices against these leaders. This global perspective is complemented by their subsequent study (2022), which delves deeper into the specific implementation of SDGs within Philippine publicly listed companies. The latter study found that most companies have integrated SDGs into their mission and implemented health and education programs.

These research findings are similar to the issues and concerns observed by Bustamante and Viloria (2021) regarding San Beda University's efforts to implement the Sustainable Development Goals (SDGs). While the university's efforts to align with the SDGs in areas like education and partnerships are commendable, the identified gaps in faculty research, climate action, and inequality documentation underscore the need for continued improvement.

While schools foster climate change awareness, the key issue for individuals is turning their classroom knowledge into real-world behavior. Therefore, identifying its determinants is imperative. According to Dweck et al. (1995), a mindset is a set of beliefs that shapes how a person understands the world and themselves. It's a core assumption or 'self-theory' about the malleability of personal attributes like intelligence, talent, and personality. According to Bernardo (2022, p. 675-676), “the mindset is proposed to be associated with a range of positive outcomes, including higher school achievement and stronger reading engagement and comprehension.”

Mindsets (Implicit Beliefs): Fixed vs. Growth Mindset

Dweck and her colleagues (1995), along with Makel and others (2015), suggest that mindset, or individuals' beliefs about their own abilities, influences their expectations, how they interpret new information, and their behavior. Dweck et al. (1995) identified two main beliefs people hold about important personal qualities, such as intelligence or morality. Some people believe that their traits are fixed and cannot be changed, and this viewpoint refers to a fixed mindset. On the

other hand, some individuals maintain a growth mindset, believing that their abilities can improve and grow over time. Dweck and her colleagues (1995) observed that those individuals with a fixed mindset often focus on performance goals, which means that they need to prove their competence and meet external expectations. In contrast, Dweck and Leggett (1988) found that people with a growth mindset prioritize learning, value progress, and often take on challenging tasks. Furthermore, studies by Costa and Faria (2018), Dweck and Leggett (1988), and Robins and Pals (2002) show that when faced with difficulties, individuals with a growth mindset tend to increase their effort, improve their problem-solving skills, and persist in enhancing their abilities.

Dweck and her colleagues (1995) argued that neither a fixed nor a growth mindset is inherently better or superior to the other. Instead, they represent distinct ways of thinking, each with its own advantages and disadvantages. Specifically, believing that human traits are fixed (i.e., entity theory) can help predict behavior; however, this simplified view might also lead to quick conclusions and ineffective problem-solving (Dweck et al., 1995). On the other hand, the incremental theory, which suggests traits can change over time, is more complex, yet it encourages persistence and resilience when facing challenges. Dweck and her colleagues (1995) stated that these mindsets operate differently and affect various aspects of a person. While a fixed mindset might be more effective in stable situations, a growth mindset could be more beneficial when circumstances are dynamic or uncertain.

Individuals' beliefs about their personal characteristics, specifically if they view these traits as unchangeable (fixed mindset) or capable of improvement (growth mindset), impact their decisions, their assessments of situations, and their reactions to different circumstances (Dweck et al., 1995; Dweck & Leggett, 1988). Therefore, these varying personal beliefs may lead individuals to a different worldview, which in turn influences their approach to tasks, their self-perceptions of capability, and their strategies for coping with demanding situations (Dweck et al., 1995).

A study conducted by Bulaon and Shoji (2022) indicates that early childhood experiences, particularly those involving natural disasters, significantly influence the development of fixed mindsets in later life. This makes it imperative to prioritize the care of infants and mothers within the disaster-prone areas in the country. Furthermore, research by Lualhati et al. (2018) indicated the importance of other factors, such as family income, parental education, and academic performance in natural sciences in shaping environmental awareness among Filipino students. Collectively, these studies emphasize that a strong focus on early childhood care and education is necessary for making individuals who are equipped to understand and address environmental challenges.

Mindset research, though considered relatively new, is providing an understanding of how a person's way of thinking affects his or her own decisions and actions related to the environment, climate change, and sustainability (Rissanen et al., 2024). However, this area of discipline still requires more studies to fully understand its connections (Rissanen et al., 2024). Although current findings suggest that people with a growth mindset, which means they believe that their abilities and intelligence can still be developed or changed, tend to be more aware of the seriousness of climate change. They also seem more likely to believe its effects can be reduced and are more willing to engage in environmentally friendly behaviors (Duchi et al., 2020; Rissanen et al., 2024; Soliman & Wilson, 2017).

Rissanen and associates (2024) investigated the relationship between mindsets and climate action among young people in Europe. Their findings demonstrated a correlation between a growth mindset and climate action. However, to confirm if this connection is universal, there is a need to compare these findings with studies from other countries. Although there is increasing research on how mindsets relate to climate action, we still do not fully understand how individual and group mindsets affect climate initiatives, especially among young Filipino early adults, as more research is needed to understand the specifics of mindset-driven climate action in diverse cultural settings beyond Western individuals. Therefore, this research replicates the study by Rissanen and associates (2024) to explore how individual and group mindsets affect climate actions among young Filipino adults.

Conceptual Model and Operational Framework

Individuals hold varying beliefs about the flexibility of human characteristics and group traits. These beliefs, known as mindsets or implicit theories, function as cognitive frameworks that influence our thoughts, emotions, and behaviors (Burnette et al., 2013; Dweck, 2000; Molden & Dweck, 2006). According to Hong et al. (1995, p. 198), “Implicit theories of intelligence are beliefs about the fundamental nature of intelligence, specifically whether intelligence is a fixed entity that cannot be changed (an *entity* theory) or a malleable quality that can be increased through one's efforts (an *incremental* theory).”

Leggett (1985) introduced the concepts of incremental and entity mindsets, which describe how individuals perceive their intelligence and abilities. Specifically, an incremental mindset views intelligence as a dynamic quality that can be enhanced through effort, whereas an entity mindset regards it as fixed and unchangeable. Furthermore, Dweck and Leggett (1988) demonstrated that individuals with a growth mindset are more intrinsically motivated to develop their skills, while those with a fixed mindset are primarily driven by external rewards or the desire to avoid negative outcomes.

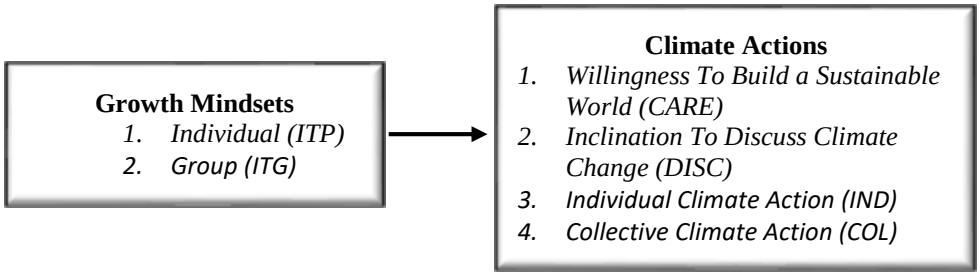
However, it is important to note that mindsets are not rigid categories but rather exist along a continuum. Moreover, an individual's mindset can vary depending on the specific area or domain, meaning a person might exhibit a growth mindset in one field while holding a fixed mindset in another (Chan et al., 2022; Haukås & Mercer, 2021).

Climate action encompasses any environmental initiative aimed at addressing anthropogenic climate change. Specifically, as defined by Jensen and Schnack (1997), climate actions are voluntary decisions made by individuals or groups to contribute to climate change solutions. These actions can be direct, such as reducing personal carbon emissions, or indirect, such as advocating for policy changes or educating others about climate issues. Both environmental education and climate change education frequently motivate individuals to take personal action because educators and environmental specialists often view behavior modification as a significant objective of their efforts (Rissanen et al., 2024).

Rissanen and colleagues (2024) examined how mindsets relate to climate action among young Europeans; specifically, their research indicated a connection between growth mindsets and some aspects of climate action, although the specific nature of this relationship differed across various European nations. In contrast, while Soliman and Wilson (2017) took an opposite approach, they demonstrated that fixed mindsets about the world decrease pro-environmental behavior through increased climate skepticism and reduced belief in societal change. Meanwhile, Cuadrado et al. (2023) showed that growth mindsets about climate change are associated with greater pro-environmental intentions and behavior.

Figure 1.

Research paradigm showing the connections between Growth Mindsets and Climate Actions of the Filipino Early Adults.



Drawing upon this existing research, particularly by Rissanen and colleagues (2024), the current exploratory study hypothesized that growth mindsets would positively predict climate actions among Filipino young adults.

Figure 1 illustrates the proposed positive relationships between growth mindsets and the climate actions of young Filipino adults. The first box represents the two dimensions of growth mindsets regarding the malleability of individuals and groups, namely "Mindsets about persons" (ITP) and "Mindsets about groups" (ITG). These serve as predictors of climate actions, as presented in the second box, specifically: "Willingness to Build a Sustainable World" (CARE), "Inclination to Discuss Climate Change" (DISC), "Individual Climate Action" (IND), and "Collective Climate Action" (COL).

Based on previous studies, it is indicated that a growth mindset, defined as the belief that capabilities and intelligence can be developed over time, is linked to heightened climate change awareness. This perspective also appears to increase people's confidence in their ability to lessen climate change's effects and boost their motivation to participate in behaviors that benefit the environment (Duchi et al., 2020; Rissanen et al., 2024; Soliman & Wilson, 2017). Therefore, the following are the hypotheses of the study:

Hypothesis 1: The relationship between Filipino early adults' growth mindsets (on the two dimensions of malleability) and their climate actions is significantly and positively related.

Hypothesis 2: Growth mindsets on the two dimensions of malleability significantly and positively predict Filipino early adults' climate actions.

Statement of the Problem

The purpose of this study was to determine the relationship between growth mindsets and climate actions among Filipino early adults in the NCR. Specifically, this research aimed to answer the following questions:

1. What is the level of Filipino early adults' growth mindsets on the two dimensions of malleability: 'Mindsets about persons' (ITP) and 'Mindsets about groups' (ITG)?
2. What is the level of climate actions of Filipino early adults, specifically their “Willingness to Build a Sustainable World” (CARE), “Inclination to Discuss Climate Change” (DISC), “Individual Climate Action” (IND), and “Collective Climate Action” (COL)?
3. What is the relationship between Filipino early adults' growth mindsets (on the two dimensions of malleability) and their climate actions?"
4. How do growth mindsets on the two dimensions of malleability predict Filipino early adults’ climate actions?

Methodology

Research Design

This study employed a cross-sectional, predictive design to investigate the relationship between and the predictive influence of growth mindsets and climate action among participants, without conducting experimental manipulation (Johnson & Christensen, 2014; Nieva, 2022). "Cross-sectional as a research dimension means that data were collected from participants only once, at a single point in time, while prediction as a research objective aimed to forecast future events or behaviors by analyzing patterns within the collected data" (Nieva, 2024, p. 156; Nieva et al., 2024, p. 5468).

Participants

This study comprised a total of 592 participants, specifically 263 male and 330 female early adults from the National Capital Region (NCR). Importantly, this sample size met the recommended minimum of 10-15 data cases per predictor for regression analysis. Furthermore, participants were early adults, aged 18-26, as defined by Bonnie et al. (2014), with a mean age of 21 and a standard deviation of 2.095. Finally, they were selected using convenience sampling.

Measures

This study adapted measures from Rissanen and associates (2024), subsequently analyzing them with confirmatory factor analysis to establish the within-network construct validity of the measures before the regression analysis. The following are the descriptions of the scales.

Growth Mindsets were measured with two scales. Levy et al.'s (1998) three items were used to study "Mindsets about persons" (ITP), and Halperin et al.'s (2011) three items to study Mindsets about groups" (ITG). All these items had negative wordings, meaning that on a Likert scale (1 = strongly disagree, 6 = strongly agree), lower scores indicated growth mindset tendencies and higher scores fixed mindset tendencies. For the analysis, the scales of mindset items were reversed, with higher scores referring to a growth mindset and lower scores to a fixed mindset. Reliability estimates for growth mindsets based on internal consistency using Cronbach's alpha and McDonald's omega are as follows: ITP: $\alpha = 0.734$ and $\omega = 0.742$, and ITG: $\alpha = 0.734$ and $\omega = 0.735$, which suggests that these scales are reliable.

Climate Action was measured through four dimensions. Firstly, to measure the participant's willingness to help create a sustainable world, a scale was taken and adopted from Colebrook-Claude's (2019) Adolescent Internal Environmental Locus of Control Scale. Five items were evaluated on a four-point scale (1 = not

at all important, 4 = very important). Secondly, using four items from the Climate Justice Survey (2020, 2021), participants were asked to evaluate how often they discussed climate change with their family, friends, and teachers. Climate action was measured using the three items referring to individual action and three items describing collective action (Climate Justice Survey 2020, 2021). These scales used a six-point scale (1 = never, 6 = daily). Reliability estimates for climate action based on internal consistency using Cronbach's alpha and McDonald's omega are as follows: CARE: $\alpha = 0.819$ and $\omega = 0.824$; DISC: $\alpha = 0.877$ and $\omega = 0.880$; IND: $\alpha = 0.799$ and $\omega = 0.801$; and COL: $\alpha = 0.819$ and $\omega = 0.812$, which suggests that these scales are reliable.

Procedure

This study applied for ethical approval from the university's Research Ethics Board with the designated approval number of SBU-REB-2024-010. The survey questionnaires were administered online using Microsoft Forms. All participants were provided with written informed consent informing them that their anonymity and the confidentiality of their responses throughout the research were assured. This research administered two sets of questionnaires. A measure designed to assess growth mindsets and another to evaluate perceptions of climate action. After completion of data collection, the data were analyzed using JASP statistical software (version 0.16.2).

Data Analysis

The initial data analysis involved calculating descriptive statistics such as skewness, kurtosis, mean, standard deviation, and zero-order correlations. McDonald's omega and Cronbach's alpha were utilized to examine the reliability of the scales, while a Confirmatory Factor Analysis (CFA) was conducted to examine the factor structure, or within-network validity, of all the scales (i.e., Growth Mindsets and Climate Action). For the main analysis, a multiple regression was performed using the forced entry method. According to Field (2019), this method is suitable for theory testing.

Results and Discussion

This study was conducted to determine the relationship between growth mindsets and climate actions among early adults in the NCR, Philippines. Before the regression analysis, the factor structures of the scales were examined using Confirmatory Factor Analysis (CFA). This statistical method ensures the scales' construct validity and confirms that the collected data align with their pre-established theoretical structure. This rigorous process verified that the scales possessed critical measurement properties, such as validity and reliability, which

are necessary for their confident and appropriate application (Nieva, 2023; Nieva, 2024; Nieva et al., 2025; Quilon & Kurniawan, 2023; Rada & Nieva, 2024).

The predefined theoretical models of all the scales are presented in the section under Measures. The results of the initial confirmatory factor analysis suggested a poor fit of the factor models to the data, as indicated by items with factor loadings less than .34 and standardized residuals greater than 2.58 (Stevens, 2002). To improve this, these items were removed. However, satisfactory fit indices were not achieved. Further investigation of modification indices resulted in the removal of items with high modification indices (above 15, Awang, 2015) and low factor loadings. Consequently, the following poorly fitting items were removed: ITP2, CARE1, DISC4, DISC5, IND1, and COL6. The item statements for these removed items are presented in the appendix with an asterisk. Following the removal of six poorly fitting items, an improved model fit was observed. Despite this, the number of factors remained the same. Table 1 presents a summary of the CFA fit indices for all measures. For interpretation, Goodness of Fit Index (GFI), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and Bentler-Bonett Normed Fit Index (NFI) values above .90 are deemed acceptable. Therefore, these indices suggested an acceptable fit. Regarding the Root Mean Square Error of Approximation (RMSEA), a value below .08 indicates acceptable fit (Matsunaga, 2010). As a result, the RMSEA values for all measures suggested acceptable fit. Moreover, an extra measure was employed: the ratio of the chi-square statistic to its degrees of freedom. This decision was made because chi-square fit statistics are sensitive to large sample sizes, and it aligns with West, Taylor, and Wu's (2012, p. 211) assertion that the chi-square test isn't “always the final word in assessing fit.” While a ratio close to 1.0 is ideal, a perfect fit is uncommon in empirical data. Hu and Bentler (1999) suggested a chi-square/df ratio under 5 as representing reasonable fit, with considerations for model complexity and sample size. Similarly, Bentler (1990) indicated that ratios between 2 and 5 are acceptable, with a preference for lower values. Therefore, the results of this analysis support the scale's validity in measuring these distinct dimensions.

Table 1.

Summary of Goodness of Fit Indices of the CFA

	Chi-Square Test (X^2/df)	***Goodness of Fit Index (GFI)***	***Comparative Fit Index (CFI)***	***Tucker-Lewis Index (TLI)***	***Bentler-Bonett Normed Fit Index (NFI)***	***Root Mean Square Error of Approximation (RMSEA)***
MINDSETS about persons (ITP) and about groups (ITG)	3.47	0.985	0.984	0.969	0.977	0.065
CLIMATE ACTION Willingness to build a sustainable world CARE) and Inclination to discuss climate change (DISC)	1.91	0.982	0.990	0.986	0.979	0.039
Individual climate action (IND) and Collective climate action (COL)	3.82	0.984	0.986	0.973	0.981	0.069

Figures 1 through 3 illustrate the model plots for the mindset and climate action scales, displaying unstandardized factor loadings and error terms. Specifically, Figure 1 shows the model for mindsets about persons (ITP), which comprises 3 items, and mindsets about groups (ITG), also with 3 items. Figure 2 presents the model for climate actions: Willingness to build a sustainable world (CARE), containing 5 items, and Inclination to discuss climate change (DISC), also with 5 items. Finally, Figure 3 depicts the model for Individual climate action (IND), consisting of 3 items, and Collective climate action (COL), which also

includes 3 items. A complete list of the specific questions for each factor can be found in Appendix A.

Figure 1.

Model Plot for Growth Mindsets: Persons (ITP) and Groups (ITG)

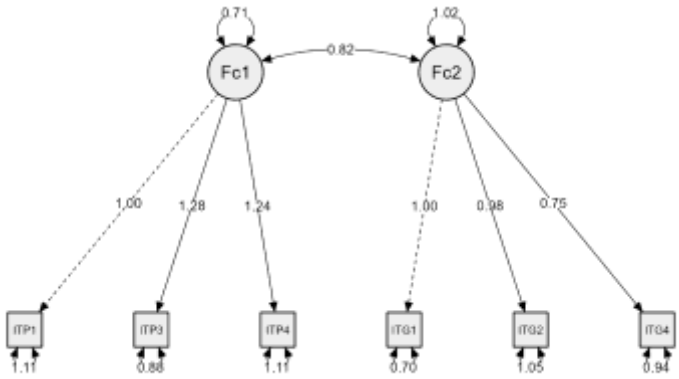


Figure 2.

Model plot for Climate Action measuring "willingness to build a sustainable world" (CARE) and "inclination to discuss climate change" (DISC)

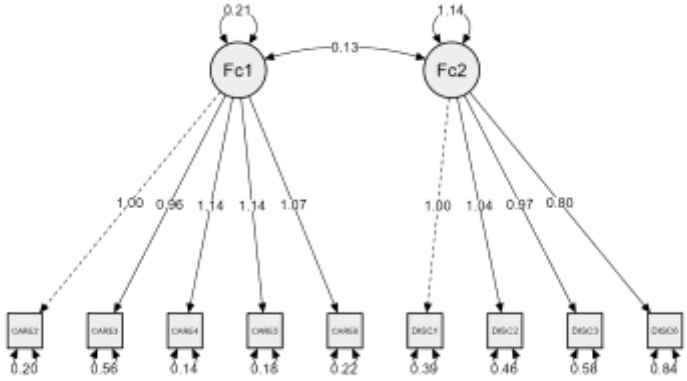
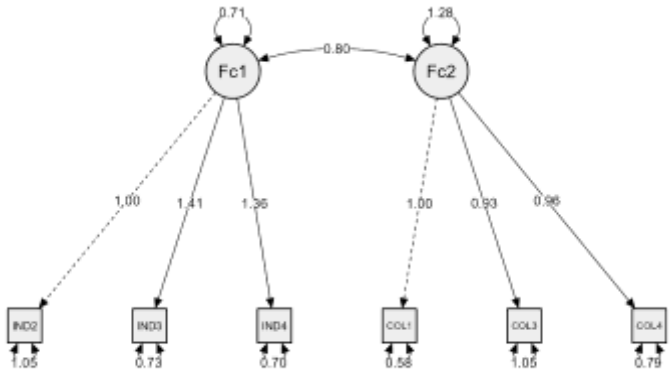


Figure 3.

Model Plot for Climate Action (Individual and Collective Action)



Normality assessments for the Growth Mindset scale revealed skewness values between 0.042 and 0.271, and kurtosis values between -0.280 and -0.448. Similarly, the Climate Action scale exhibited skewness values ranging from 0.115 to -1.580, and kurtosis values from -0.070 to 2.650. Because these values fall within the acceptable limits outlined by Hair et al. (2010), and because Byrne (2010) posited that normality is indicated by skewness between -2 and +2 and kurtosis between -7 and +7, the data for both scales can be considered normally distributed.

Table 2.

Zero-Order Correlations, Descriptive Statistics, and Internal Consistency (Cronbach's Alpha and McDonald's Omega)

Variables	*ITP*	*ITG*	*CARE*	*DISC*	*IND*	*COL*
1. ITP	—					
2. ITG	0.703***	—				
3. CARE	0.052	0.115**	—			
4. DISC	0.043	0.007	0.224***	—		
5. IND	-0.043	-0.020	0.258***	0.556***	—	
6. COL	-0.046	-0.076	0.117**	0.596***	0.660***	—
Mean	3.035	3.204	3.521	3.193	3.776	2.908
S.D.	1.150	1.111	0.541	1.086	1.189	1.210
α	0.734	0.734	0.819	0.877	0.799	0.819
ω	0.742	0.735	0.824	0.880	0.801	0.812

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Table 2 presents the means and standard deviations of the Mindset scales—specifically *Mindset about persons* (ITP) and *Mindset about groups* (ITG)—and the Climate Action scales, which include *Willingness to build a sustainable world* (CARE), *Inclination to discuss climate change* (DISC), *Individual climate action* (IND), and *Collective climate action* (COL).

Although participants scored slightly higher on Mindset about groups compared to Mindset about persons, both mean scores fell within the midpoint of the scale (i.e., 3). Therefore, these results suggest that participants exhibited neither distinctly high nor low mindset scores. Consequently, individuals with midpoint scores are often classified as having a mixed mindset. That is, as implicit theory posits, a mixed mindset indicates that people do not consistently adhere to purely fixed or growth mindsets across all areas of their lives. Instead, they demonstrate a combination of these mindsets. Individuals do not always have just one type of mindset; instead, they often show a mix of mindsets depending on the situation or specific area. This blend of beliefs shows how people view their potential for change and development in different skills (Chan et al., 2022; Haukås & Mercer, 2021).

Meanwhile, regarding the Climate Action scales, the "Willingness to build a sustainable world" (CARE) dimension of the scale scored slightly higher than the "Inclination to discuss climate change" (DISC). Since both of these mean scores exceeded the midpoint of 2.5, they indicate high levels of reported willingness and inclination. In terms of comparing the mean scores of "Individual climate action" (IND) with the mean score of "Collective climate action" (COL), the "Individual climate action" (IND) exhibited a higher mean score as compared to the mean score of "Collective climate action" (COL). With regard to the mean score on "Individual climate action," it has exceeded the midpoint of 3, suggesting a high level of engagement, while the "Collective climate action" mean score fell slightly below the midpoint of 3, implying a relatively lower level of reported collective action.

A high mean score on the CARE (i.e., "Willingness to build a sustainable world") suggests that, on average, participants generally agree with actions promoting environmental sustainability. For example, they tend to change their lifestyle to reduce their negative impact on the environment, or they tend to believe it is important to support businesses that prioritize sustainability. Regarding the scale dimension "Inclination to discuss climate change" (DISC), a high score similarly indicates that participants generally have a high inclination to engage in conversations about climate change. This finding could mean that they tend to feel comfortable discussing climate change with friends and family or that they are open to learning more about different perspectives on climate change.

The observed positive results in the descriptive statistics, particularly the high levels of reported willingness and inclination, may be partly explained by the

Philippine government and DepEd's initiatives to raise student awareness regarding climate change and disaster-related concepts. Supporting this claim, Mamon and his colleagues (2018) found that their research participants had a strong comprehension of disaster risk reduction. Similarly, even though Grade 11 students perceived catastrophe risk as low, they still exhibited readiness, awareness, preparedness, and acclimatization to disaster threats. Researchers such as Lapada (2022) and Mamon et al. (2018) have attributed these encouraging results to the integration of Disaster Risk Reduction and Management (DRRM) into the senior high school curriculum. Adding to this, Lualhati et al. (2018) also concluded that their education student respondents demonstrated ecological awareness. This awareness led students to be mindful of how to care for the environment and the value of active involvement in environmental activities and programs.

Furthermore, while students in this study demonstrate a strong tendency to adopt individual sustainable behaviors, their involvement in broader, organized collective actions for climate change is comparatively less frequent. This highlights a potential area for further exploration: understanding the barriers or facilitators that influence students' participation in collective climate action initiatives.

Table 3.

Results of Regression Analysis on "Willingness to build a sustainable word" (CARE)

Model		b	S.E.	β	t	p
M_1	(Intercept)	3.361	0.070		47.923	< .001
	ITP	-0.027	0.027	-0.057	-0.983	0.326
	ITG	0.075	0.028	0.154	2.684	0.007

Note: R^2 = 0.015; F (2, 589) = 4.413, p = 0.013

Regarding the zero-order correlations presented in Table 2, only "*Mindset about Groups"* (ITG) and "*Willingness to build a sustainable world"* (CARE) exhibited significant relationships. Consequently, these were the sole variables advanced to regression analyses.

Because regression analysis is sensitive to multicollinearity, the Variance Inflation Factor (VIF) for both ITP and ITG is 1.979. A VIF close to 1 indicates

low multicollinearity. Specifically, VIF values are used for each independent variable in the model to help assess the degree of multicollinearity, as this allows researchers to identify if any predictors are highly correlated with others, a condition that can affect the stability and interpretability of the regression coefficients. Furthermore, the model demonstrates an acceptable independence of errors, with a Durbin-Watson statistic of 1.712. Since a common rule of thumb for an adequate Durbin-Watson range is between 1.5 and 2.5, the value obtained suggests that autocorrelation is not a significant concern.

The regression analysis results, as shown in Table 3, indicate that "*Mindset about Groups*" (ITG) significantly positively predicts "*Willingness to build a sustainable world"* (CARE); however, the effect size is considerably low, explaining only 1.5% of the variance. The research findings indicate a statistically significant, albeit weak, positive relationship between an individual's general disposition towards group efficacy (Mindset about groups) and their reported Willingness to build a sustainable world. This suggests that individuals who tend to hold more positive beliefs about the capacity of groups to achieve goals are slightly more inclined to express a personal commitment towards sustainable practices and environmental stewardship.

However, the limited variance explained (1.5%) underscores the modest practical significance of this association. While the positive coefficient suggests a directional influence—a more favorable outlook on group effectiveness is associated with a marginally higher willingness for sustainability—this factor alone accounts for a very small proportion of the overall variability in individuals' commitment to building a sustainable world.

While the regression analysis reveals a statistically significant positive beta coefficient for Mindset about groups predicting Willingness to build a sustainable world ($p<0.05$), the corresponding R^2 value of 0.015 indicates a minimal effect size. This implies that other unmeasured or unmodeled variables likely exert a considerably greater influence on a person's readiness to participate in pro-environmental behaviors and support sustainability initiatives.

This finding stands in direct contrast to the study conducted by Rissanen and associates (2024). Specifically, their results indicated that European youth demonstrate a willingness to build a sustainable world and engage in individual climate action, yet they show less inclination towards collective action or discussing climate change with those close to them. Therefore, this observed difference suggests cultural distinctions; Western youth tend to exhibit more individualistic tendencies, whereas Filipino early adults tend to exhibit collectivism.

According to Alampay (2024), Philippine society is generally characterized by collectivism, which aligns with cultural values that prioritize

family bonds and well-being, respect for elders and authority, and the fulfillment of familial duties. She further explained that Filipino interpersonal values and behavior are deeply rooted in the Filipino psychological concept called kapwa, which signifies shared identity that is founded in mutual respect and consideration for others.

Therefore, while a positive perception of collective action within a group may subtly influence an individual's sustainability mindset, its predictive power for this willingness remains limited. Therefore, future research should focus on exploring other, potentially more significant factors that influence young Filipinos' dedication to a sustainable world. These factors could include environmental knowledge, personal values, perceived responsibility, exposure to environmental issues, and dominant social norms.

Aruta's (2025) study provided an example. Aruta's (2025) study provided an example. Their study revealed that young Filipinos' environmental concern is significantly correlated to their willingness to take climate action. Aruta's (2025) study indicates that climate anxiety can strengthen the relationship between environmental concern and the willingness to act on climate change. However, this finding may only be applicable for young Filipinos who were confident that their individual and collective efforts could actually help solve the climate crisis. On the contrary, young Filipinos who were not confident that their individual and collective efforts could help solve climate problems, climate anxiety failed to strengthen the link between their environmental concern and taking action. This suggests that climate anxiety may only promote climate action when young Filipinos believe that their efforts could really make a difference.

Conclusions

The primary purpose of this research was to determine the relationship between growth mindsets and climate actions among Filipino early adults in the National Capital Region (NCR), Philippines. Furthermore, this research carefully assessed the scales' construct validity and reliability within the study's framework. The measurement scales used in this study underwent statistical tests, which confirmed their suitability for assessing young Filipino participants. This research revealed that participants possessed a "mixed mindset" regarding the malleability of personal and group characteristics. This indicates that their beliefs about change are not fixed but are instead influenced by the specific context or domain. Essentially, this mixed mindset reflects the intricate nature of human beliefs concerning malleability—the diverse perspectives individuals hold on the potential for their various abilities to change and develop. This finding is consistent with Dweck and colleagues' (1995) proposition that neither a fixed nor a growth orientation toward human attributes is inherently superior; rather, they represent distinct cognitive frameworks, each with its advantages and disadvantages.

The result of the regression analysis showed a weak but significant positive relationship between "Mindset about Groups" (ITG) and "Willingness to build a sustainable world" (CARE). This would suggest that young Filipino adults who believe that groups can evolve and improve are more likely to be dedicated to advancing sustainability. Therefore, programs that encourage belief in positive group change could help strengthen individual dedication to sustainable practices.

This result also suggests that Filipino early adults exhibit a strong tendency towards collectivism. Specifically, the participants are more inclined towards collective climate action, or their mindset about groups significantly influences their willingness to build a sustainable world. This aligns with the well-documented cultural trait of collectivism in the Philippines. In fact, Filipinos might feel a stronger sense of collective responsibility towards environmental issues, as the idea that "we all need to do our part" might resonate more deeply than an emphasis on individual responsibility alone. Consequently, the findings likely tap into a core aspect of Filipino culture, where the well-being and actions of the group hold significant importance. Therefore, understanding this collectivist orientation can offer helpful suggestions for how to effectively engage Filipinos in climate action initiatives.

On the other hand, the lack of significant statistical links between individuals' beliefs about the potential for change (both in people and in groups) and their inclination to discuss climate change, their individual climate actions, and their collective climate actions offer an alternative interpretation. Rather than indicating no association, it could suggest that these two types of growth mindsets may each separately encourage these pro-environmental attitudes and behaviors. For instance, a student who believes individuals can develop their understanding might be more open to climate change discussions, trusting in others' capacity to learn. This same belief could also motivate their own individual climate actions, driven by the conviction that personal efforts can lead to positive outcomes. Similarly, a student who believes that groups can improve and achieve goals might be more willing to engage in climate change discussions within groups, feeling optimistic about reaching a shared understanding. This belief could also foster their participation in collective climate actions, based on the conviction that group endeavors can effectively address environmental issues.

Therefore, even though this particular study's statistical analysis did not reveal strong predictive relationships, it is conceivable that both a belief in individual growth and a belief in group growth can independently promote a greater willingness to discuss climate change and to participate in both individual and collective climate actions. The research design may not have been structured to fully capture these potentially distinct and additive effects.

However, it is crucial to acknowledge that, while a positive orientation toward group agency may have a subtle influence on an individual's sustainability mindset, its predictive power remains limited. Therefore, future research should

prioritize exploring other, potentially more significant factors that shape young Filipinos' commitment to a sustainable world.

Moreover, the findings also indicate a disparity between individual and collective climate action. Specifically, while students showed a strong inclination towards adopting individual sustainable behaviors, their engagement in broader, organized collective climate action was notably less frequent. This discrepancy underscores the need for further investigation into the barriers and facilitators that influence students' participation in collective climate action initiatives.

It is important to acknowledge certain limitations when concluding this study. The cross-sectional design, for one, restricts our capacity to make causal claims about the relationship between implicit beliefs concerning persons and groups and climate actions. To overcome this, future research is recommended to utilize longitudinal and experimental designs. Furthermore, since this study used only self-reported data, the results may be influenced by social desirability or common method bias. Therefore, to mitigate these limitations, future investigations should strive to incorporate multi-method approaches. For instance, integrating self-report data with observable behaviors or objective measures of climate action could yield a more nuanced and valid understanding of how mindsets relate to pro-environmental behavior.

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APPENDIX A:
SURVEY QUESTIONNAIRE

MINDSET

Mindset about persons (ITP, Levy et al., 1998)

1. The kind of person someone is, is something basic about them, and it can't be changed very much.
2. People can do things differently, but the important parts of who they are can't really be changed.
3. Everyone is a certain kind of person, and there is not much that they can do to really change that.
4. You can't teach an old dog new tricks, People can't really change their deepest attributes.

Mindset about groups (ITG, Halperin et al., 2011)

5. Groups can do things differently, but the important parts of who they are can't really be changed
6. Groups can't really change their basic ways of thinking.7 Groups that are characterised by indifference towards nature will never change their ways
7. Every group or nation has basic moral values and beliefs that can't be changed significantly

CLIMATE ACTION

Willingness to build a sustainable world (Colebrook-Claude, 2019)

1. Helping other people*
2. Helping to make the world a better place
3. Giving time and money to make life better for other people
4. Helping to reduce hunger and poverty in the world
5. Helping to make sure all people in the world are treated fairly
6. Speaking up for equality (everyone should have the same rights and opportunities)

Inclination to discuss climate change (DISC, Youth Climate Justice Survey, 2020, 2021)

1. With parents/guardians
2. With siblings
3. With extended family members or relatives
4. With teachers as part of a lesson*
5. With friends at school*
6. With friends outside school

Individual climate action (IND, Youth Climate Justice Survey, 2020, 2021)

1. Reducing, reusing, recycling*
2. Energy saving initiatives
3. Choosing a climate-friendly diet (i.e., plant-based)
4. Choosing climate-friendly transport options

Collective climate action (COL, Youth Climate Justice Survey, 2020, 2021)

5. Involvement in local environmental action groups/projects

6. Organizing or participating in petitions or protests*
7. Writing to politicians or companies about climate change issues
8. Involvement in school/youth group/college/workplace environmental initiatives

*****These items were removed in the main analysis due to poor item loading in the CFA.