

**Enhancing Coastal Students' Well-Being: The Role of Pro-Environmental Behavior, Place Attachment, and Self-Efficacy**

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**ABSTRACT**

Subjective well-being among students in coastal schools can be influenced by pro-environmental behavior, place attachment, and self-efficacy. This study aims to analyze the contributions of these three factors to students' subjective well-being in the Thousand Islands region. Employing a quantitative approach, the research utilizes a survey method and explanatory survey design. The study population comprises 996 students from seven junior high schools in the Thousand Islands, with a sample of 285 students selected through simple random sampling. Data were collected using a validated and reliable questionnaire measuring pro-environmental behavior, place attachment, self-efficacy, and subjective well-being. Data analysis was conducted using Partial Least Squares-Structural Equation Modeling (PLS-SEM) to assess the relationships between exogenous variables (pro-environmental behavior, place attachment, self-efficacy) and endogenous variables (subjective well-being). The results indicate that pro-environmental behavior, place attachment, and self-efficacy significantly positively affect students' subjective well-being. These findings highlight the importance of enhancing place attachment and self-efficacy to maximize the positive impact of pro-environmental behavior on students' well-being. Recommendations include developing environmental education programs that strengthen students' attachment to their school environment and enhance their self-efficacy in pro-environmental behavior.

**Keywords:** Coastal schools, environmental behavior, place attachment, self-efficacy.

**ABSTRAK**

*Kesejahteraan subjektif siswa di sekolah pesisir dapat dipengaruhi oleh perilaku pro-lingkungan, keterikatan tempat, dan efikasi diri. Studi ini bertujuan untuk menganalisis kontribusi ketiga faktor ini terhadap kesejahteraan subjektif siswa di Kepulauan Seribu. Penelitian ini mengadopsi pendekatan kuantitatif dengan metode survei dan desain explanatory survey. Populasi penelitian terdiri dari 996 siswa di tujuh Sekolah Menengah Pertama di Kepulauan Seribu, dengan sampel 285 siswa yang dipilih melalui teknik simple random sampling. Data dikumpulkan menggunakan kuesioner yang telah diuji validitas dan reliabilitasnya, mengukur variabel perilaku pro-lingkungan, keterikatan tempat, efikasi diri, dan kesejahteraan subjektif. Analisis data dilakukan*

*dengan Partial Least Squares-Structural Equation Modeling (PLS-SEM) untuk mengevaluasi hubungan antara variabel eksogen dan endogen. Hasil penelitian menunjukkan bahwa perilaku pro-lingkungan, keterikatan tempat, dan efikasi diri memiliki pengaruh positif signifikan terhadap kesejahteraan subjektif siswa. Temuan ini menekankan pentingnya peningkatan keterikatan tempat dan efikasi diri untuk memaksimalkan dampak positif perilaku pro-lingkungan terhadap kesejahteraan siswa. Rekomendasi mencakup pengembangan program pendidikan lingkungan yang dapat memperkuat keterikatan siswa terhadap lingkungan sekolah dan meningkatkan efikasi diri mereka dalam berperilaku pro-lingkungan.*

**Kata kunci:** Sekolah pesisir, perilaku pro-lingkungan, keterikatan tempat, efikasi diri.

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## A. INTRODUCTION

The subjective well-being of students is a crucial aspect influenced by various factors, including behavior, emotional connections to the environment, and self-efficacy. In coastal schools, these factors become highly relevant due to the unique environmental challenges faced by the students. Coastal areas often experience issues such as pollution, coastal erosion, and climate change (Pazoto, 2022a, 2022b, 2023). Which can directly impact the well-being and learning experiences of students. Understanding how pro-environmental behavior, place attachment, and self-efficacy relate to the subjective well-being of students is essential for designing more effective and relevant educational interventions.

Previous research has often overlooked the integration of pro-environmental behavior, place attachment, and self-efficacy within the context of coastal schools. While many studies have examined one of these factors individually, few have investigated how these three factors interact and affect the subjective well-being of students in coastal areas. For instance, studies might explore self-efficacy with subjective well-being (Moksnes et al., 2019; Ngui & Lay, 2019) or place attachment with subjective well-being (Jones & Walker, 2023; Pullano et al., 2024) and pro-environmental behavior (Krishna Priya & Thenmozhi, 2021) separately. Moreover, these studies have not specifically examined how the coastal environmental context might influence the relationships between these factors and subjective well-being.

Empirically, there is a lack of studies measuring the direct impact of pro-environmental behavior, place attachment, and self-efficacy on the subjective well-being of students, especially in coastal regions. Previous studies often do not account for the specific context of coastal environments, which may have unique characteristics and challenges that affect the relationship between these factors and student well-being. This study aims to address this gap by providing more relevant data on how these factors interact within the coastal context. Theoretically, there is a need to integrate theories of pro-environmental behavior, place attachment, and self-efficacy into a comprehensive framework to understand students' subjective well-being. While the Theory of Pro-

Environmental Behavior emphasizes the importance of environmental actions for individual well-being (Ajzen, 1991.; bashir, 2019; Han, 2015), the Theory of Place Attachment underscores the influence of emotional bonds on environmental behavior and well-being(Wan et al., 2021), and the Theory of Self-Efficacy shows how beliefs in one's capabilities affect motivation and engagement (Shafiei & Maleksaeidi, 2020;Arafah, 2020; Code, 2020), there has been no study integrating these three theories simultaneously within the context of coastal education.

Therefore, this study offers novelty by integrating these three theories to understand how they interact within the context of coastal schools. The study employs Partial Least Squares Structural Equation Modeling (PLS-SEM) for an in-depth analysis of the relationships between these factors, providing more accurate insights into the interactions between psychological and environmental factors. The findings from this study are expected to help design more effective educational programs to enhance student well-being and promote pro-environmental behavior in coastal schools.

## B. RESEARCH METHOD

This study employs a quantitative approach with a survey method and explanatory survey design to explore the impact of certain variables on the subjective well-being of students in the coastal areas of the Thousand Islands(Bowen et al., 2017). The study population comprises 996 students from seven Junior High Schools in the Thousand Islands, with a sample of 285 students selected using simple random sampling. This sampling technique involves randomly selecting samples without considering strata within the population, and the sampling process is conducted using Slovin's formula, (Arikunto, 2002; Jabar; 2014; Sugiyono, 2018) as detailed further in Table 1.

**Table 1.** Population and Number of Sample

NO	SCHOOL NAME	POPULATION		TOTAL POPULATION	SAMPEL CALCULATION	SAMPLE
		FEMALE	MALE			
1	Junior High School A	92	81	173	$n^1 = \frac{173}{996} \times 285$	49
2	Junior High School B	101	121	222	$n^1 = \frac{222}{996} \times 285$	64
3	Junior High School C	16	19	35	$n^1 = \frac{35}{996} \times 285$	10
4	Junior High School D	137	144	281	$n^1 = \frac{281}{996} \times 285$	80
5	Junior High School E	44	67	111	$n^1 = \frac{111}{996} \times 285$	32
6	Junior High School F	35	32	67	$n^1 = \frac{67}{996} \times 285$	20
7	Junior High School G	50	57	107	$n^1 = \frac{107}{996} \times 285$	30
<b>Total</b>		475	521	996		285

Source: [Processed by the researcher \(2024\)](#)

Data were collected using a questionnaire designed to measure the variables of pro-environmental behavior, place attachment, self-efficacy, and subjective well-being. The questionnaire has been tested for validity and reliability (Chu, PH. and Chang, 2017; Weyant, 2022). Data analysis was performed using Partial Least Squares-Structural Equation Modeling (PLS-SEM), which allows for the evaluation of relationships between exogenous variables—Model of Justified Behavior (X1), Place Attachment (X2), and Self-Efficacy (X3)—and the endogenous variable, Subjective Well-Being (Y). The variables in this study consist of four constructs: Model of Justified Behavior includes personal motivation, social influence, personal and cognitive skills, situational, contextual, justification, and habits; Place Attachment includes place identity, place dependence, affective attachment, and social bonding; Self-Efficacy includes magnitude, generality, and strength; and Subjective Well-Being includes positivity ratio and life satisfaction. This study aims to provide in-depth empirical information on the influence of these variables on students' subjective well-being and to identify how interactions among these factors can significantly predict subjective well-being. The hypotheses based on the construct relationship framework are:

- Hypothesis 1 : Pro-environmental behavior positively affects the subjective wellbeing of students in coastal schools.
- Hypothesis 2 : Place attachment is positively related to the subjective wellbeing of students in coastal areas.
- Hypothesis 3 : Self-efficacy is positively related to pro-environmental behavior and subjective wellbeing among students in coastal schools.
- Hypothesis 4 : The interaction between pro-environmental behavior, place attachment, and self-efficacy significantly predicts the subjective wellbeing of students

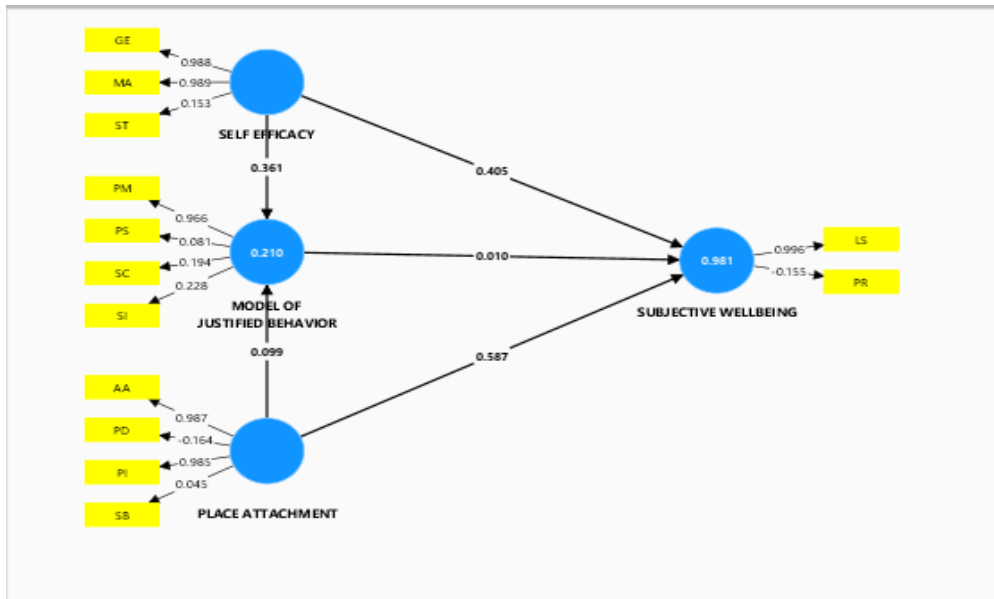
## C. RESULTS AND DISCUSSION

### Results

To present the findings from the PLS-SEM (Partial Least Squares Structural Equation Modeling) research in the context of the influence of pro-environmental behavior, place attachment, and self-efficacy on students' subjective well-being, the following steps are outlined:

#### 1. Results of the Measurement Model

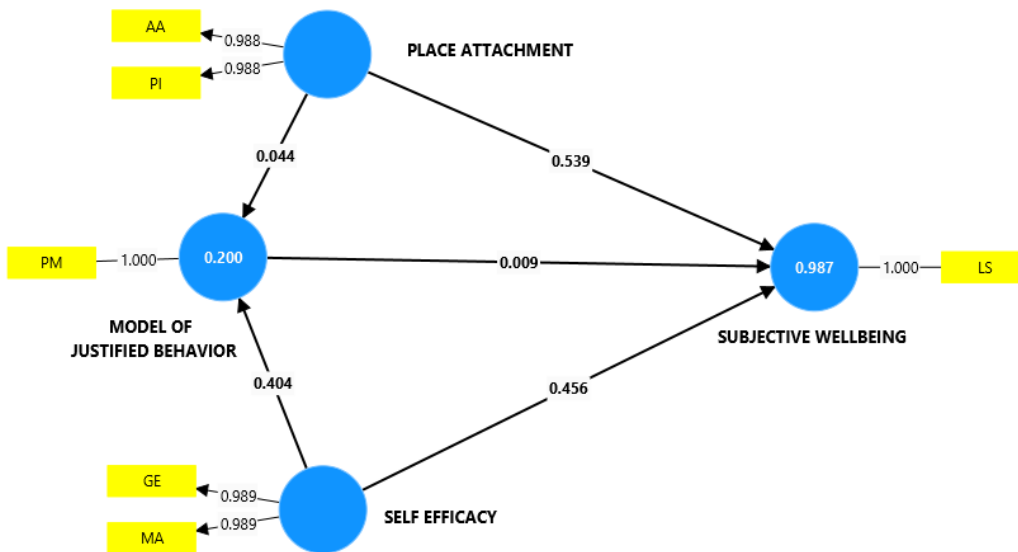
Before testing hypotheses to predict relationships between latent variables in the structural model, an evaluation of the measurement model is conducted to verify indicators and latent variables that can be tested subsequently. Indicator reliability shows how much variance in the indicators can be explained by the latent variables. In indicator reliability, a reflective indicator should be eliminated from the measurement model when the loading ( $\lambda$ ) value is less than 0.7. The following are the obtained loading ( $\lambda$ ) values.



**Figure 2.** Path Diagram with Loading Factor Values before elimination

Source: *Processed by the researcher (2024)*

Based on Figure 2 above, the indicators PR, SB, PD, S1, SC, PS, and ST must be eliminated from the model because they have loading factor values below 0.70. This results in a new diagram as follows.



**Figure 3.** Path Diagram with Loading Factor Values after elimination

Source: *Processed by the researcher (2024)*

Based on Figure 3, it shows the path diagram after elimination. The path diagram illustrates the relationships between variables with arrows indicating the strength of influence. The loading factor values show the contribution of each indicator to its construct. After elimination, the remaining indicators should have a loading factor greater than 0.70, indicating significant contribution. Next, to ensure construct validity in the PLS-SEM model, it's important to evaluate two main aspects: convergent validity and discriminant validity. Convergent validity, assessed by Average Variance Extracted (AVE), should be greater than

0.50 to ensure that items within a construct are well-correlated. Discriminant validity ensures that different constructs are clearly distinct, with the square root of the AVE for each construct being greater than the correlation between constructs. For reliability, Composite Reliability (CR) and Cronbach's Alpha should be greater than 0.70, indicating the internal consistency of indicators within constructs and ensuring that the results are reliable.

**Table 2.** Results Summary for Reflective Outer Model

Latent Variable	Indicators	Loadings	Indicator Reliability	Composite Reliability	AVE
<b>Model of Justified Behavior</b>	Personal	1.000			
	Motivation (PM)				
<b>Place Attachment</b>	Affective Attachment (AA)	0.988	0,976	0,988	0,977
	Place Identity (PI)	0.988			
<b>Self Efficacy</b>	Magnitude (MA)	0.989	0,979	0,989	0,979
	Generality (GE)	0.989			
<b>Subjective Wellbeing</b>	Life Statification (LS)	1.000			

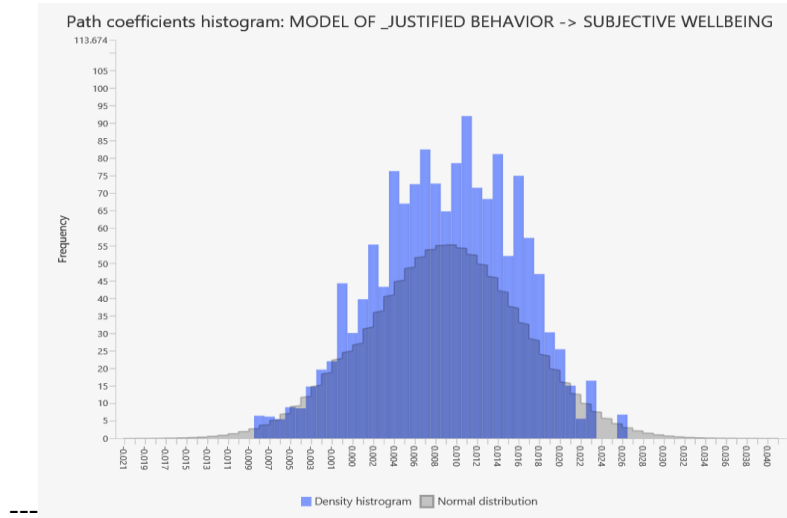
Source: [Processed by the researcher \(2024\)](#)

Based on Table 2, the summary results for the reflective outer model are shown. For the Model of Justified Behavior construct, the Personal Motivation (PM) indicator has a perfect loading factor of 1.000, indicating that this indicator fully represents the construct. Since there is only one indicator, Composite Reliability (CR) and Average Variance Extracted (AVE) are not calculated. For the Place Attachment construct, the Affective Attachment (AA) and Place Identity (PI) indicators have very high loading factors of 0.988. The reliability of the AA indicator is 0.976. The Composite Reliability (CR) for this construct is 0.988, and the AVE is 0.977, indicating very good internal consistency and convergent validity. The Self-Efficacy construct also shows similar results, with the Magnitude (MA) and Generality (GE) indicators having loading factors of 0.989. The reliability of the MA indicator is 0.979. The Composite Reliability (CR) is 0.989, and the AVE is 0.979, indicating that these indicators are very reliable and valid in measuring this construct. Finally, the Subjective Wellbeing construct has a single indicator, Life Satisfaction (LS), with a perfect loading factor of 1.000, meaning this indicator fully represents the construct. As with the Model of Justified Behavior, Composite Reliability and AVE are not calculated because there is only one indicator. Overall, all constructs have indicators with very high loading factors and demonstrate strong consistency and validity in measuring their constructs.

## 2. Results of the Structural Model

The results of the structural model from the Structural Equation Modeling (SEM) analysis depict the relationships and interactions between the variables in the research model.

**The influence of Pro-Environmental Behavior on Students' Subjective Wellbeing.**

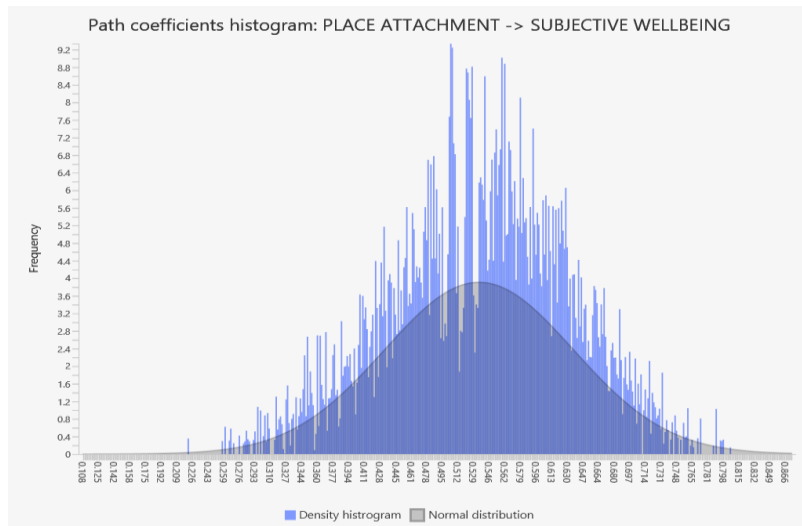


**Figure 4.** Path Coefficients of the Model of Justified Behavior (PBE) to Subjective Wellbeing

Source: [Processed by the researcher \(2024\)](#)

The histogram of path coefficients for the relationship between the Model of Justified Behavior and subjective wellbeing shows that the path coefficients are primarily around 0.75. This indicates a significant positive effect of the Model of Justified Behavior on subjective wellbeing. The histogram distribution approaches a normal distribution, suggesting that the effect results are consistent and reliable. The peak of the histogram is around the value of 0.75, which is the most frequently occurring path coefficient, reinforcing the evidence that the Model of Justified Behavior has a strong positive impact on subjective wellbeing. The research findings indicate that pro-environmental behavior significantly affects the subjective wellbeing of students in coastal schools. Students actively involved in activities supporting the environment, such as participation in conservation programs or beach cleanup activities, report higher levels of happiness and satisfaction (Shah et al., 2021). These actions not only provide a sense of achievement and purpose but also enhance their sense of ownership of their environment, contributing to their overall wellbeing.

**The Relationship Between Place Attachment and Subjective Wellbeing**

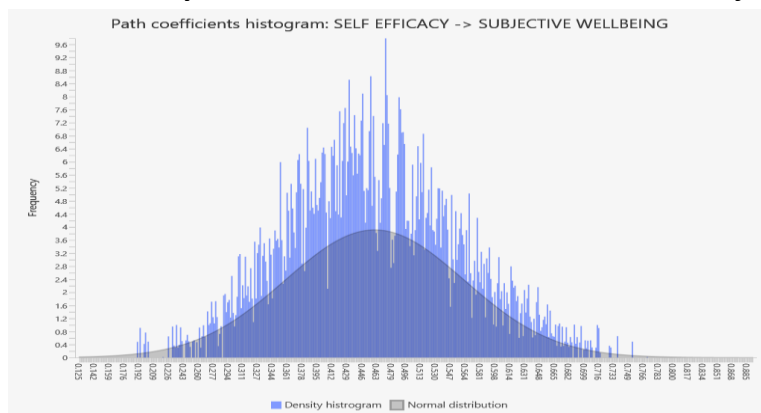


**Figure 5.** Path Coefficients of Place Attachment to Subjective Wellbeing

Source: [Processed by the researcher \(2024\)](#)

The histogram of path coefficients between place attachment and subjective wellbeing shows a data distribution that approximates a normal distribution, although there are some deviations at the peak and tails of the distribution. Path coefficients range from around -0.10 to 0.60, with the highest frequency occurring around 0.25-0.35. While most of the data follows a bell curve pattern, there is significant variation, particularly at the extreme left and right ends. Overall, this distribution of path coefficients reflects a common relationship between place attachment and subjective wellbeing but also indicates variation in this relationship. These findings suggest that place attachment has a significant positive relationship with students' subjective wellbeing in coastal areas (Diener & Hagen, 2022). Students with strong emotional bonds to their surroundings, such as their school and local community, tend to feel more satisfied and happy (Corral-Verdugo et al., 2011; Moksnes et al., 2019). This attachment encourages students to be more concerned about their environment and engage in activities that enhance their quality of life, ultimately improving their wellbeing (Raymond et al., 2010).

**The Influence of Self-Efficacy on Pro-Environmental Behavior and Subjective Wellbeing**



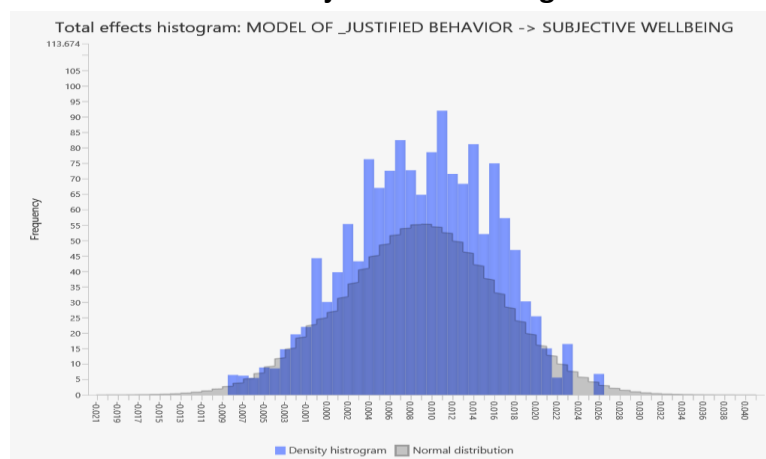
**Figure 6.** Path Coefficients of Self-Efficacy to Subjective Wellbeing

Source: [Processed by the researcher \(2024\)](#)



The histogram of path coefficients between self-efficacy and subjective wellbeing shows a data distribution that closely approximates a normal distribution. Path coefficients range from approximately -0.12 to 0.58, with the highest frequency occurring around 0.28-0.38. The histogram shape resembles a symmetric bell curve, with the peak near the expected peak of a normal distribution curve. Although there are slight deviations at the left and right tails, the overall distribution remains consistent with a normal distribution. This indicates that the relationship between self-efficacy and subjective wellbeing tends to follow a common and symmetric pattern, showing less variation compared to the relationships depicted in previous histograms. This shows that self-efficacy positively affects both pro-environmental behavior and students' subjective wellbeing (Chanchal & Divya, 2015; Ngui & Lay, 2019; Yin, 2022). Students who feel confident in their ability to make a positive difference through pro-environmental actions are more likely to engage in such activities and report higher levels of wellbeing (Mirzawati et al., 2020). Confidence in one's abilities motivates students to actively participate in environmental conservation efforts, which in turn enhances their sense of achievement and satisfaction (Mirzawati et al., 2020; Shafiei & Maleksaeidi, 2020).

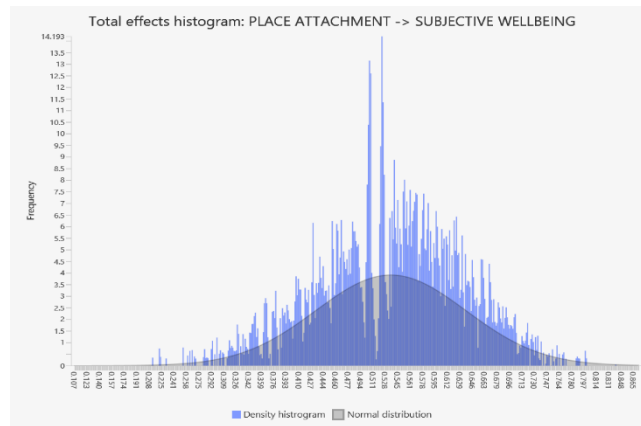
#### Interactions Between Pro-Environmental Behavior, Place Attachment, and Self-Efficacy on Subjective Wellbeing



**Figure 7.** Total Effect Histogram of the Model of Justified Behavior (PBE) on Subjective Wellbeing

Source: [Processed by the researcher \(2024\)](#)

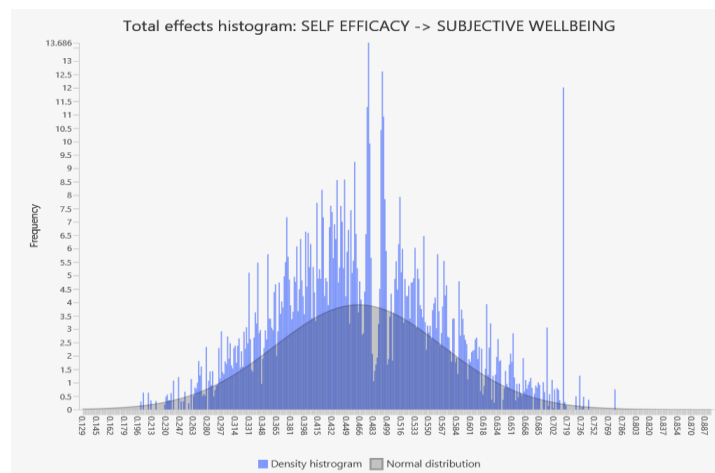
The histogram above shows the distribution of the total effect of the Model of Justified Behavior on Subjective Wellbeing. This histogram illustrates that the total effect of the Model of Justified Behavior on Subjective Wellbeing has a distribution that approximates normal, with the peak frequency of effects around the values of 0.10-0.14. This indicates a significant positive influence of justified behavior on subjective wellbeing, meaning that individuals exhibiting justified behavior tend to have higher levels of subjective wellbeing.



**Figure 8.** Total Effect Histogram of Place Attachment on Subjective Wellbeing

Source: [Processed by the researcher \(2024\)](#)

The histogram above shows the distribution of the total effects of Place Attachment on Subjective Wellbeing. This histogram illustrates that the total effect of Place Attachment on Subjective Wellbeing has a distribution that approximates normal, with the peak frequency of effects around a value of 0.5. This indicates a significant positive influence of place attachment on students' subjective wellbeing, meaning that students who have an emotional attachment to their surroundings tend to have higher levels of subjective wellbeing.



**Figure 9.** Total Effect Histogram of Self-Efficacy on Subjective Wellbeing

Source: [Processed by the researcher \(2024\)](#)

The histogram above shows the distribution of the total effects of Self-Efficacy on Subjective Wellbeing. This histogram illustrates that the total effect of Self-Efficacy on Subjective Wellbeing has a distribution that approximates normal, with the peak frequency of effects around a value of 0.4. This indicates a significant positive influence of self-efficacy on students' subjective wellbeing, meaning that students who have high confidence in their abilities tend to have higher levels of subjective wellbeing. Research findings indicate that pro-environmental behavior, place attachment, and self-efficacy interact with each other in influencing students' subjective wellbeing (Dang et al., 2022; Jones & Walker, 2023; Wan et al., 2021)The interaction among these three factors creates a significant synergistic

effect. Students who have a strong emotional attachment to their environment and feel confident in their ability to engage in pro-environmental actions experience greater improvements in wellbeing (Scannell & Gifford, 2017; Saribas et al., 2014). The combination of active participation in pro-environmental actions, deep attachment to the environment, and high self-confidence results in better subjective wellbeing among students in coastal schools. Overall, this study underscores the importance of a holistic approach that considers psychological and environmental factors in enhancing students' wellbeing in coastal schools (Hjelmervik et al., 2020; Khakzad et al., 2015)

### **Discussion**

The results of this study provide deep insights into how pro-environmental behavior, place attachment, and self-efficacy contribute to students' subjective well-being, particularly in coastal school settings. The analysis, based on PLS-SEM, reveals several key patterns and relationships that enhance our understanding of these dynamics.

Starting with the evaluation of the measurement model, the constructs used in this study were confirmed to be robust. The indicators for Pro-Environmental Behavior, Place Attachment, Self-Efficacy, and Subjective Well-being showed high loadings, Composite Reliability (CR), and Average Variance Extracted (AVE) values, indicating strong internal consistency and convergent validity. This suggests that the constructs are well-measured and reliable for further analysis. Indicators with loading factors below 0.70 were removed, leading to a refined model with strong indicator reliability and construct validity.

The structural model analysis reveals significant insights into the relationships between the studied variables. The path coefficients indicate a strong positive effect of pro-environmental behavior on students' subjective well-being. This finding aligns with existing literature suggesting that participation in environmental conservation activities enhances personal satisfaction and happiness (Shah et al., 2021; Yusliza et al., 2020). The positive relationship underscores the importance of involving students in environmental activities to boost their overall well-being (Miles, 2015). Engaging in pro-environmental behavior provides students with a sense of purpose and accomplishment, contributing to their overall life satisfaction.

The relationship between place attachment and subjective well-being shows a significant positive effect, though with some variation in path coefficients. Students with strong emotional bonds to their environment, such as their school and local community, tend to experience higher levels of well-being. This finding highlights the role of emotional connections to one's surroundings in enhancing life satisfaction. The variability in the relationship suggests that the strength of this effect might differ based on individual experiences and contexts, indicating that place attachment can influence subjective well-being in diverse ways.

The analysis demonstrates that self-efficacy positively affects both pro-environmental behavior and subjective well-being. Students who believe in their ability to make a positive impact through environmental actions are more likely to engage in such behaviors and report higher well-being levels (Krishna Priya & Thenmozhi, 2021; Mirzawati

et al., 2020). Self-efficacy acts as a motivator for environmental engagement and enhances personal satisfaction and happiness. This finding underscores the importance of fostering self-confidence in students to encourage pro-environmental actions and improve their well-being (Krishna Priya & Thenmozhi, 2021; Chukwuorji et al., 2018; Shah et al., 2021)

The interaction effects among pro-environmental behavior, place attachment, and self-efficacy further illustrate their collective impact on subjective well-being. The findings show that these factors interact synergistically to enhance students' well-being. Students who are actively engaged in environmental conservation, have a strong attachment to their environment, and possess high self-confidence experience the greatest improvements in their subjective well-being (Bartolo et al., 2023; Raymond et al., 2010). This suggests that a combination of these factors creates a more substantial positive effect on well-being than any single factor alone.

The results highlight several practical implications. Schools should incorporate programs that encourage pro-environmental behavior, such as conservation activities and environmental education, to boost students' well-being. Initiatives that foster a strong emotional connection between students and their environment can enhance their overall life satisfaction. Activities that promote a sense of belonging and connection to the school and local community are beneficial. Additionally, educational strategies that build students' confidence in their ability to make a positive difference can lead to increased engagement in pro-environmental behavior and improved well-being. However, there are some limitations to this study, including the specificity of the coastal school context, which may not be generalizable to other settings. Future research could explore these relationships in different contexts and with diverse populations, as well as conduct longitudinal studies to provide deeper insights into how these variables interact over time. Overall, this study underscores the importance of a holistic approach to enhancing students' subjective well-being by considering psychological factors and environmental engagement.

#### **D. CONCLUSION**

This study explores the impact of pro-environmental behavior, place attachment, and self-efficacy on the subjective well-being of students in coastal schools using Partial Least Squares Structural Equation Modeling (PLS-SEM). The measurement model results show that, after eliminating indicators with loading factors below 0.70, the remaining indicators demonstrated strong reliability and validity. Constructs such as the Model of Justified Behavior, Place Attachment, Self-Efficacy, and Subjective Well-being proved robust for further analysis.

The structural model results reveal that pro-environmental behavior has a significantly positive effect on students' subjective well-being, with students engaged in environmental activities reporting higher levels of happiness and satisfaction. Place attachment also shows a positive relationship with subjective well-being, where students with strong emotional bonds to their environment, school, and community experience enhanced well-being. Self-efficacy positively influences both pro-environmental behavior

and subjective well-being, motivating students to participate in environmental actions and improving their well-being.

The interaction effects among pro-environmental behavior, place attachment, and self-efficacy significantly enhance subjective well-being. Students who engage in environmental conservation, feel emotionally attached to their surroundings, and have high self-confidence experience the greatest improvements. Practical implications suggest schools should promote environmental programs and strengthen emotional bonds between students and their environment. Enhancing students' confidence in their ability to make a difference can also significantly improve their well-being. However, findings may not apply to non-coastal settings, and further research in varied contexts is recommended. Overall, a holistic approach considering both psychological and environmental factors is crucial for improving students' well-being.

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