Research Paper

The Impact of Seasonal Affective Disorder on Environmental Consciousness and Pro-Environmental Behavior

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ABSTRACT

The purpose of this study is to find the impact of seasonal affective disorder on environmental consciousness and pro-environmental behavior among adults in Chennai. Seasonal affective disorder (SAD) is a type of depression that affects people as the season changes. Depression caused by shifts in weather affects the mood and brings about hopelessness, anhedonia, and even chronic fatigue just like symptoms of typical depression. As people get into adulthood they are more likely to get affected by this disorder. Being environmentally conscious and proactively doing something for the environment's well-being which is also known as pro-environmental behavior (PEB) can be hard to give thought to during the low mood swings. Data was collected from 120 adults using a purposive sampling technique and the data was collected through a questionnaire including demographic details, Seasonal Affective Disorder Questionnaire, Pro-Environmental Behavior Scale, and the Environmental Consciousness Scale. We employ regression analysis additionally a correlational study hence to find the relationship, descriptive statistics are applied to account for other relevant factors. This research significantly contributes to the field of ecopsychology. Findings from this study show that there is a significant correlation between seasonal affective disorder, pro-environmental behavior, and environmental consciousness. Seasonal affective disorder also has an impact on both pro-environmental behavior and environmental consciousness. This study can help by observing the relationship seasonal affective disorder has on pro-environmental behavior and environmental consciousness which can help us stay environmentally friendly even when there is a shift in mood during certain seasons.

(i) Seasonal Affective Disorder (SAD)

Seasons change causing noticeable mood swings, particularly in the winter months. Often known as the "winter blues", SAD is a type of depression in which changes in the seasonal cycle serve as a trigger for the recurrence of depressive symptoms. This phenomenon demonstrates a preference for people in the age range of 18-30, with a clear

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preference for females. People are more likely to experience symptoms of SAD if they have a history of mood disorders, depression, or other mental illnesses.

A range of symptoms appears in the winter, including fatigue, anhedonia—a condition marked by a loss of interest in previously enjoyed activities—a generalized depressive state, increased appetite leading to weight gain, a noticeable decrease in libido, hypersomnia, which translates into an increased tendency to fall asleep during the day, and an overall feeling of hopelessness regarding future prospects and current circumstances.

On the other hand, summertime brings with it a unique set of symptoms. Summertime SAD sufferers frequently exhibit agitated behavior, which can include physical discomfort, sleeplessness, and impulsive, irascible outbursts. This is made worse by a noticeable appetite decrease, leading to weight loss. An abundance of uneasiness and elevated anxiety characterizes the summertime mental terrain.

It is still unclear what specifically causes seasonal affective disorder. A maladaptive reaction within the physiological framework is precipitated by changes in temperature, climatic factors, ambient levels of natural sunshine, and humidity.

Hormone levels that regulate bodily processes vary, and these variations are crucial to the expression of SAD. The circadian cycle's sentinel regulator, melatonin, influences the chronobiological rhythms that control our restorative sleep. Concurrently, serotonin is a complex neurotransmitter that acts across a variety of physiological areas. It manages the regulation of mood, controls appetite and the digestive system, and supports the neural network that directs our mental processes. Serotonin also affects how pain is felt and handled, and it modifies blood coagulation. It is also a neurotransmitter that causes cardiac rhythm disturbances, leading to arrhythmia, and affecting the cardiovascular system. It also has a hand in behavioral and emotional disturbances, demonstrating its extensive influence on human physiology.

To receive a formal diagnosis, a person must exhibit symptoms of major depressive disorder at certain seasonal times for a period of two years in a row without any apparent relation to underlying medical conditions. Antidepressants such as SSRIs or SNRIs and CBT are the mainstay of therapeutic approaches. This process of radical cognitive restructuring results in an ongoing recalibration that gives people a clear view of reality free from the distortions caused by their past experiences.

If you suffer from SAD and have symptoms that are specific to the winter then a boost in vitamin D levels and light therapy can be utilized. When considering the use of light therapy, care must be taken, especially in patients with co-occurring illnesses including diabetes, retinopathies, or bipolar disorder, since its application may trigger inappropriate medication reactions or manic episodes.

(ii) Pro-Environmental Behavior (PEB)
PEB is based on the idea of environmental guardianship and demonstrates a variety of deliberate decisions, and lifestyle choices made by people or groups to reduce their ecological impact, reduce damage to the environment, and actively support environmental sustainability and conservation. The importance of PEB cannot be stressed as severe global environmental issues like climate change, resource depletion, and habitat devastation arise.

The four basic domains that can account for this behavior are egoistic value, which promotes and protects capitalized properties; altruism, which is the act of putting the welfare of others before your own; hedonic value, which minimizes effort while attaining pleasure; and biospheric value, which explains the intrinsic need to preserve nature.

It could be necessary to deviate from standard practice in order to follow these varied pursuits, which would benefit the environment and society at large.

Altruistic and biospheric values are highly connected with more PEB. The concept of biospheric value stands in stark contrast to anthropocentric ideals and is closely associated with ecocentric views, which maintain that the environment has inherent value and ought to be protected regardless of human benefit or usage. In actuality, biospheric value encourages environmental preservation, even if it means making a sacrifice. A reduction in the use of personal vehicles, the adoption of water-saving measures, recycling habits, active environmental advocacy, support for energy policies that lower carbon emissions and benefit the environment, and the use of renewable energy sources in domestic settings are just a few examples of how this commitment can be demonstrated.

The principle of PEB gathered serious adherence and absorption, spreading its influence even into native societies like the local iwi in Aotearoa New Zealand. The recent acknowledgment of civil rights for natural entities like the Whanganui River, Te Urewera National Park, and Mt. Taranaki is an example of how profound admiration for the environment has given rise to unique legal issues. Although the implications of these methods may appear radical, they serve as symbolic representations of the growing commitment across the globe to recognize and manage environmental imperatives. This commitment is supported by a collective effort to increase awareness and reinvigorate productive discourse regarding the veracity of such theories.

(iii) Environmental Consciousness (EC)
Environmental consciousness, often referred to as environmental awareness, can be broken down into its component aspects. The term "environment" refers to the entire natural world as well as the effects of human behavior on it. In this context, "consciousness" refers to a high level of awareness of one's immediate environment and a correspondingly cautious and nervous reaction to it. Combining these two phrases points to a thoughtful application of environmental information to guide firm decision-making while maintaining a steadfast dedication to the preservation and welfare of the natural world.

Important topics including pollution, waste management, habitat loss, and deforestation are always in the news and hold a prominent place in today's discourse. It is critical to understand that anthropogenic activities and the ensuing ecological disruption they cause ultimately lead to climate change. The environmental principles embody a strategy that is supported by a dedication to ongoing and sustainable techniques intended to alleviate these pervasive and complex concerns.

In addition to causing harm to the planet, humanity's destructive activities jeopardize every living thing's environment and the succeeding generations. Jainism, a reputable Indian religion, suggests that symbiosis includes not only the world of living creatures but also the elements of fire, air, water, earth, and space.

LITERATURE REVIEW

(i) Ramadhani Lausi Mkumbachi, I Komang Astina, Budi Handoyo (2020) aimed to explore "the levels of environmental awareness and pro-environmental behavior and to find the relationship between environmental awareness and pro-environmental behavior among university students." This study employed a survey approach in a descriptive quantitative research design. The sample for this study consisted of 400 undergraduate students from various universities in Indonesia. The results revealed that most students possessed higher environmental awareness and exhibited highly environmentally friendly behavior. Furthermore, there was a significant relationship between environmental awareness and pro-environmental behavior among university students.

(ii) Audra Balundė[1, 2*], Goda Perlaviciute[2], Linda Steg[2] (2019) studied "The Relationship between People's Environmental Considerations and Pro-Environmental Behavior in Lithuania". This was a correlational study done on 334 individuals via a convenience sampling method in Lithuania. They concluded by saying that general environmental considerations are related to pro-environmental behaviors beyond Western Europe and the United States.

(iii) Aditi Mishal, Rameshwar Dubey, Omprakash K. Gupta, Zongwei Luo (2017) investigated "The relationships between environmental consciousness (ECO), green purchase attitude (GPA), green purchase intention (GPI), perceived customer effectiveness (PCE), green behavior (GRB) and green purchase behavior (GPB)". This was a two-stage random sampling method where a survey was conducted. The first stage involved 100 households, and the second stage involved 25 households. The study has produced empirical evidence supporting the claim that the customer's ECO strongly affects PCE and GPA but not GPI. Moreover, GPA and GPI have a big impact on how successful green purchases are.

(iv) Shrikant Srivastava a, Mukul Sharma b (1997) conducted a report on "Seasonal affective disorder: report from India (latitude 26° 45′ N)". The study was conducted in the outpatient clinic of a tertiary care center, and the selected patients were interviewed. A total of 93 individuals (males = 67, females = 26) of a mean age of 26.59 years (range 20–70 years) constituted the sample. DSM-III-R criteria for a seasonal pattern of recurrence was met by 18 individuals. In order to get a ballpark estimate of the prevalence of SAD, they also included patients who were in the manic or hypomanic phase at the time of the study. As a result, of the patients in the seasonal group, 7 were currently depressed (winter = 4, summer = 3), and 11 were in mania or hypomania.

METHODOLOGY

This chapter aims to explain how this research was conducted. It describes the methods and tools that were used to gather and analyze the data. The goal is to show you how the research findings were obtained. This chapter elucidates the methodology employed to ensure that this study is credible and reliable.

Need for the Study

Several important aspects highlight the importance of performing a study titled "The Impact of Seasonal Affective Disorder on Environmental Consciousness and Pro-Environmental Behavior". To begin with, there is a significant gap in existing literature exploring the potential link between seasonal affective disorder and its influence on environmental consciousness and pro-environmental behavior. Exploring this relationship can aid in

making valuable contributions to this field. Furthermore, it is vital to explore the relationship between SAD and environmental consciousness in a world of growing environmental concerns, as it can bridge the gap between mental health and environmental concerns. Major public health concerns include challenges with mental health. If seasonal affective disorder results in altered environmental consciousness or pro-environmental behavior, it can have broader implications on public health, highlighting the importance of considering mental health in public health initiatives. Overall, the study can also help promote a holistic understanding of the various factors that can influence individuals' attitudes and actions towards the environment.

Aim
To assess the impact of seasonal affective disorder on environmental consciousness and pro-environmental behavior in adults.

Objectives
- To evaluate the impact of seasonal affective disorder on pro-environmental behavior among adults.
- To assess the impact of seasonal affective disorder on environmental consciousness among adults.
- To analyze the relationship between seasonal affective disorder and pro-environmental behavior among adults.
- To examine the relationship between seasonal affective disorder and environmental consciousness among adults.

Hypothesis
- There is no significant relationship between seasonal affective disorder and pro-environmental behavior among adults.
- There is no significant relationship between seasonal affective disorder and environmental consciousness among adults.
- There will be no significant impact of seasonal affective disorder on pro-environmental behavior among adults.
- There will be no significant impact of seasonal affective disorder on environmental consciousness among adults.
- There is no significant difference between the study variables across socio-demographic variables.

Research Design
This study employs a quantitative research design to examine the relationships between seasonal affective disorder, environmental consciousness, pro-environmental behavior, and various sociodemographic factors among young adults.

Venue
The universe of the study will include young adults residing in Chennai and neighboring locations.

Data Analysis:
- **Descriptive Analysis:** Descriptive statistics will be used to summarize demographic statistics, seasonal affective disorder level, pro-environmental behavior, and environmental consciousness.

Inferential Analysis:
- **Correlation Analysis:** Pearson's correlation coefficient will be computed to analyze the relationships between seasonal affective disorder and pro-environmental behavior, and seasonal affective disorder and environmental consciousness. T-test analysis will be employed to explore the influence of sociodemographic variables on seasonal affective disorder, pro-environmental behavior, and environmental consciousness.
- **Regression Analysis:** Regression analysis will be used to examine and quantify the impact of seasonal affective disorder on environmental consciousness and pro-environmental behavior in adults. This statistical tool helps validate the model, explore interaction effects, and investigate mediation, providing valuable insights into the dynamics of the relationship between the variables involved.

Subject
The subjects of this research study are adults aged 18 to 65.

Sampling Technique and Sample Size
A convenient sampling technique is used. The number of samples collected was (n) = 120. Samples will be collected from adults residing in Chennai and neighboring regions. Data will be collected from participants between the ages of 18 and 65 who reside in Chennai and can understand English. The sample size was chosen based on the previous literatures.

Inclusion Criteria
The participants must:
- Fall within the age range of 18 to 65 years old.
- Reside in Chennai or neighboring regions.
- Be able to understand English.
- Be able to independently consent to participate in the study.

Exclusion Criteria
The participants must not:
- Be unable to understand English

Tools for Data Collection
- Sociodemographic Sheet: The sheet will be prepared and used to collect information regarding the socio-demographic details of participants such as age, gender, and marital status.
- Seasonal Pattern Assessment Questionnaire (SPAQ): Depression symptoms and their occurrence during specific seasons of the year are both evaluated using the Seasonal Pattern Assessment Questionnaire (SPAQ). It is a 17-item measure that combines quantitative and qualitative research methods for gathering. The SPAQ's SAD criteria have an excellent specificity of 94%. It has a six-item general seasonality score (GSS), from which screening thresholds for seasonal affective disorder (SAD) have been determined. High reliability and validity characterize this scale.

- Sustainability Consciousness Questionnaire (SCQ): With a Cronbach Alpha value of 0.72 and 5-point Likert scale ratings, the Sustainability Consciousness Questionnaire (SCQ) is a highly dependable tool for this research. There was adequate internal consistency in the knowingness/attitude component ($\alpha = 0.889$ and $\omega = 0.902$).
- Pro-Environmental Behavior Scale (PEBS): Likert scoring on the Pro-Environmental Behavior Scale (PEBS) is seven points. It has eleven elements, all of which are affirmative assertions. It is appropriate for use in this study because to its excellent reliability and validity.

Procedure
The purpose of this study is to understand the impact of seasonal affective disorder on pro-environmental behavior and environmental consciousness among adults. The participants were informed of the same and briefed on the ethical considerations taken, their right to withdraw, and the protection of their data. Their informed consent and permission to participate in this study were received from selected participants. Data was collected from willing participants, aged 18 to 65, starting with sociodemographic details and tools like the Seasonal Pattern Assessment Questionnaire (SPAQ), Sustainability Consciousness Questionnaire (SCQ), and Pro-Environmental Behavior Scale (PEBS).
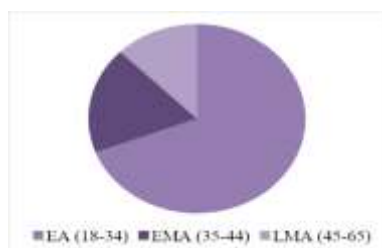
Ethical Consideration
Ethical considerations in the study on the impact of seasonal affective disorder on environmental consciousness and pro-environmental behavior in adults involve ensuring informed consent from participants, safeguarding their confidentiality and anonymity, and minimizing any potential harm or distress caused by the research procedures conducted online. Participants will be provided with comprehensive information about the study objectives and procedures. Informed consent forms will be included in the online survey, emphasizing participants' right to withdraw at any stage without consequences. Participant data will be securely stored on password-protected Google Forms and anonymized, and any identifiable information will be carefully protected. Ethical guidelines will be strictly adhered to throughout the online survey, emphasizing the importance of respecting participants' autonomy and well-being. The information gathered will be safely saved and used only for study.

RESULTS AND DISCUSSION
Table 4.1 shows the distribution of respondents on the basis of age group

Age group	N	%
Early Adulthood (18-34)	83	69.2
Early Middle Age (35-44)	22	18.3
Late Middle Age (45-65)	15	12.5
TOTAL	120	100.0

■EA (18-34) ■EMA (35-44) ■LMA (45-65)

Table 4.1   According to Table 4.1, 83 (69.2%) of the 120 samples are between the ages 18-34, 22 (18.3%) of the samples are between 35-44 and 15 (12.5%) of the samples are 45-65.

Table 4.2 shows the distribution of respondents on the basis of gender

Gender	N	%
Female	49	49.8
Male	71	59.2
TOTAL	120	100.0
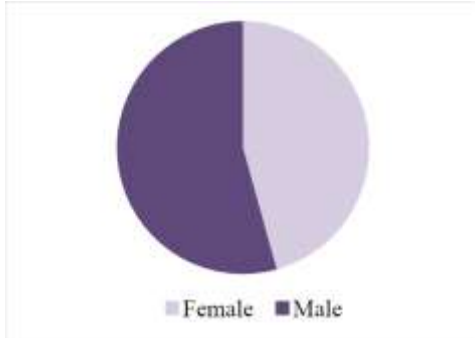
According to Table 4.2, 49 (49.8%) of the 120 samples are female and 71 (59.2%) are male.

Table 4.3 shows the distribution of respondents on the basis of marital status

Marital Status	N	%
Single	34	28.8
Married	86	71.7
TOTAL	120	100.0

According to Table 4.3, 34 (28.3%) of the 120 samples are single and 86 (71.7%) of the samples are married.

Table 4.4 shows the mean score, standard deviation, and T value of seasonal affective disorder with respect to age, gender, and marital status

Variable	Age group	N	Mean	Standard deviation	T value
	18-34	83	8.54	3.918	
	35-44	22	10.05	5.411	0.047(S)
	45-65	15	6.60	2.823	
	Total	120	8.58	4.192	
	Gender	N	Mean	Standard deviation	T value
Seasonal Affective Disorder (SAD)	Male	71	8.34	4.329	
	Female	49	8.92	4.004	0.458(NS)
	Total	120	8.58	4.192	
	Marital Status	N	Mean	Standard deviation	T value
	Single	34	9.24	5.022	
	Married	86	8.31	3.817	0.35(NS)
	Total	120	8.58	4.192	

The statistical data provided focuses on the independent variable "Seasonal Affective Disorder" and various demographical variables. Under the category of age, the data is divided into three groups: 18-34, 35-44, and 45-65. The sample size for the first age group of 18-34 is 83, the second for the age group of 35-44 is 22 and for the final age group of 45-65 it is 15. The mean score for SAD in the 18-34 age group is 8.54, for the 35-44 age group it is 10.05 and for the age group 45-65 it is 6.60. The standard deviation for SAD scores is 3.918 for the 18-34 age group, 5.411 for the 35-44 age group, and 2.823 for the 45-65 age group. Based on a t-value of 0.047, there is a statistically significant difference in SAD scores between these three age groups (S). Shifting the focus to the variable of gender, the data includes 71 males and 49 females. The mean score for SAD among males is 8.34 while among females it is 8.92. The standard deviation for SAD scores is 4.329 for males and 4.004 for females. With a t-value of 0.458, there is no statistically significant difference in SAD scores based on gender (NS). Analyzing the variable of marital status, the data consists of 34 individuals who are single and 86 married. The mean score for SAD for participants who are single is 9.24 and 8.31 for married participants. The standard deviation for SAD scores is 5.022 in single participants and 3.817 for married. Based on a t-value of 0.35, there is no statistically significant difference in SAD scores based on marital status (NS).

Table 4.5 shows the mean score, standard deviation, and T value of pro-environmental behavior with respect to age, gender, and marital status.

Variable	Age group	N	Mean	Standard deviation	T value
	18-34	83	32.64	7.613	
	35-44	22	36.91	11.288	0.0176(S)
Pro-Environmental Behavior (PEB)	45-65	15	34.93	16.782	
	Total	120	33.71	9.922	
	Gender	N	Mean	Standard deviation	T value
	Male	71	33.32	9.763	
	Female	49	34.27	10.224	0.311(NS)
	Total	120	33.71	9.922	

Variable	Age group	N	Mean	Standard deviation	T value
	Marital Status	N	Mean	Standard deviation	T value
	Single	34	33.29	8.397	
	Married	86	33.87	10.505	0.240(NS)
	Total	120	33.71	9.922	

The statistical data provided focuses on the independent variable "Pro-Environmental Behavior" and various demographical variables. Under the category of age, the data is divided into three groups: 18-34, 35-44, and 45-65. The sample size for the first age group of 18-34 is 83, the second for the age group of 35-44 is 22 and for the final age group of 45-65 it is 15. The mean score for PEB in the 18-34 age group is 32.64, for the 35-44 age group it is 36.91 and for the age group 45-65 it is 34.93. The standard deviation for PEB scores is 7.613 for the 18-34 age group, 11.288 for the 35-44 age group, and 16.782 for the 45-65 age group. Based on a t-value of 0.0167, there is a statistically significant difference in PEB scores between these three age groups (S). Shifting the focus to the variable of gender, the data includes 71 males and 49 females. The mean score for PEB among males is 33.32 while among females it is 34.27. The standard deviation for PEB scores is 9.763 for males and 10.224 for females. With a t-value of 0.311, there is no statistically significant difference in PEB scores based on gender (NS). Analyzing the variable of marital status, the data consists of 34 single individuals and 86 married. The mean score for PEB for participants who are single is 33.29 and 33.87 for married participants. The standard deviation for PEB scores is 8.397 in single participants and 10.505 for married. Based on a t-value of 0.240, there is no statistically significant difference in PEB scores based on marital status (NS).

Table 4.6 shows the mean score, standard deviation, and T value of environmental consciousness with respect to age, gender, and marital status

Variable	Age group	N	Mean	Standard deviation	T value
	18-34	83	49.25	11.014	
	35-44	22	35.82	10.523	0.000(S)
	45-65	15	36.87	7.739	
	Total	120	45.24	12.110	
	Gender	N	Mean	Standard deviation	T value
Environmental Consciousness (EC)	Male	71	46.76	11.177	
	Female	49	43.04	13.154	0.025(S)
	Total	120	45.24	12.110	
	Marital Status	N	Mean	Standard deviation	T value
	Single	34	47.35	11.936	
	Married	86	44.41	12.146	0.231(NS)
	Total	120	45.25	12.110	

The statistical data provided focuses on the independent variable "Pro-Environmental Behavior" and various demographical variables. Under the category of age, the data is divided into three groups: 18-34, 35-44, and 45-65. The sample size for the first age group of 18-34 is 83, the second for the age group of 35-44 is 22 and for the final age group of 45-65, it is 15. The mean score for EC in the 18-34 age group is 49.25, for the 35-44 age group it is 35.82 and for the age group 45-65 it is 36.87. The standard deviation for EC scores is

11.014 for the 18-34 age group, 10.523 for the 35-44 age group, and 7.739 for the 45-65 age group. Based on a t-value of 0.000, there is a statistically significant difference in EC scores between these three age groups (S). Shifting the focus to the variable of gender, the data includes 71 males and 49 females. The mean score for EC among males is 46.76 while among females it is 43.04. The standard deviation for EC scores is 11.177 for males and 13.154 for females. With a t-value of 0.025, there is a statistically significant difference in EC scores based on gender (NS). Analyzing the variable of marital status, the data consists of 34 single individuals and 86 married. The mean score for EC for participants who are single is 47.35 and 44.41 for married participants. The standard deviation for EC scores is 11.936 for single participants and 12.146 for married. Based on a t-value of 0.231, there is no statistically significant difference in EC scores based on marital status (NS).

Table 4.7 shows the correlation SAD has with PEB and EC

Scale	PEB	EC
SAD	.198	-.181

**. Correlation is significant at the 0.05 level (2-tailed).

The data provided examines the correlation coefficients between the variables "SAD", "PEB" and "EC". The correlation coefficients between SAD and PEB are 0.198 and for SAD and EC it is -0.181. These correlation coefficients illustrate the strength and direction of the relationship between SAD and PEB as weakly positively correlated while SAD and EC are slightly less weakly negatively correlated. Overall, this data provides insights into the associations between SAD, PEB, and EC. There is a significant relationship between SAD and EC and no significant relationship between SAD and PEB among 120 adults at the 0.05 level (2-tailed).

Table 4.8 shows the regression SAD has on EC and PEB

Regression Weights	Beta Coefficient	R^2	F Value	T Value	P Value
SAD → PEB	.198	.198	4.805	2.192	.030
SAD → EC	-.181	.181	3.983	-1.996	.048

The regression analysis examining the impact of SAD on PEB reveals several noteworthy findings. Firstly, the beta coefficient of 0.198 suggests a positive relationship between SAD and PEB. If SAD increases, PEB will also increase. Additionally, the R-squared value of 0.198 indicates that approximately 19.8% of the variance in PEB can be attributed to SAD, signifying a modest contribution. The F-value, with a result of 4.805 and a corresponding P-value of 0.030 (P < 0.05) suggests that the regression model approaches statistical significance in predicting PEB. However, it is important to note that the T-value of 2.192 associated with SAD suggests an individual predictor achieves conventional statistical significance P-value 0.030 (P < 0.05).

The regression analysis examining the impact of SAD on EC reveals several noteworthy findings. Firstly, the beta coefficient of -0.181 suggests a negative relationship between SAD and EC. If SAD increases, EC will decrease. Additionally, the R-squared value of 0.181 indicates that approximately 18.1% of the variance in EC can be attributed to SAD, signifying a modest contribution. The F-value, with a result of 3.983 and a corresponding P-value of 0.048 (P < 0.05) suggests that the regression model approaches statistical significance in predicting EC. However, it is important to note that the T-value of -1.996

associated with SAD suggests an individual predictor achieves conventional statistical significance P-value 0.048 (P < 0.05).

Therefore, seasonal affective disorder exerts an impact on pro-environmental behavior and environmental consciousness.

DISCUSSION

This study's main goal was to clarify the effects of seasonal affective disorder (SAD) on environmental consciousness (EC) and pro-environmental behavior (PEB). In this study, significant attention was paid to examining how SAD affected PEB and EC while also investigating the possible influence of sociodemographic factors on these constructs. The analysis revealed a notable finding: there was a statistically significant difference between age groups, particularly with the 35–45 age group showing a slightly higher mean impact. However, no statistically significant differences were found in the other sociodemographic factors of gender and married status.

When examining the link between PEB and SAD, an undeniable positive relationship has been found. This phenomenon may have its roots in the idea that people who are depressed may perform acts of kindness to better their own emotional well-being or, alternatively, as a protective mechanism to counteract the negative effects of social withdrawal and mood disturbance brought on by seasonal changes.

On the other hand, EC and SAD were found to be negatively correlated. This adverse link may be attributable to the obstacles given by decreased motivation and increased irritation that frequently accompany SAD, making cognitive engagement and environmental consideration more difficult for individuals affected.

An R-value of 0.198 indicates a clearly beneficial effect of SAD on PEB. This statistical result indicates that around 19.8% of the variance within PEB can be attributed to SAD, highlighting a small but significant contribution.

On the other hand, the influence of SAD has a negative effect on EC, as indicated by a negative R-squared value of 0.181. This statistical finding implies that around 18.1% of the underlying EC fluctuation can be explained by SAD, indicating a quiet but noticeable contribution.

After completing this thorough investigation, we can confidently state that people who struggle with SAD are not predisposed to contribute negatively to our society, easing a significant worry amid the escalating environmental problems we are currently facing. The results also highlight the negative correlation between SAD intensity and a person's ability to perceive and engage cognitively with their ecological surroundings as compared to a non-SAD state.

In addition, our study fills in a glaring gap in the field of ecopsychology by demonstrating a direct link between SAD, PEB, and EC. It emphasizes the connection between people's mental health and the well-being of society as a whole and the environment in which we live. This realization calls for more thorough research into this junction in order to prevent any negative outcomes and encourage a more peaceful cohabitation between human mental health and environmental sustainability.

CONCLUSION

The complex interactions in adult between pro-environmental behavior (PEB), seasonal affective disorder (SAD), and environmental consciousness (EC) have been elucidated by this study in convincing ways. Notably, it has discovered an important and negative link between SAD and EC along with a significant and positive correlation between SAD and PEB. The contradictory influence of SAD is highlighted by this split dynamic, which contrasts its negative effects on EC with its inclination to increase PEB. Furthermore, age was the only sociodemographic variable in this comprehensive study to show a statistically significant difference between SAD, PEB, and EC. This confluence of data points us to a vital conclusion: the seasons have a deep ability to affect changes in not just emotional state but also, most importantly, environmental effect. As a result, this area offers itself as an appealing direction for more scholarly research, offering the potential to spark positive changes via more in-depth, sophisticated investigation.

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Conflict of Interest
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