



Moving From Indifference to Responsibility: Reframing Environmental Behavior Among College Students in Israel

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Objectives: To examine the level of knowledge, attitudes, and behavior of students on topics related to climate change and the relationship between those variables.

Methods: A cross-sectional study using an online questionnaire, including 704 students. Statistical analysis was performed using Pearson correlations, *t*-tests, one-way ANOVA, and regression models.

Results: Only 42% of participants understood what climate change meant, and 14% indicated their indifference toward it. Students had a moderate level of knowledge about the impact of climate change, and their attitudes were moderately positive, yet they demonstrated poor environmental behavior. We found positive relationships between variables, with attitudes mediating the relationship between knowledge and behavior. Women demonstrated more pro-environmental behavior than men.

Conclusions: Our results highlight the importance of raising awareness of climate change's effects and its mitigation. Pro-environmental behavior requires long-term thinking and priorities for the future rather than benefits in the present. Future environmental education campaigns should emphasize individual contributions to environmental impacts in the context of climate change, as well as environmentally relevant consumption habits. We suggest including an introductory reflective and emancipatory course in environmental studies in all departments, emphasizing public health aspects.

Keywords: climate change, sustainability, environmental responsibility, knowledge and environmental attitudes, pro-environmental behavior

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INTRODUCTION

Climate change is one of the most significant global threats to humanity in the twenty-first century. Although there are many processes in nature that affect average global temperature, human activity continues to be the main factor contributing to the acceleration of climate change through processes such as greenhouse gas emissions, increases in aerosols, and changes to land cover (NASA, 2019).

Public health is expected to be significantly affected by climate change—both directly through physiological effects (the intensity and frequency of heat and cold waves) and indirectly through chronic and contagious diseases, as well as through mortality and morbidity rates as a result of other

factors, such as road accidents, fires, undernourishment, immigration, and others. These issues will also place burdens on health care and welfare systems (Swiss Re Institute, 2021). In view of the effects of climate change, it is important to examine the level of knowledge, attitudes, and behavior of the public. A better understanding of these variables should improve the current debate on the impact of human behavior on the environment and health.

Relationship Between Knowledge, Attitudes, and Pro-environmental Behavior

Knowledge alone cannot adequately predict pro-environmental behavior. Attitudes are essential for driving the transformation of knowledge to pro-environmental behavior (Dopelt et al., 2019). Despite the complex relationship between these components, researchers have shown that expanding knowledge via educational activities leads to more positive attitudes toward the environment and more responsible behavior.

Michaels (2012) found that, among the Israeli public, the increase of media coverage positively correlates with the public's understanding of climate change and its consequences. Moreover, concerns about climate change and understanding that climate change has anthropogenic causes are related to pro-environmental perceptions and behaviors.

Yang et al. (2018) examined the level of knowledge and perceptions about climate change and its effects among 1,387 medical, nursing, and public health students at five universities in China. Most respondents believed that climate change is bad for human health (88%), and 67% believed that climate change is controllable. The level of knowledge predicts an increase in awareness of the adverse effects of climate change among medical and nursing students; however, it was not as significant for their public health colleagues. Researchers concluded that students could identify the direct links between weather events and health but were less likely to understand the implications of climate change's complex and long-term processes.

Further research shows that most students understand that climate change is real and occurs primarily due to human-made factors. Although most students express concern about climate change, many of them hold misconceptions about the effects of long-term climate change and do not fully understand the potential impact of individual responsibility (Özdem et al., 2014; Wachholz et al., 2014). At the same time, other studies have shown a strong relationship between attitudes and environmental behavior among students and that positive attitudes can mediate and influence the relationship between knowledge level and environmental behavior (Milfont, 2012; Dopelt et al., 2019; Stevenson et al., 2019).

In summary, studies show that there is a gap in the environmental field between declared attitudes and actual decisions or behavior. For example, a survey conducted in the U.S. found that 40% of participants hold favorable opinions about "green" products. However, they do not purchase them for several reasons, such as cost, accessibility, or convenience (Cohen and Murphy, 2001).

This study examines the level of knowledge, attitudes, and behavior among students in Israel on topics related to climate change and the relationship between those variables. The research hypothesis is that positive relationships will be found between knowledge, attitudes, and environmental behavior, whereby attitudes mediate the relationship between knowledge and behavior.

METHODS

Study Population and Sample

This study was a cross-sectional study among students enrolled in Ashkelon Academic College from a various socio-economic status. According to the Students Administration Office, 3,707 students studied at the college in the academic track during 2019, 70% of whom were women. In total, 704 students answered the questionnaire (19% of students at the college). As an exclusion criterion, pre-academic students were not included in the study.

Research Tools and Research Process

An anonymous, closed, self-completion questionnaire was used. We did not find questionnaires in Hebrew that measured the research variables, so we translated selected questions from a validated existing English questionnaire (Hope, 2016) and added more questions to adapt the questionnaire to the Israeli context. First, the relevant questions were translated from English to Hebrew, then from Hebrew to English, and back again to Hebrew; then, the versions were compared to verify the reliability of the translation. Second, the questionnaire was validated by two health and environmental experts using a content validation method, and their comments were integrated into the questionnaire. Then, a pilot study was conducted among 30 students studying at other colleges. We asked them to write comments on the questionnaire and four unclear questions were edited. The internal reliability of the piloted questionnaire was tested for the knowledge, attitude, and behavior sections (Cronbach's $\alpha = 0.86, 0.88, \text{ and } 0.75$ respectively).

After approval from the Ashkelon Academic College Ethics Committee, the questionnaire was programmed using Qualtrics and distributed to the students on December 5, 2019. After one reminder, the survey was locked on December 25, 2019. The average time to complete the questionnaire was 5 min. There were 822 entries to the questionnaire, and 704 students completed it (85% of entering were completed).

The questionnaire was comprised of 49 closed questions, as follows:

1. Demographic information—gender, age, relationship status, city of residence, academic department, and nutritional lifestyle (omnivore/vegetarian/vegan).
2. Knowledge—Participants were asked whether they had heard of "climate change" and whether they understand what it means. In addition to those questions, the knowledge section included a 13-item knowledge questionnaire. They were asked to indicate whether they thought the statement was true or not. The questionnaire reliability was Cronbach's $\alpha = 0.85$.

TABLE 1 | Description of sample characteristics ($n = 704$).

Characteristic	<i>n</i>	%
Male	230	33
Female	474	67
In a relationship	428	61
Omnivore	642	91
Vegetarian/Vegan	62	9
Discipline		
Humanities and social sciences	415	59
Health sciences	169	24
Computer science and management	120	17
Home District		
Ashkelon District	392	56
Southern District	144	21
Central District	74	10
Jerusalem District	33	5
Unspecified	61	9

- Attitudes—Participants were asked how they felt about climate change (e.g., scared, worried, sad, indifferent). In addition, there were 18 questions relating to attitudes toward climate change, in which respondents were asked to indicate to what extent they agree with the statement on a Likert scale of 1 (strongly disagree) to 5 (strongly agree). The questionnaire reliability was Cronbach's $\alpha = 0.90$.
- Behavior—Participants were asked nine questions to rate the extent to which each of the statements describes their behavior on a Likert scale ranging from 1 (not at all) to 5 (to a large extent). The questionnaire reliability was Cronbach's $\alpha = 0.78$.

Data Analysis

The data were analyzed using SPSS v. 26 (IBM, Armonk, NY, USA). The exploratory data analysis demonstrated that the data was normally distributed, and parametric statistical tests were used. The relationships between the variables were examined by calculating Pearson correlations. Mediation was examined using linear regressions, according to the Baron and Kenny method (Baron and Kenny, 1986). Differences between groups were examined using independent-samples *t*-tests or one-way analysis of variance (ANOVA). Finally, hierarchical linear regression models were compiled to predict pro-environmental behavior.

RESULTS

Description of Sample Characteristics

The sample included 704 students aged 19–55 (average 26.5 ± 9.5). **Table 1** describing sample characteristics.

Level of Knowledge

Most participants (80%) had heard of the term “climate change.” Only 42% answered that they completely understood what is meant by “climate change,” 32% moderately understood, and 26% did not understand what climate change is.

TABLE 2 | Distribution of responses to the knowledge questionnaire.

As far as you know, can climate change cause...?	Correct (%)	Incorrect (%)	Don't know (%)
Aggravation of air pollution	88	4	8
Increase in air temperatures	87	5	8
Desertification	85	5	10
Agricultural damage (loss of crops and loss of farming land)	85	6	9
Increase in the number of natural disasters, such as hurricanes, floods, and earthquakes	82	6	12
Decrease in the variety of plant and animal species	81	7	12
Decrease in rainfall	74	11	15
Less fish in the sea/ocean	72	10	18
Rising sea levels	71	10	19
Increase in morbidity	68	9	23
Increase in ocean temperature	65	8	27
Decrease in air temperatures	58	24	18
Migration of people due to displacement from their homes	52	19	29

The distribution of responses to the statements that examined the level of knowledge concerning the damages caused by climate change is presented in **Table 2**.

To construct the variable “level of knowledge,” we counted the number of correct answers provided by each participant. The variable ranged from 0 to 13. The mean value of the knowledge variable was 9.63 ± 3.56 .

Attitudes

The distribution of responses to statements that examined attitudes is presented in **Table 3**, and the categories were combined as follows: Answers 1 and 2 were combined into the category “disagree,” answer 3 remained “moderately agree,” and answers 4 and 5 were combined into the category “strongly agree.”

To construct the attitudes variable, we calculated the mean response of each after inverting the scale for the three negative items as marked in the table. The mean value of the variable was 3.84 ± 0.72 .

In addition, participants were asked about their feelings about climate change from a given list of sentiments (more than one answer could be marked). About one-fifth (18%) of respondents felt hopeful and that change can be made. In contrast, only 3% of respondents reported that they did not believe that climate change existed, 16% of respondents reported feeling fear in the context of climate change, and 15% reported feeling helpless in the face of the threat of climate change. Moreover, on the one hand, 14% of respondents reported feeling sad, and, on the other hand, the same percentage of respondents reported indifference. Twelve percent of respondents reported a sense of confusion, and only 8% reported feeling angry.

TABLE 3 | Distribution of responses to the attitude questionnaire.

Statement	Disagree (%)	Moderately agree (%)	Strongly agree (%)	Mean ± SD
It is important to recycle plastic, glass, etc.	5	10	85	4.37 ± 0.90
Public awareness of climate change must increase	6	15	79	4.25 ± 1.00
Deforestation should be reduced	8	14	78	4.19 ± 1.06
People should be encouraged to save water and reuse items	9	15	76	4.13 ± 1.06
Climate change may adversely affect the quality of life of future generations	14	11	75	4.03 ± 1.28
Climate change is happening	10	15	75	4.01 ± 1.00
It is important to conserve energy and natural resources	11	20	69	3.98 ± 1.12
Anyone can do something to reduce climate change	16	17	67	3.91 ± 1.23
Addressing climate change in Israel should be a higher priority than it is today	15	18	67	3.87 ± 1.18
Human activity is responsible for climate change	15	13	72	3.85 ± 1.16
I am concerned about climate change	25	25	50	3.44 ± 1.24
Israel is too small a country to do anything about climate change*	7	14	79	3.18 ± 1.15
Climate change does not affect us in Israel*	13	12	75	3.13 ± 1.23
People who deal with climate change are making a big deal out of nothing*	22	12	66	3.10 ± 1.18
It is better not to buy a house near the coast for fear of rising seawater in the future	34	29	37	3.09 ± 1.33
I would agree to pay more for more environmentally friendly products	36	25	39	3.03 ± 1.42
It is more important to think about immediate concerns than worry about the effects that climate change will have in 50 years*	14	16	70	2.86 ± 1.25
A course on environmental issues should be required for all students during their studies	49	20	31	2.72 ± 1.43

*Opposite items; the data are presented after inversion of scales.

TABLE 4 | Distribution of responses to the behavior questionnaire.

Statement	Rarely (%)	Sometimes (%)	Often (%)	Mean ± SD
I'm willing to do everything I can to protect the environment	20	33	47	3.38 ± 1.04
I recycle waste, like plastic containers	46	22	32	2.76 ± 1.40
I use energy-efficient appliances	54	23	23	2.43 ± 1.32
I usually buy eco-friendly products	55	26	19	2.41 ± 1.21
I reduce fuel consumption (by using public transportation, carpool, etc.)	57	22	21	2.37 ± 1.34
I reduce my consumption of animal food products (e.g., meat, chicken)	76	12	12	1.84 ± 1.22
I use disposable plastic products*	39	27	34	1.80 ± 1.27
I am considering cutting back on flying due to the environmental footprint	83	11	6	1.63 ± 1.07
I attend environmental protests/demonstrations	92	4	4	1.30 ± 0.78

*Opposite items; the data are presented after inversion of scales.

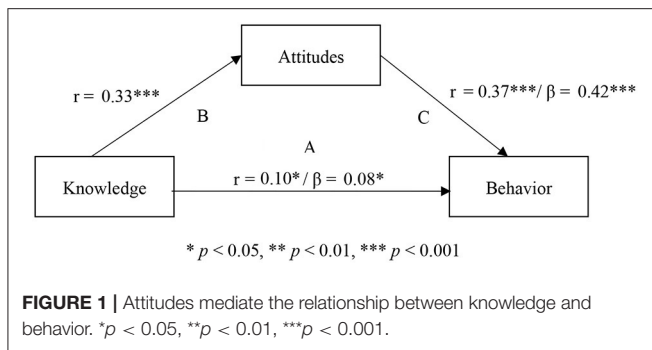
Behavior

The distribution of responses to the statements, after combining categories, is presented in **Table 4**.

To construct the variable, we calculated the mean response for each participant after inverting the scale for the negative item (as marked in the table). The mean value of the behavior variable was 2.41 ± 0.64 .

Relationships Between Knowledge, Attitudes, and Behavior

Using Pearson correlations, we found positive and strongly significant relationships between level of knowledge and attitude ($r_p = 0.42$, $p < 0.001$) and between attitude and behavior ($r_p = 0.37$, $p < 0.001$) and a weak significant relationship between level of knowledge and behavior ($r_p = 0.10$,



$p < 0.05$). In other words, participants with higher levels of knowledge demonstrated more positive attitudes and pro-environmental behavior. Additionally, participants with more pro-environmental attitudes exemplified more pro-environmental behavior. Therefore, the hypothesis is confirmed.

Attitudes Mediating the Relationship Between Knowledge and Behavior

Three linear regressions were performed according to the Baron and Kenny method (Baron and Kenny, 1986), as shown in **Figure 1**. In the first regression (path A), we found that knowledge predicted behavior ($\beta = 0.10$, $p < 0.05$, $R^2 = 1\%$). In the second regression (path B), we found that knowledge predicted attitude ($\beta = 0.42$, $p < 0.001$, $R^2 = 17\%$). In the third regression (path C), when we added the attitude variable, the amount of variance explained increased to 15%, and the power of the corrected regression coefficient (β) of the knowledge decreased ($\beta = 0.08$, $p < 0.05$). The attitude variable was found to significantly predict behavior ($\beta = 0.40$, $p < 0.001$). Thus, according to Baron and Kenny (1986), attitude partly mediates the relationship between knowledge and behavior. In other words, if we controlled for the effect of attitude, there was still a relationship between knowledge and behavior, but it was weaker. The change in the variance percentage was significant (R^2 change = 0.14, $p < 0.001$), thereby confirming our hypothesis.

Differences Between Genders

No differences were found between genders in the level of knowledge and attitudes; however, significant differences were found with respect to behavior on topics related to climate change [$t_{(694)} = 2.28$, $p < 0.05$]. Women exhibited more pro-environmental behavior than men (mean 2.45 vs. 2.33, respectively).

Differences Between Disciplines

Significant differences were found between disciplines in the level of knowledge [$F_{(668)} = 4.18$, $p < 0.05$], attitudes [$F_{(670)} = 4.27$, $p < 0.05$], and behavior [$F_{(665)} = 5.23$, $p < 0.01$] on issues related to climate change. Computer science and management students had the highest level of knowledge, followed by health sciences and humanities and social sciences (mean 10.22, 10.10, and 9.36, respectively). Health sciences students held the most positive attitudes, followed by computer science and management, and

humanities and social sciences (average 3.98, 3.82, and 3.79, respectively). Students from health sciences reported more pro-environmental behavior, followed by humanities and social sciences, and finally by computer science and management (mean 2.53, 2.39, and 2.28, respectively). Scheffé's follow-up test results show that health sciences students hold significantly more positive attitudes toward the environment than humanities and social sciences students and more pro-environmental behavior than computer and management students.

Linear Regression Model to Predict Pro-environmental Behavior

The findings of the hierarchical linear regression models to predict pro-environmental behavior are contained in **Table 5**. Variables that were significantly related to behavior in the univariate analyses were included in the models.

The ability of all variables to predict pro-environmental behavior was maintained, except gender, in the final model, which included all the variables that were significant in the previous models. Attitudes were the best predictor of behavior ($\beta = 0.31$, $p < 0.001$). They were followed by age ($\beta = 0.15$, $p < 0.001$) and being hopeful about possible change ($\beta = 0.14$, $p < 0.001$). The integrated model also indicated that not being in a relationship and having feelings of indifferent, confusion, and anger predict behavior ($\beta = 0.12$, $p < 0.01$; $\beta = 0.13$, $p < 0.01$; $\beta = 0.12$, $p < 0.01$; and $\beta = 0.11$, $p < 0.01$, respectively). The variance explained by the final model was approximately 22% ($p < 0.001$).

DISCUSSION

The present study examined the level of knowledge, attitudes, and behavior of college students on topics related to climate change. The participants' knowledge level about the potential damage due to climate change is quite high, and their attitudes are mostly positive, while their pro-environmental behavior is low. These findings corroborate several studies showing that people have a high level of knowledge and positive attitudes, along with poor pro-environmental behavior (Pugliese and Ray, 2011; Lombardi and Sinatra, 2012; Meyer, 2015; Yang et al., 2018).

While the average level of knowledge is generally high, an inspection of the various items shows gaps in knowledge level. For example, only about half of the respondents (52%) knew that climate change could cause mass migration, despite publications estimates range between 25 million and 1 billion "climate migrants" by 2050 (Brown, 2008). On the other hand, 85% of the students responded positively when asked whether they felt that climate change could cause desertification. About one-fifth of the participants did not associate the natural disasters reported in the media (e.g., hurricanes, earthquakes, fires) with climate change. One-third of the respondents also lacked the understanding that the effects of climate change will also result in increased morbidity.

The behavioral questionnaire results show a dissonance. On the one hand, the participants declared that they are willing to do everything they can to protect the environment, but they displayed very little pro-environmental behavior.

TABLE 5 | Results of hierarchical linear regression models to predict pro-environmental behavior.

Variable	Background variables	Knowledge and attitudes	Feelings	Combined model
	β	β	β	β
Gender (0—male, 1—female)	0.10*			0.06
In relationship (0—in relationship)	0.09*			0.12**
Age	0.19***			0.15***
Knowledge		0.08*		0.08**
Attitudes		0.40**		0.31**
Afraid (0—yes)			0.02	
Sad (0—yes)			0.01	
Helpless (0—yes)			0.01	
Indifferent (0—yes)			0.16***	0.13**
Confused (0—yes)			0.14***	0.12**
Angry (0—no)			0.13**	0.11**
Hopeful (0—no)			0.20***	0.14***
Adjusted R Square	0.04***	0.15***	0.13***	0.22***
N	682	695	696	682

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Example responses do not recycle, do not buy eco-friendly products, and do not reduce fuel consumption. Janmaimool and Khajohnmanee (2019) had similar findings, which showed that a high level of knowledge along with positive attitudes did not necessarily provide a basis for positive environmental behavior. Sometimes people are biased in favor of the present and underestimate the future, so they prefer a small profit today over a more significant profit in the future. The present preference over the future is a classic sustainability problem because it requires long-term thinking and priorities for the future rather than benefits in the present (Pahl et al., 2014).

The strongest correlation was found between knowledge and attitudes, followed by the correlation between attitudes and behavior, and finally, between knowledge and behavior. In the past years, the media has placed increasing importance on environmental issues. Environmental education studies discovered a clear relationship between acquiring knowledge and an uptick in positive attitudes toward the environment (Adler et al., 2016; Fang et al., 2018). Many studies have supported these results and have shown that environmental knowledge is necessary to drive responsible environmental behavior and is a prerequisite for action (Tuncer et al., 2009; Milfont, 2012; Stevenson et al., 2019). Environmental knowledge is essential in the prevalence of supportive environmental behavior and is a prerequisite for formulating attitudes toward environmental problems (Rickinson, 2001). Knowledge, however, is not the central component affecting behavior (Pe'er et al., 2007); indeed, this study's findings show that the strength of the correlation between attitudes and behavior is stronger than the strength of the correlation between knowledge and behavior. Varoglu et al. (2018) supported that finding, which reported a moderate relationship between environmental knowledge and attitudes of students at the secondary school level in North Cyprus and found a weak relationship between knowledge and pro-environmental behavior.

Sobel (2002) article on ecophobia in the context of climate change can explain the weak relationship between knowledge and behavior. According to Sobel (2002), a high level of knowledge about climate change and its dangers inherent in it can result in deplorable environmental behavior. There are two main types of environmental knowledge; the first is based on natural disasters seen in the media, and the second comes from personal experiences, activism, and environmental curiosity. An excess of knowledge of natural disasters makes one feel as though they are environmental recurrences, along with a sense that nothing can be done about them. As a result, the individual does not make changes, so a high level of knowledge ultimately leads to low environmental behavior.

It was also evident that the relationship between the level of knowledge and behavior was partially mediated by attitudes. Namely, if we account for the effect of attitudes, there exists a relationship between knowledge and behavior, although weaker. Geiger et al. (2019) found that, although people had a high level of environmental knowledge, their pro-environmental behavior engagement was merely average. Oreg and Katz-Gerro (2006) stated that environmental knowledge potentially fosters an environmental attitude, which, in turn, influences environmental behaviors. According to Pe'er et al. (2007), knowledge is critical, but the emotional component related to attitudes is necessary to drive the transformation of knowledge into behavior. Fishbein and Ajzen's theory of reasoned action (TRA) (Fishbein and Ajzen, 1975), connects variables that influence a behavior: intention; attitude toward the behavior; subjective norm; and perceived behavioral control. In the context of our findings, the knowledge, and positive attitudes, combined with social norms that call for environmental conservation, can create a socialization process that strengthens environmental responsibility. Those factors will create motivation and intentions to act to mitigate climate change.

We did not find differences between genders in the level of knowledge or attitudes; nevertheless, significant differences between genders were found for behavior. Women had more pro-environmental behavior than men. Similar findings were found in some other studies (Wongchantra and Nuangchalerm, 2011; Lombardi and Sinatra, 2012; Cincera and Krajhanzl, 2013; De Silva and Pownall, 2014; Xiao and McCright, 2014). Researchers offer some possible reasons for this, including the arguments that, due to women's socialization into traditional roles in the home, they are primarily responsible for the use of plastic items, recycling, and other concerns, or perhaps their role as mothers causes them to worry more about future generations (Xiao and McCright, 2014).

We also found that computer science and management students have the highest level of knowledge, while health sciences students hold the most positive attitudes and pro-environmental behavior. Health sciences students participate in a course devoted to health and the environment as part of their curriculum. The findings are consistent with Janmaimool and Khajohnmanee (2019) results that revealed significant differences in environmental attitudes and the engagement in pro-environmental behavior between students participating in the environmental course and students not participating in the course. Heeren et al. (2016) also indicated that environmental knowledge is essential to encourage American students in pro-environmental behavior engagement; however, environmental knowledge is not as important as attitudes toward the environment. Formal environmental education can positively change students' environmental attitudes and influence them to adopt pro-environmental behavior.

Finally, in the regression model, it was found that pro-environmental behavior is a function of knowledge, attitudes, and feelings. Heyl et al. (2013) also revealed the potential of positive environmental attitudes for predicting the pro-environmental behavior of engineering students in a Chilean university. Despite the positive correlation between knowledge and attitudes and pro-environmental behavior, there seems to be a cognitive dissonance that prevents those with a high level of knowledge and positive attitudes from behaving in a pro-environmental manner. The theory of cognitive dissonance centers around the idea that if a person knows various things that are not psychologically consistent with one another, the person will, in a variety of ways, try to make them more consistent (Festinger, 1962). The person will change their behavior or adopt a new attitude to reduce the dissonance. Therefore, failure to take proactive action to change the population's behavior toward the environment may result in people with positive attitudes but minimal pro-environmental behavior adopting more negative attitudes to reduce this dissonance (instead of changing their behavior).

In order to create pro-environmental behavior, a positive attitude is necessary for two reasons. First, we presented the positive relationship between positive attitudes and pro-environmental behavior—a finding that is consistent with many studies (Mtutu and Thondhlana, 2016; Paço and Lavrador, 2017; Geiger et al., 2018; Liefländer and Bogner, 2018; Varoglu et al., 2018). Second, because attitudes are partially mediated by knowledge level and pro-environmental behavior and because

a high level of knowledge is not necessarily enough to predict pro-environmental behavior, we are led to conclude that positive attitudes improve behavior. However, raising the level of knowledge is easier and more practical than influencing attitudes, so it is important to continue education (Janmaimool and Khajohnmanee, 2019). It is likely that a significant proportion of the population does not know how to adopt pro-environmental behavior or is lacking the element of personal interest in environmental behavior. In addition, pro-environmental behavior involves understanding the implications of long-term climate change, a challenge that is a barrier for the population in the process of changing attitudes and adopting pro-environmental behavior (Yu et al., 2018). Another possible reason is that pro-environmental behavior is sometimes a consequence of the possibilities available to an individual. For example, recycling behavior is only possible when recycling infrastructure exists (e.g., availability of recycling bins). The same is true for preferring public transportation over private cars; if public transportation is not available, the decision to use a private car is not a matter of lack of an alternative.

We can summarize by saying that environmental behavior is a function of increasing an individual's knowledge and attitudes. Nevertheless, the study shows that there is sometimes a gap between attitudes and behavior. Pro-environmental behavior involves conflict between the individual's immediate needs and long-term environmental interests. Preferring the present over the future is a classic sustainability problem.

LIMITATIONS

The present was conducted only among students at Ashkelon Academic College and may not be a representative sample for all students or the general population in Israel. Another limitation of the study may be selection bias due to the nature of the online survey—participants may have entered the survey because of their personal interest in climate change. However, the moderate levels of knowledge, attitudes, and behavior indicate that these limitations did not lead to any significant biases in the results, if any.

RECOMMENDATIONS

Future environmental education campaigns should emphasize individual contributions to environmental impacts in the context of climate change as well as environmentally relevant consumption habits, including the environmental and health benefits of organic food consumption. People will be able to slow climate change through recycling and reducing fuel and animal product consumption. Environmental education actions are continuous and should be based on emancipatory and critical learning. There is a need for emancipatory environmental education, based on constructive, critical and transformative learning, in contrast to passive, top-down methods that leaves little or no room for autonomy, self-responsibility, and self-determination. Such education should build upon the ideas and the lifeworld of the learner, challenging underlying assumptions

and values, taking into account social inequities, thus creating the foundation for empowerment when changing lifestyles. In addition, beyond the contribution of each individual, we must strive for change in all systems and for the understanding that we must protect the environment.

The fact that only 42% of the college students who participated in this study have knowledge of climate change, and a considerable amount were indifferent toward it, is an indication that the general population can potentially have even less exposure and knowledge. Thus, we recommend that environmental education, especially recycling and other basics, is introduced as early as Kindergarten, and is reinforced throughout the primary school years. Naturally, the habits and values that are developed during childhood persevere into adulthood.

We also recommend including an introductory course in environmental studies in all college departments, emphasizing public health aspects. Currently, this issue is not adequately emphasized in public health programs in Israel. Indeed, the discussion of climate change is of fundamental importance due to the many forms of damage climate change can cause and individual responsibilities, as described in the current study.

Various initiatives are now being promoted worldwide, such as encouraging carpooling, reducing flights, recycling competitions, promoting meatless Mondays, and increasing awareness of the impacts of climate change through education. These ideas should be evaluated in order to promote the best practices to deal with this crucial issue. A more in-depth study could include focus groups and interviews to better examine policy makers' awareness and behavior concerning climate change.

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With the above proposals, we can envision a world where attitudes change from indifference to responsibility, and ultimately, actions change from ambivalence to involvement to secure a better environment for generations to come.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Ashkelon Academic College. Written informed consent for participation was not required for this study in accordance with the national legislation and the institutional requirements.

AUTHOR CONTRIBUTIONS

KD and OL: conceptualization, formal analysis, and writing—original draft preparation. KD and ND: methodology. GG: software and data curation. KD, OL, GG, and ND: validation. KD: investigation and supervision. ND: writing—review and editing. OL and GG: project administration. All authors discussed the results, contributed to the final manuscript, and approved the final version.

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