

ORIGINAL ARTICLE

Explaining the Role of Moral Intelligence in University Students' Environmental Attitude and Morality

Faezeh Shahrabi Farahani¹, Zeinab Sadat Athari²(ORCID: 0000000237686638)

1. M.A in Curriculum Planning,
Department of Educational Sciences,
Faculty of Humanities, University of
Kashan, Kashan, Iran
2. Assistant professor, Department of
Educational Sciences, Faculty of
Humanities, University of Kashan,
Kashan, Iran.

Correspondence:
Zeinab Sadat Athari
Email: zathari@kashanu.ac.ir

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ABSTRACT

The present study was conducted to investigate the role of moral intelligence in the environmental attitude and morality of the students at the University of Kashan. This research employed a descriptive-correlational design. Three standardized questionnaires, including the Moral Intelligence Questionnaire (Lennick & Kiel, 2005), the Environmental Attitude Questionnaire (Gagnon Thompson & Barton, 1994), and the Environmental Morality Questionnaire (Firoozfar et al., 2019), were used for data collection. The statistical population comprised all 5,597 undergraduate students at the University of Kashan, from which a sample of 265 students was selected using stratified random sampling proportional to size. The content validity of the questionnaires was confirmed by experts, and the reliability of the Environmental Attitude, Moral Intelligence, and Environmental Morality questionnaires was calculated to be 0.82, 0.89, and 0.91, respectively. Data analysis was performed using SPSS22 and AMOS software. The findings revealed that moral intelligence has a positive and significant effect on students' environmental attitudes and morality. Moreover, aspects of moral intelligence, including forgiveness, compassion, responsibility, and integrity, were directly related to environmental morality and attitude. Therefore, based on the results of the study, fostering and enhancing moral intelligence is essential for improving and increasing environmental attitudes and morality.

KEYWORDS

Environmental Morality, University Student, Environmental Attitude, Moral Intelligence.



Introduction

The issue of the environment and its protection is among the most pressing challenges in the world today. Destroying the environment equates to destroying the life cycle and the possibility of sustaining life. Environmental protection is the duty of everyone in society, and misusing it is a factor in exploitation and undermining the rights of people in society (Sojasi et al., 2023). The environment is the natural world in which living creatures communicate with each other, engaging in ongoing interaction and reciprocal relationships. It includes all the conditions and factors that influence the life and growth of living creatures (Hafezi et al., 2023). In other words, the environment and life depend on each other, and the environment is considered an important factor for humanity. The importance of discussing the environment and its related issues is so great that today, mankind will not be able to find a solution without changing his or her thoughts and behavior (Farzi & Farokhiyan, 2019). Environmental issues such as the depletion of the ozone layer, water pollution and crisis, extinction of animal species, energy overuse, wastage of water and nutrients, soil erosion and desertification, inappropriate waste collection, and the lack of sorting it, along with many other destructive environmental behaviors, pose significant threats. These environmental issues and disasters not only threaten the persistence of human life but also destroy the security and tranquility of human existence. As a result, the environment is among the most serious and challenging issues in political and scientific circles today (Vellai, 2005). Thus, it is essential to pay special attention to the issue of environmental protection.

One of the factors that seems to be effective in addressing these environmental crises and protecting the environment is "morality." Morality is a branch of axiology that discusses attitudes and spiritual values through a philosophical lens. The study of morality encompasses various fields, such as servitude morality, individual morality, social morality, and environmental morality. It is only in recent decades that the concept of environmental morality has attracted the attention of scientists

in various fields. Environmental morality is a subcategory of operational morality, focusing on human interaction and behavior with the non-human universe. Specifically, environmental morality offers a systematic and comprehensive rationale for why there should be moral relationships between humans and the natural environment (Abedi Sarvestani & Mohagheghdamad, 2012). Its purpose is to provide a moral framework and motivation for addressing global environmental issues (Haji & Haji, 2023). Environmental morality addresses universal concerns such as the human relationship with the environment, understanding one's responsibility toward the environment, commitment to protecting resources for future generations, preventing environmental pollution, and preserving wildlife and species diversity (Olia, 2012; Mousavi et al., 2019). Thus, investigating the relationship between autonomous, conscious human actions and environmental entities is a primary focus of environmental morality. In other words, environmental morality is concerned with the allocation, use, exploitation, and protection of resources, focusing on two main aspects: first, preserving the health of the natural world, including aquatic creatures, forests, ecosystems, and species diversity; and second, the conservation of energy and environmental elements (Dehghan et al., 2018).

In addition to the factor of morality, human attitude toward the environment also significantly influences environmental protection and has drawn researchers' attention. From the researchers' point of view, a major part of human behavior is shaped by their attitude toward the environment (Mousavi et al., 2019). Hence, in the current century, human environmental attitude is among the most effective and influential factors affecting the environment. Environmental attitude encompasses general feelings regarding the environment and ecology, concerns and emotions about specific environmental issues, and feelings about taking action to solve environmental problems (Pe'er et al., 2007). This attitude has three components: human-orientation, environment-orientation, and general indifference. Human-orientation is a positive philosophical attitude in which only humans are considered. Two types of human-

orientation can be identified: strong and weak. In the weak form, understanding the universe and interacting with it are conducted solely based on social life. It is due to human sensory mechanisms that our perception of the surrounding world is formed. In the strong form, nonhumans are valuable only as long as they serve human interests, either directly or indirectly. In this attitude, nature is merely an instrument that belongs to humans without having intrinsic value (Ghiyasiyan & Shirini, 2016). Therefore, in a human-orientation attitude, the values that drive human support for the environment are human-centered, making it less likely to protect the environment. General indifference refers to a lack of concern for the environment and everything that humans encounter (Ferdowsi et al., 2007).

One of the factors that might be used to reinforce environmental morality and environmental attitude is moral intelligence. Moral intelligence is the ability to distinguish right from wrong; in other words, someone possesses moral intelligence when they hold strong and steadfast moral beliefs and are able to act according to them, such that they behave appropriately and respectfully (Pourmirsaleh et al., 2016). This intelligence is a type of orientation for actions; in essence, moral intelligence directs other human intelligences in performing valuable human actions, guiding communication, behavior, and goals. Moreover, this type of intelligence reflects a person's ability and willingness to prioritize higher principles over their own interests (Cheraghiyan et al., 2015). According to Lennick and Kiel, moral intelligence comprises four basic components: integrity, forgiveness, compassion, and responsibility. Integrity is a hallmark of a person with moral virtues. When we act correctly, we align our behavior with human principles. We do what we know is right and act consistently with our principles and beliefs (Najafian et al., 2014). In sum, integrity means aligning what we know to be correct with consistently telling the truth (Borba, 2016). Another component is forgiveness, which operates on two levels: first, in how we communicate with ourselves, and second, in how we interact with others and our environment. Not only is our communication

with others shaped by showing compassion and interest in them and our surroundings, but it also fosters a state in others that encourages kindness when we need it most; thus, compassion refers to caring for others (Lennick & Kiel, 2007). Responsibility pertains to a person's increased resilience against external conditions, following intrinsic obligations rather than external pressures; it is known as liability or accountability (Jalali et al., 2019). Responsibility is a universal human duty. In addition to being responsible for the environment, humans are responsible for themselves and others. A person with higher moral intelligence accepts responsibility for their actions, failures, and mistakes (Borba, 2016). In summary, moral intelligence is what humans need to act correctly, and through this intelligence, the best actions can be taken, and smart behaviors can be learned (Mokhtaripour & Siadat, 2009).

Considering the above facts, the present study investigates and determines the role of moral intelligence and its components (integrity, forgiveness, compassion, and responsibility) in shaping the environmental attitude and morality of university students. In other words, the study seeks to answer this fundamental question: Can university students' environmental attitudes and morality be improved through nurturing their moral intelligence?

Investigating the literature and records regarding the subject under study is one of the important stages in every scientific research which results in avoiding duplication and the researcher finds a good command of the subject under study. Hence, the research has been followed by a series of foreign and domestic studies which are somehow related to it.

Akbarzadeh and Adhami (2011) investigated effective cultural factors on environmental protection in the city of Tehran. The findings of their study revealed four effective variables: 1. feeling responsible, 2. religious and traditional values, 3. Social morality, and 4. Teaching environmental knowledge and awareness of environmental protection and environmental behaviors. Farahmand et al. (2013) investigated social factors influencing environmental behaviors.

The findings of their study proved that there is a significant relationship between variables including age, environmental awareness, individualism, life satisfaction and environmental behaviors. Karami et al. (2018) addressed predicting environmental morality according to environmental values and norms. The findings of his study revealed that people's environmental values cause the increase or decrease of citizens' environmental morality. Esfandiarpour et al. (2019) addressed the relationship between environmental morality as well as social capital and environmental culture. The results of the study proved that there is a significant relationship between environmental morality and the degree of social capital in the last 10 years and the present time, and environmental culture and the degree of social capital in the present time and the last 10 years. Mousavi et al. (2019) investigated the efficiency of environmental training courses on environmental knowledge, attitude, and skill. The findings of their study showed that holding training courses has had the highest effect on the increase of environmental knowledge level, skill level, and attitude change, respectively. Khaleghi et al. (2022) investigated the effectiveness of teaching moral intelligence on responsibility and academic morality in female primary school students. Their results revealed that reinforcing moral intelligence can be effective in improving responsibility and morality-based academic behavior. Furthermore, in a study by Moeinikia et al. (2022), the relationship between moral intelligence and psychological wellbeing and the mediator role of religious attitude and moral reasoning was investigated. The result of their study showed that the variables of moral intelligence, moral reasoning, and religious attitude have a significant direct effect on psychological well-being.

In a study by Chen et al. (1996), the level of high school students' environmental attitudes was examined in Hong Kong. The results showed that the students under study greatly worried about the environment and asked to participate in environment-oriented activities; besides, female students have higher environmental attitudes than male ones, and TV and school have been reported as their most important information resources regarding the environment in this study. Katz-Gerro et al.

(2015) investigated philanthropic environmental actions and environmental behaviors in five countries around the world. The results showed that the five countries of Canada, Korea, Germany, Israel, and the US are different in case of population and the number of educated ones, and there is a significant difference between the students in case of environmental philanthropic behaviors and their environmental attitude in a way that environmental attitude causes philanthropic behavior in the students. Ulka (2015) investigated university students' environmental attitudes and approaches. The results showed that there is no significant relationship between students' environmental awareness and the environment-related courses they passed. Stamatios et al. (2018) studied high school students' environmental behavior in the organization of education. The results showed that most of the students are environment lovers. However, there is a necessity for stronger environmental teaching and social opportunities outside the school, such as family grounds and general socializing. Fayyaz and Mubeen (2020) conducted a study entitled "Addressing Environmental Knowledge and Attitude in Undergraduate Students via Scientific Reasoning." The results showed that the student's relationship with nature and then their participation in scientific discussion helped to improve their knowledge and their environmental attitude. Moreover, in a study, Dlamini et al. (2021) investigated the social-population factors in the environmental attitudes, perceptions, place dependence, and responsible behavior in Gauteng, South Africa. The results showed that social-population features, including ethnicity, gender, and migration status, are determining factors in people's relationship with the environment and their attitudes and perceptions. Puspitasari et al. (2022) also investigated the effect of affective intelligence, moral intelligence, and intellectual intelligence on the students' environment-caring personalities from the viewpoint of civil education. This study has resulted in four categories of findings. First, emotional intelligence has a positive effect on the students' environment and caring personality. Second, intellectual intelligence had no effect on the students' environmental personality. Third, moral intelligence has a positive effect on the

students' environment-caring personality. Fourth, emotional intelligence, moral intelligence, and intellectual intelligence have a common effect on primary school students' environment-caring personality.

Now, although numerous studies have been conducted regarding moral intelligence and environment, and the above subject have been frequently searched; there has not yet been found any subject in which the role of intellectual intelligence has been examined on the university students' degree of environmental attitude and morality.

Research Questions

1. What is the relationship between university students' moral intelligence and their environmental attitude and morality?
2. What is the relationship between the components of moral intelligence (integrity, responsibility, forgiveness, and compassion) and university students' environmental attitudes and morality?

Research Methodology

The present study is functional in the case of purpose and descriptive-correlational in the case of implementation. The statistical population included all 5597 undergraduate students at the University of Kashan in the academic year 2020-21, and the research sample of 265 students was achieved via the Cochran formula; however, considering the alteration of 47 questionnaires, the number of confirmed questionnaires in this study reached 218 cases. The sampling method was stratified random sampling proportional to volume (according to the number of students in each

faculty). The applied instrument in this study included three standard questionnaires. Moral Intelligence Questionnaire by Lennick & Kiel (2005) is composed of 40 items and 4 components (compassion, forgiveness, integrity, and responsibility). Environmental Attitude Questionnaire by Gagnon Thompson & Barton (1994), which is composed of 15 items and the components of humanism, environment-orientation and general indifference and Environmental Morality Questionnaire by Firoozfar et. al. (2019) which is composed of 104 items including the components of water, soil, air, plants and animals from which 48 items were deleted and 56 items remained due to high number of questions, and less relationship of some items with the students population.

The face and content validity of the questionnaires were confirmed by the specialists. Cronbach's alpha method was used in order to evaluate the instrument's reliability, and its results were that the reliability of intellectual intelligence, environmental morality, and environmental attitude were 0.89, 0.91, and 0.82, respectively. Moreover, the data analysis was conducted using two descriptive and inferential statistics tools via AMOS₂₂ and SPSS₂₂ software. Moral considerations were observed in information collection, and they included respondents' voluntary agreement, certainty in the confidentiality of the answers, respect for the respondents' beliefs, sending the results to them, and giving enough time to the respondents to answer the questions.

Research Findings

Descriptive information about the study is given in Table 1.

Table 1. Descriptive Statistics of the Study

Demographic Information	Number	Percentage
Gender		
Female	113	51.8
Male	105	48.2
Entrance Year		
2017	43	19.7
2018	28	12.8
2019	84	38.5
2020	63	28.9
Faculty		
Humanistic Sciences	45	20.6

Demographic Information	Number	Percentage
Literature and Foreign Languages	20	9.2
Mechanics	16	7.3
Engineering	24	11.0
Art and Architecture	27	12.4
Physics	16	7.3
Electronics and computer	23	10.6
Natural Resources and Earth Sciences	11	5.0
Chemistry	19	8.7
Mathematical Sciences	17	7.8
Sum	218	100.0

Analysis of the Final Model of the Study

At first, the final model of the study is given in addition to path coefficients in graph no.1 and according to that, goodness of fit of the final model of the study has been estimated in table

2 which reveals the confirmation of general model of the study. Then, non-standard regression coefficients of the final model have been given in table 3 which shows the confirmation of the existing relationships in the model separately.

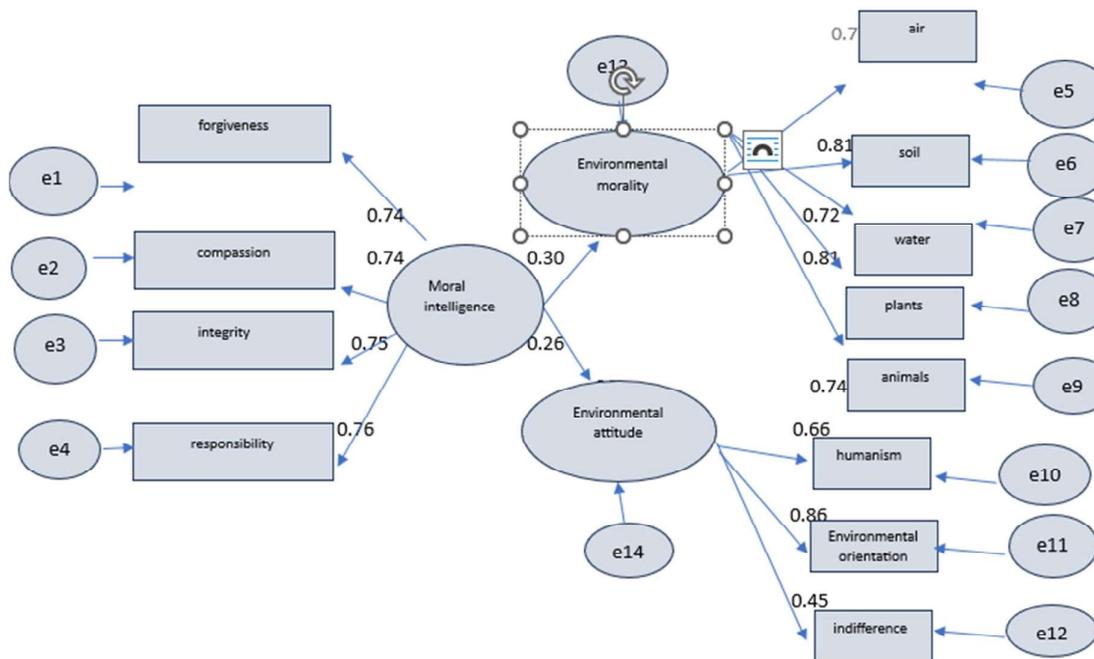


Figure 1. Final Model of the Study and Path Coefficients

Goodness of Fit of the Final Model of the Study

Generally, each of the achieved indexes, alone,

is not the reason of the model goodness of fit and its lack of it, these indexes should be interpreted besides each other.

Table 2. Indexes of Model Goodness of Fit

Index	Estimation	Model acceptable goodness of fit
$\frac{\chi^2}{df}$	3.045	$1 \leq \frac{\chi^2}{df} \leq 5$
GFI	0.957	$GFI \geq 0.9$

Index	Estimation	Model acceptable goodness of fit
RMSEA	0.017	$RMSEA \leq 0.08$
TLI	0.925	$TLI \geq 0.9$
NFI	0.911	$NFI \geq 0.9$
CFI	0.962	$CFI \geq 0.9$
IFI	0.865	$IFI \geq 0.9$
PRATIO	0.788	$PRATIO \geq 0.5$
AGFI	0.886	$AGFI \geq 0.9$

Results of table 2 shows that the model enjoys a suitable condition regarding goodness of fit. The indexes of model suitability indicate suitability of the measurement model. Of course, general confirmation of the model does not mean that all the existing relationships in

the model have been confirmed. Therefore, the existing relationships in the model are investigated separately too.

B. non-standard regression coefficients of the study conceptual model

Table 3. Nonstandard Regression Coefficients

Conceptual model relationships	Estimation	Standard error	Critical ratio	Significance level	Result
Moral intelligence-environmental morality	0.495	0.160	3.098	0.002	Relationship is confirmed
Moral intelligence-environmental attitude	0.198	0.083	2.387	0.017	Relationship is confirmed
Moral intelligence-forgiveness	1.000				Relationship is confirmed
Moral intelligence-compassion	0.728	0.089	8.160	0.000	Relationship is confirmed
Moral intelligence-integrity	1.821	0.219	8.325	0.000	Relationship is confirmed
Moral intelligence-responsibility	1.608	0.192	8.358	0.000	Relationship is confirmed
Environmental morality-air	1.000				Relationship is confirmed
Environmental morality-soil	0.891	0.090	9.868	0.000	Relationship is confirmed
Environmental morality-water	0.773	0.089	8.708	0.000	Relationship is confirmed
Environmental morality-plants	0.831	0.84	9.879	0.000	Relationship is confirmed
Environmental morality-animals	0.904	0.101	8.991	0.000	Relationship is confirmed
Environmental attitude-humanism	1.000				Relationship is confirmed
Environmental attitude-environment-orientation	1.059	0.006	4.686	0.000	Relationship is confirmed
Environmental attitude-general indifference	0.898	0.196	4.574	0.000	Relationship is confirmed

Non-standard factor loading has been reported with critical ratio and P (significance level) in table 3. This goodness of fit indexes show that all factor loadings have significant difference with zero ($p < 0.05$). Therefore, all the existing relationships in the model are confirmed with 95% certainty.

In responding to the first question, and considering the research conceptual model and the results of table (3), the relationship between two variables of moral intelligence and environmental morality is confirmed with the certainty of 95%, the amount of statistic t of 3.098 and the influence coefficient of 0.301.

Moreover, the relationship between moral intelligence and environmental attitude is confirmed with the certainty of 95%, the amount of statistic t 2.387 and the influence coefficient of 0.261. So, moral intelligence has a significant positive effect on the

environmental attitude and morality of the students at the University of Kashan.

In responding to the research second question, regression coefficients of the categories of moral intelligence have been given in the environmental attitude and morality.

Table 4. Regression Coefficients of the Effect of the Categories of Moral Intelligence in the Environmental Attitude and Morality

Regression model	B	Beta coefficient	T	Significance
Forgiveness-environmental morality	1.158	0.198	2.966	0.003
Forgiveness-environmental attitude	0.589	0.283	4.338	0.000
Compassion- environmental morality	1.442	0.181	2.711	0.007
Compassion-environmental morality	0.550	0.195	2.917	0.004
Integrity-environmental morality	0.810	0.249	3.777	0.000
Integrity-environmental attitude	0.214	0.185	2.771	0.006
Responsibility-environmental morality	0.629	0.170	2.531	0.012
Responsibility-environmental attitude	0.381	0.290	4.449	0.000

According to Table (4), forgiveness is effective on environmental morality with the statistic of 2.966 and an influence coefficient of 0.198 and on the environmental attitude with the statistic t of 4.338 and a coefficient of 0.283 at the certainty level of 95%. Moreover, compassion is effective on environmental morality with a statistic of 2.711 and an influence coefficient of 0.181 and on the environmental attitude with a statistic t of 2.917 and a coefficient of 0.195 at the certainty level of 95%. In addition, integrity is effective in environmental morality with the statistic t of 3.777 and the influence coefficient of 0.249, and in environmental attitude with the statistic t of 2.771 and a coefficient of 0.185 at the certainty level of 95%. Responsibility, too, is effective on environmental morality with the statistic t of 2.531 and the influence coefficient of 0.170 and on the environmental attitude with a statistic of 4.449 and coefficient of 0.290 at the certainty level of 95%.

Conclusion

According to the results of the study, the students' moral intelligence has a significant, positive, and direct relationship with environmental morality; in other words, the more a person's moral intelligence increases, the better their environmental attitude and morality improve. The findings of the present study align with the research by Alizadeh

(2017), Esfandiarpour et al. (2019), Akbarzadeh and Adhami (2011), Moeinikia et al. (2022), and Puspitasari et al. (2022), who also found that moral intelligence is effective in shaping people's environmentally caring personalities. In explaining the findings, it can be said that an individual with moral intelligence likely acts beyond their duties, even when such actions are not among their moral obligations. A person with moral intelligence strives to exhibit the best human attributes, even in their interactions with non-human creatures. Therefore, by nurturing moral intelligence, a person's attitude, actions, and behaviors regarding the environment are reinforced.

The findings showed that forgiveness and the components of values-based performance and integrity have a significant relationship with students' environmental attitude and morality, with an average of 11.32 and an effect on environmental attitude and morality with a regression coefficient of 0.198. These findings are consistent with studies by Ferdowsi et al. (2007), Akbarzadeh and Adhami (2011), Stamatios et al. (2018), Fayyaz (2019), and Dlamini et al. (2021), which also found a significant relationship between forgiveness and environmental protection. In explaining these findings, it can be said that a person with forgiveness can clearly articulate their principles, beliefs, and values, which guide their actions and lead them to disagree with

anyone who acts improperly, such as those who harm the environment. Therefore, when forgiveness is reinforced, the person's conscious behavior toward the environment increases.

The results also indicated that compassion and the ability to forgive others' mistakes have a significant relationship with students' environmental attitudes and morality, with an average of 70.18. Studies by Ferdowsi et al. (2017), Akbarzadeh and Adhami (2009), Mousavi et al. (2017), Esfandiarpour et al. (2019), Ulka Duman (2015), Katz-Gerro et al. (2015), Stamatios et al. (2018), Fayyaz (2020), and Dlamini et al. (2021) support these findings, showing a significant difference in students' environmental philanthropic behaviors and attitudes. Compassion is not merely about caring for others; it encompasses respect for others and their surroundings, which often has a reciprocal effect. In social interactions, a compassionate person tends to receive support when facing critical situations. When making important decisions, a compassionate person aligns their choices with deep principles, beliefs, and values, showing that a kind and compassionate person extends their care to nature, the environment, and even living creatures.

Moreover, the study showed that integrity and its components—such as fulfilling promises, perseverance, accountability for personal decisions, and confessing failures—have a direct relationship with students' environmental attitude and morality, with an average of 59.91. In other words, reinforcing integrity leads to an increase in environmental morality and attitude. Similar results were found in studies by Ferdowsi et al. (2007), Akbarzadeh and Adhami (2010), Stamatios et al. (2018), Fayyaz (2019), and Dlamini et al. (2021), which suggest that social characteristics are determining factors in human relationships with the environment and influence their attitudes and perceptions. Integrity is considered a cornerstone of moral intelligence. When people behave honestly, they align their actions with universal human moral principles, such as protecting the air, soil, plants, and animals. Therefore, integrity enhances environmental morality and attitude.

Furthermore, the study revealed that like other aspects of moral intelligence, responsibility, and its components—such as accepting responsibility to serve others, being actively interested in others, and the ability to forgive oneself—have a direct, significant relationship with environmental attitude and morality, with an average of 44.76. Responsibility was shown to affect environmental attitude and morality with a regression coefficient of 0.170. This study is consistent with research by Ferdowsi et al. (2007), Akbarzadeh and Adhami (2009), Khaleghi et al. (2022), Stamatios et al. (2018), Fayyaz (2019), and Dlamini et al. (2021), who found that people's environmental values are directly related to environmental morality, and changes in these values can influence their environmental morality. In explaining these findings, it can be said that many people might engage in responsible behavior even without a strong attitude toward environmental protection. These individuals believe that they are, to some extent, responsible for finding solutions to environmental problems. Therefore, some of each person's sense of responsibility is related to the severity of their behavior toward the environment; in other words, by respecting nature, a person feels responsible for the environment. Thus, as the sense of responsibility increases, so does the attitude and behavior toward the environment.

Limitations and Suggestions

It can be said that all studies have limitations that influence the findings, and the limitations of the present study include the following:

The sample in this study was limited to students from one university, so caution should be exercised in generalizing the findings to other universities. If students who did not participate in the study had been included, it might have led to different results. Additionally, many variables in the present study were beyond the researcher's control and could influence the results.

Based on the findings, the following suggestions are offered:

- According to the findings, rather than solely emphasizing environmental protection, there should be a focus on

- nurturing students' moral intelligence. As long as individuals do not possess high moral intelligence, it is unrealistic to expect them to protect the environment.
- The study showed that forgiveness has a direct effect on students' environmental attitude and morality. Therefore, it is recommended that professors emphasize moral themes in a way that encourages students to behave in accordance with their academic dignity, which inherently involves adhering to moral principles, with forgiveness being a prime example.
 - A kind and compassionate person extends their compassion not only to others but also to nature, the environment, and living creatures. This concept should be integrated into university syllabi, with sufficient attention given to it.
 - Reinforcing integrity enhances social interactions between people and their surroundings. Therefore, it is suggested that integrity be emphasized through workshops and both direct and indirect teachings.
 - The study identified responsibility as one of the most important aspects of moral intelligence, playing a significant role in students' environmental attitude and morality. Special attention should be given to this aspect, with a focus on it in the students' curricula, particularly in more explicit ways.

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