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Morality and environment: Analyzing the effect of the moral foundations on attitudes towards the environment in Italy

La moralità e l'ambiente: analisi dell'effetto dei *moral foundation* sugli atteggiamenti verso l'ambiente in Italia

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ABSTRACT

The state of the environment is a critical issue in Italy, and attitudes towards the environment among Italians are mixed. Recent research has found that attitudes towards the environment can be predicted from the moral foundations, which can be interpreted as attitudes towards moral principles. Consistent with this research, the current research found that the individualizing foundations (i.e., concern for the state of an individual) predicted positive attitudes towards the environment, whereas the binding foundations (i.e., concern for the state of a larger group) predicted negative attitudes towards the environment. Pro-environment attitudes could be driven by the desire to protect individuals via protecting the environment, whereas anti-environment attitudes could be driven by a desire to maintain the status quo. The implications of these results are discussed.

Keywords: Moral Foundations; Environmental attitudes; Environmental changes; Political orientations

RIASSUNTO

Lo stato dell'ambiente è un problema critico in Italia e gli atteggiamenti verso l'ambiente, tra gli Italiani, variano. Ricerche recenti hanno trovato che gli atteggiamenti verso l'ambiente possono essere predetti dai "*moral foundation*", vale a dire dagli atteggiamenti verso i fondamenti della moralità. In linea con queste ricerche, il presente studio ha trovato che gli "*individualizing foundation*" (i.e., la preoccupazione per lo stato di un individuo) possono predire gli atteggiamenti positivi verso l'ambiente, mentre i "*binding foundation*" (i.e., la preoccupazione per lo stato di un vasto gruppo) possono predire entrambi gli atteggiamenti, positivi e negativi, verso l'ambiente. Gli atteggiamenti pro-ambientali sarebbero dunque guidati dal desiderio di proteggere le persone attraverso la protezione dell'ambiente, mentre gli atteggiamenti anti-ambientali sarebbero guidati dal desiderio di mantenere lo status quo. Vengono discusse alcune possibili implicazioni di questi risultati.

Parole chiave: fondamenti della moralità; atteggiamenti ambientali; cambiamenti ambientali; orientamenti politici

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Introduction

Policies aimed at protecting the environment (vs. e.g., promoting industry) are increasingly popular but controversial issues in Italy. On one hand, a recent Europe-wide assessment on environmental attitudes noted that Italians favored both increased regulations that protect the environment and increased taxation on environmentally-harmful activities, relative to the rest of Europe (European Commission, 2017a). On the other hand, however, Italians were less likely to engage in environmentally-friendly behaviors, relative to citizens of other European countries (European Commission, 2017b).

This duality can be seen in the reaction towards a recently enacted law, mandating that supermarkets must only provide biodegradable bags for fruits and vegetables—for an extra fee. Both Italian- and English-language news outlets (Ghisellini, 2018; Vaughn, 2018) have reported doubt and displeasure towards the government's motivation for this new regulation. Similarly, a restriction on automobile usage in northern Italy—enacted to reduce air pollution—was also met by the displeasure of residents (Giacosa, 2017). These controversies can be expected to increase in the future, as the relatively high levels of air (European Environment Agency, 2017) and water pollution (European Environment Agency, 2016) in Italy will likely prompt further regulations.

Naturally, many factors can underlie Italians' general attitudes towards the environment as well as towards specific environmental policies. In one thread of research, Linda Steg and colleagues (e.g., De Groot & Steg, 2007; Ünal, Steg, & Gorsira, 2017) have analyzed the role that environmental values have on environmentally friendly attitudes. In particular, they have found that biospheric values (i.e., a concern for the environment) and altruistic norms (i.e., a concern for the welfare of others), but not egoistic values (i.e., a concern for maximizing one's own benefits) are positively related to the awareness of environmental problems. Additional factors could plausibly include political beliefs, a preference for convenience, and a disapproval of interference in daily activity. We propose that there are instead attitudes towards morality that ultimately underlie general and specific environmental attitudes, which are differentiated from Steg and colleagues' conception of environmental values. In other words, environmental issues are perceived as moral issues, at least among a subset of Italians.

Our proposal recalls Moral Foundation Theory (Graham, Haidt, & Nosek, 2009), which states that “political” beliefs (e.g., abortion, environmental protection) are explained by five facets of morality. These facets are: Harm/Care (i.e., a concern for the well-being of individuals), Fairness/Reciprocity (i.e., a concern towards individuals receiving what they deserve), Respect/Authority (i.e., maintenance of leadership and social hierarchies), Ingroup/Loyalty (i.e., a concern for faithfulness towards the group), and Purity/Sanctity (i.e., a concern with potential social but also physical contamination). The first two facets can be grouped together as the individualizing foundations, whereas the latter three facets can be grouped together as the binding foundations. The individualizing foundations (i.e., Harm, Fairness) are so-called as they reflect a concern for the individual and his or her rights, whereas the binding foundations (i.e., Loyalty, Authority, Purity) reflect a concern for a larger group, even at the expense of the individuals who make up the group (e.g., family, nation, culture).

Political liberals tend to support the individualizing above the binding foundations; this pattern is reversed among political conservatives (Graham et al., 2009). However, past research (Koleva, Graham, Iyengar, Ditto, & Haidt, 2012) has found that the moral foundations can predict stances on political issues controlling for political affiliation, in addition to Right-Wing Authoritarianism (RWA; Altemeyer, 1988) and Social Dominance Orientation (SDO; Pratto, Sidanius, Stallworth, & Malle, 1994), both of which are tied to far right-wing political attitudes. Although the binding and individualizing foundations are in some sense opposite views of morality, both reflect a concern for morality, in general, and as such should co-occur.

There is debate over what, precisely, the moral foundations represent. The developers of the theory argued that the foundations represent intuitions, present from the early stages of life, that guide the development of culturally-appropriate moral beliefs (Haidt & Joseph, 2007). Other researchers have disagreed with this stance, and concluded that individuals' moral foundations fluctuate with the wording of survey questions (Oliver & Wood, 2014) or are the result of other moral principles (Gray & Schein, 2012; Gray, Schein, & Ward, 2014). In this case, the moral foundations can be conceived of attitudes towards moral principles that are influenced by other variables. This point is consistent with research that has used the moral foundations either as dependent variables or as mediators (e.g., Federico, Ekstrom, Tagar, & Williams, 2016; Giacomantonio, Pierro, Baldner, & Kruglanski, 2017). However, regardless of the origin of the moral foundations, they can be used to predict individuals' opinions towards specific moral issues (see above Koleva et al., 2012).

Steg and colleagues' approach to environmentally friendly attitudes and behavior is, in some ways, fundamentally different from an approach that utilizes the moral foundations. As the individualizing foundations represent a concern for individual, it can theoretically take two relevant but contrasting forms. First, it could take shape as an opposition to new, environmentally friendly attitudes, behaviors, and policies, if they are seen as oppressing individuals' rights. Second, it could instead take shape as approval, if they are seen as helping other individuals. The binding foundations could likewise take contrasting forms. The binding foundations could take shape as either approval or opposition. Approval, if the collective nature of the environment is emphasized (i.e., defending collective property); opposition, if new environmental attitudes, behaviors, or policies are seen as a threat to the current way of life. That is, the individualizing and binding foundations do not exactly map onto biospheric, altruistic, or egoistic biospheric values. However, as we will discuss later, the rationale for the moral foundation effect are not well understood.

We know of two works that have assessed the relationship between the moral foundations and stances towards environmental issues. The work of Koleva and colleagues mentioned above included a survey item on global warming. Their participants could select between three options: the government should increase regulations in order to combat global warming; the current regulations are sufficient; or the government should decrease regulations, as global warming has not yet been proven to occur. The researchers initially regressed attitudes towards global warming on the five (second-order) moral foundations and political affiliation (i.e., liberal vs. conservative); they found that the a liberal political affiliation and the Harm and Fairness foundations predicted a preference for increased regulation, whereas a conservative political affiliation and the Purity foundation predicted a preference for decreased regulation. That is, the Purity foundation and right-wing politics—which tend to go together—both predict a preference for decreased regulations, whereas the opposite pattern was observed for the individualizing foundations and left-wing politics.

When RWA and SDO were added to the regression equation, they found that the Harm, Authority, and Purity foundations instead predicted a preference for *increased* regulation; a conservative political affiliation continued to predict a preference for decreased regulation. That is, the effect of these binding foundations is reversed when they are separated from far-right political ideologies. It is possible that the binding foundations and the protection of natural resources—which in some sense are collective property—go hand in hand. This argument evokes the quotation of the 19th century American environmental conservationist, Gifford Pinchot: “[Environmental] conservation means the greatest good to the greatest number for the longest time” (Kury, 1975).

In addition to the above work, Vainio & Mäkinemi (2016) assessed general and environment-specific moral foundations towards environmentally-friendly behaviors (i.e., energy use, environmentally-friendly transport options, and environmentally-friendly food options). They found that both the general and specific individualizing foundations positively predicted environmentally-friendly behaviors. With regard to the binding foundations, they found that the general foundations negatively predicted these behaviors, whereas the specific foundations had a weak positive effect.

However, the differences between research designs make solid conclusions difficult. Koleva and colleagues assessed the effect of general moral foundations, whereas Vainio and Mäkineniemi found different effects with different types of moral foundations; Koleva and colleagues assessed the five lower-order moral foundations whereas Vainio and Mäkineniemi assessed the two higher-order factors ; and Koleva and colleagues used attitudes towards global warming as the criterion, whereas Vainio and Mäkineniemi used environmentally-friendly behaviors. Koleva and colleagues and Vainio and Mäkineniemi collected data in the United States and Finland, respectively; given the different political realities between the U.S., Finland, and Italy, it is not a given that either set of results will be replicated in data collected from Italian participants.

Although the moral foundations appear to be linked to environment-relevant behavior, the reasons behind these associations are not immediately clear. As we mentioned earlier, the reasoning behind the effects of the moral foundations is not always well understood and in some cases the rationale for their effects is merely a post-hoc explanation (e.g., Koleva et al., 2012). The individualizing and binding foundations are associated with left- and right-wing political orientations; these foundations may be perceived to be linked to pro-environment (i.e., the individualizing foundations) and anti-environment attitudes (i.e., the binding foundations) insofar as pro-environmental policies are associated with the political left. However, this cannot be the solution as there are effects of the moral foundations controlling for political orientation.

However, with regards to the binding foundations, Vainio and Mäkineniemi (2016) argued that the binding foundations were associated with system justification beliefs (Kugler, Jost, & Noorbaloochi, 2014; Nillson & Erlandsson, 2015), which consequentially could be associated with climate change denial under specific circumstances (Feygina, Jost, & Goldsmith, 2010). Theoretically, individuals who endorse the binding foundations could also feel loyal, respectful, and in general favor, the existing order. When applied to environmental issues, these individuals could prefer the existing environmental regulations, even if they negatively impact the environment. On the other hand, as seen in the results reported in both Koleva and colleagues and Vainio and Mäkineniemi, the binding foundations can also lead to pro-environmental attitudes under some circumstances, perhaps because the environment is seen as collective property. With regards to the effects of the individualizing foundations, it is possible that individuals who care for other individuals *as* individuals will care for the environment, as the state of the environment will have an effect on them in the long-term. On the other hand, the individualizing foundations could be associated with an opposition to environmental policies which are perceived as violating individuals' rights. It must also be kept in mind that, as Koleva and colleagues (2012, Table 6) found, the specific foundations that constitute either the individualizing and binding foundations can have contrary effects.

Moreover, it is not clear if the results from Koleva et al. (2012) and Vainio and Mäkineniemi (2016) will replicate among Italians. In order to advance this literature, we designed a study that regressed pro-environment attitudes and behaviors from the specific and higher-order general moral foundations in an Italian sample. Data was collected approximately one month before a national election.

Hypotheses

H1. The individualizing foundations will predict positive environmental attitudes.

H2. The binding foundations will predict environmental attitudes. Whether these attitudes are positive or negative is undetermined from the literature.

Method

Participants. 89 students ($M_{age}=24.5$, $SD_{age}=3.9$, 59.6% women) participated in return for course credit. All participants were Italian natives, and research materials were presented in Italian. All participants were enrolled in psychology courses. Participants completed measures on moral foundations, attitudes towards the environment, social desirability, and political orientation. Data was collected in February 2018, shortly before a national election.

Measures

Moral Foundations. Participants responded to the Italian version (Bobbio, Nencini, & Sarrica, 2011) of the 30-item Moral Foundations Questionnaire (MFQ-30; Graham, Haidt, & Nosek, 2008). This questionnaire assesses the five moral foundations: Harm/Care, Fairness/Reciprocity, Ingroup/Loyalty, Respect/Authority, and Purity/Sanctity. The Harm/Care and Fairness/Reciprocity foundations can be grouped together to form a higher-order individualizing foundations factor, and the In-group/Loyalty, Authority/Respect, and Purity/Sanctity foundations can be grouped together to form a higher-order binding foundations factor.

The MFQ-30 consists of two parts. In Part 1, participants responded to fifteen items that measured the perceived relevance of different kinds of information for making moral judgments. Participants responded to the items on a 6-point Likert scale from zero (“*Not at all relevant*”) to five (“*Extremely relevant*”). In Part 2, participants responded to fifteen items that measured agreement with statements about morality. Participants responded to the items on a 6-point Likert scale from zero (“*Strongly disagree*”) to five (“*Strongly agree*”). The score for each foundation—and for the two higher-order factors—is computed by taking the mean of all items across both parts. The internal reliabilities for the five foundations were: Harm/Care ($\alpha=.58$), Fairness/Reciprocity ($\alpha=.67$), Ingroup/Loyalty ($\alpha=.59$), Respect/Authority ($\alpha=.66$), Purity/Sanctity ($\alpha=.69$). The internal reliabilities for the two higher-order factors were: Individualizing ($\alpha=.76$), Binding ($\alpha=.84$). These values are consistent with past literature (Graham et al., 2009).

Environmental Attitudes. The items used to assess participants’ stance towards the environment were taken from two sources. One item was taken from a previous experiment (Day, Fiske, Downing, & Trail, 2014): “Our way of life is sacred and should not be influenced by new environmental policies.” This item was responded to on a scale from one (“*Strongly disagree*”) to five (“*Strongly agree*”). Four additional items were taken from a report on Europeans’ environmental attitudes that was authorized by the European Commission Directorate-General for Environment (European Commission, 2017c). These items were: “How important is protecting the environment to you, personally?”; “Environmental issues have a direct effect on your daily life”; “As an individual, you can play a role in protecting the environment in Italy”; “You are willing to buy environmentally friendly products, even if they cost a little bit more.” These items were responded to on a scale from one (“*Totally disagree*”/“*Not at all important*”) to four (“*Totally agree*”/“*Very important*”). In order to develop a unitary measure we reverse scored the first item, standardized all items, and created a composite score. The internal reliability was .67.

Social Desirability. Participants completed two items that assessed their tendency to present themselves in a socially desirable way; these items were taken from a larger scale developed by Webster and Kruglanski (1994).

Political Orientation. Participants indicated their political orientation with a single item, previously used by Koleva and colleagues (2012). Participants responded on a seven-point scale; higher scores indicated a more left-wing political orientation. The average score in this sample was 4.39, $SD = 1.62$ (i.e., slightly conservative).

Results

Preliminary Results. Correlations and descriptive statistics of all study variables are presented on Table 1. Environmental attitudes were positively correlated with each of the individualizing foundations, as well as the higher-order individualizing foundations factor. On the other hand, environmental attitudes were not correlated with any of the binding foundations or with the higher-order binding foundations factor.

Moreover, the higher-order binding and individualizing foundations factors were strongly inter-correlated; a similar pattern is observed with each of the binding and individualizing foundations.

These results support the proposed factor structure of the moral foundations. Political orientation was correlated to the binding foundations, such that participants with right-wing political

attitudes were more likely to endorse these foundations; it was marginally correlated with environmental attitudes, such that participants with left-wing political attitudes were more likely to have pro-environmental attitudes.

Gender was at least marginally correlated with both binding and individualizing foundations, such that women were more likely to be concerned with morality.

Table 1. Bivariate Correlations and Descriptive Statistics

Variables	1	2	3	4	5	6	7	8	9	10	11	12	M(SD)
1. Gender	-												-
2. Age	-.07	-											
3. Political Orientation	.15	.28**	-										4.39 (1.62)
4. Social Desirability	-.06	-.19†	.04	-									3.56 (1.09)
5. Individualizing Foundations	-.27*	.13	-.07	.01	(.76)								3.78 (.54)
6. Binding Foundations	-.19†	.06	.37**	.06	.34**	(.84)							2.71 (.63)
7. Harm Foundation	-.31**	.12	-.18†	.009	.89**	.29**	(.58)						3.70 (.63)
8. Fairness Foundation	-.16	.10	.04	.01	.88**	.31**	.57**	(.67)					3.86 (.60)
9. Loyalty Foundation	-.19†	.13	.23*	.03	.42**	.83**	.40**	.35**	(.59)				3.11 (.65)
10. Respect Foundation	-.11	.05	.33**	.07	.13	.87**	.11	.12	.62**	(.66)			2.75 (.77)
11. Purity Foundation	-.19†	-.008	.37**	.04	.33**	.85**	.25*	.33**	.56**	.61**	(.69)		2.27 (.77)
12. Environment Attitudes	-.08	-.009	-.18†	-.02	.38**	-.07	.36**	.32**	-.06	-.05	-.07	(.67)	0 (.65)

Note: † $p < .10$; * $p < .05$; ** $p < .01$. Internal reliabilities are on the diagonal

Environment Attitudes as a function of Higher-Order Moral Foundations. Given the results of the correlational analyses, we initially regressed environmental attitudes on gender, social desirability, political orientation, and both the higher-order binding and individualizing foundations factors. As the binding foundations factor was (1) unrelated to environmental attitudes but (2) correlated to the individualizing foundations factor which was (3) correlated to environmental attitudes, there is the possibility that the individualizing foundations acts as a suppressor variable on the relationship between the binding foundations and environmental attitudes (see MacKinnon, Krull, & Lockwood, 2000 for more information on suppression).

Theoretically, both types of moral foundations are concerned with focus on morality; by controlling for the relationship between this concern with morality with environmental attitudes, the

unique effects of both the binding and individualizing foundations could increase. Results of this analysis are on Table 2.

As can be seen, the individualizing foundations factor had a significant and positive effect on environmental attitudes; the effect of the binding foundations factor was negative and marginally significant.

The effect of political orientation fell to non-significance. When political orientation was removed to the analysis, the effect of both the individualizing and binding foundations increased, and the effect of the latter was raised to significance ($p=.026$).

Table 2. Environmental Attitudes Regressed on Higher-Order Moral Foundations

Variables	β	p
Political Orientation	-.073	.499
Social Desirability	-.018	.851
Individualizing Foundations	.452	<.001
Binding Foundations	-.201	.082

Environment Attitudes as a function of Lower-Order Moral Foundations. In order to probe the effect of the moral foundations, we repeated the above analysis with each of the five moral foundations entered as predictors. As the lower-order foundations within each higher-order foundation are highly related, we performed two sets of analyses. In the first set of analyses, we separately entered each lower-order individualizing foundation as predictors, with social desirability, political orientation, and each of the binding foundations as covariates.

Results are reported on Table 3. Consistent with the first analysis, the Harm and Fairness foundations had positive and significant effects on environmental attitudes. These effects became stronger when political orientation was removed from the analysis.

Table 3. Environmental Attitudes Regressed on Lower-Order Individualizing Moral Foundations

Variables	Harm Foundation		Fairness Foundation	
	β	p	β	p
Political Orientation	-.035	.756	-.156	.157
Social Desirability	-.025	.801	-.025	.804
Harm Foundation	.485	<.001	-	-
Fairness Foundation	-	-	.427	<.001
Loyalty Foundation	-.276	.058	-.197	.164
Respect Foundation	.148	.300	.152	.295
Purity Foundation	-.119	.387	-.139	.324

In the second set of analyses, we separately entered each lower-order binding foundation, with social desirability, political orientation, and each of the individualizing foundations as covariates.

Results are reported on Table 4. The effect of the loyalty foundation was negative and significant and the effect of the purity foundation was negative and marginally significant; the effect of the respect foundation was very low and did not approach significance. These effects became stronger when political orientation was removed from the regression; the purity, but not respect, foundation was raised to significance.

Table 4. Environmental Attitudes Regressed on Lower-Order Binding Moral Foundations

Variables	Loyalty Foundation		Respect Foundation		Purity Foundation	
	β	p	β	p	β	p
Political Orientation	-.073	.490	-.129	.246	-.074	.510
Social Desirability	-.022	.824	-.022	.825	-.021	.829
Harm Foundation	.326	.014	.236	.066	.269	.036
Fairness Foundation	.232	.057	.200	.108	.236	.059
Loyalty Foundation	-.261	.023	-	-	-	-
Respect Foundation	-	-	-.062	.563	-	-
Purity Foundation	-	-	-	-	-.194	.095

Discussion and Conclusion

The state of the environment in Italy, and the attitudes of Italians towards the environment, are of critical importance. We can already see examples of Italians reacting negatively towards environmental regulations, and there can be many reasons for these reactions—among them perhaps a preference for convenience which is perceived to be impeded by environmental regulations or a distrust of a higher authority that dictates their behavior. It is important to understand what leads to these reactions so that they can be identified in advance and changed; we proposed that the moral foundations would be a useful precedent of these reactions.

Our results with regard to the individualizing (i.e., Harm, Fairness) foundations were consistent with past research. Both Koleva and colleagues (2012) and Vainio and Mäkinen (2016) found evidence that these foundations can be positively associated with pro-environmental attitudes or behaviors. There could be many explanations for this result. We proposed that there could theoretically be a negative relationship if (specific or general) environmental policies were seen as violating individuals' rights; this explanation can be ruled out at present. We also proposed that people who endorsed the individualizing foundations could hold pro-environment attitudes if they perceived that the environment has an effect on other individuals. There is not yet evidence from this, or other research, that can support this specific explanation of this relationship. Future research needs to focus on understanding why the individualizing foundations are associated with pro-environment attitudes and behaviors, and if there are any exceptions to this relationship.

Our results with regards to the binding (i.e., Loyalty, Respect, Purity) foundations were mostly consistent with the past literature. Koleva and colleagues (2012) found that the respect and purity foundations could be associated with pro-environment attitudes—but only when controlling for far right-wing political attitudes. Vainio and Mäkinen (2016) found that environment-specific, but not general, binding foundations (measured at the aggregate, higher-order level) could weakly predict pro-environment behaviors. On the other hand, we found that the specific binding foundations either had a positive effect (Loyalty, Purity) or no noticeable effect (Respect). We intimated in the introduction that the binding foundations could lead to pro-environment attitudes

(if the environment was seen to be collective property) but could also lead to anti-environment attitudes (if they are consistent with system justifying beliefs). In our data, the latter explanation is more likely. Of course, as with the individualizing foundations, more research must be done in order to explain the nature of these relationships.

Given these findings, what can we about shifting attitudes towards environmental policies in Italy? If we start from the assumption that the moral foundations are present from a young age, then there may not be much that we can do: those who favor the individualizing foundations should be more likely to support pro-environmental policies, whereas those who support the binding foundations may or may not support these policies, depending on how they perceive the environment and how they frame new environmental policies. This assumption may not be warranted if we consider alternative viewpoints of the moral foundations as constructs that are susceptible to outside influence (Gray & Schein, 2012; Gray, Schein, & Ward, 2014; Oliver & Wood, 2014).

It is thus of critical importance that we can identify reliable—and malleable—predictors of the moral foundations. Past research has identified the Need for Cognitive Closure (Kruglanski, 1996), or the desire for epistemic certainty, as a predictor of the binding foundations (Federico et al., 2016; Giacomantonio et al., 2017), though it is likewise critical that we uncover constructs that influence the individualizing foundations. Ultimately, people who do not typically endorse the individualizing foundations may be swayed by pro-environmental appeals that focus on protecting other individuals via protecting the environment. Likewise, people who do not typically endorse the binding foundations may be swayed by (anti-environmental) appeals that focus on the benefits of the current way of doing things.

There are important limitations that must be addressed if this research is to move forward in a meaningful way. We do not necessarily understand the reason behind the effects of the moral foundations, especially with regards to environmental policies. It is difficult to build pro-environmental appeals, or to understand anti-environmental appeals, that utilize the moral foundations if we do not understand why these foundations work as they do. Other limitations pertain to basic research. We used correlational data at a single time point, and so it is impossible to conclude that there is a causal relation; from our data it is also possible that environmental attitudes predict the moral foundations. Future research should at least use longitudinal data and, if possible, an experimental design. Furthermore, our participants were university students, and it is not known if our results would replicate in a more diverse sample. However, this research presents an important first step in investigating precedents of environmental attitudes in an understudied population.

Compliance with Ethical Standards

Conflict of interest

The authors declare that they have no competing interests.

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Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent

Informed consent was obtained from all individual participants included in the study.

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