

Integrating prosocial and proenvironmental behaviors: the role of moral disengagement and peer social norms

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KEYWORDS

Prosocial
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ABSTRACT

Prosocial behaviors, and more recently, proenvironmental behaviors, have been proposed as two dimensions of an overarching disposition towards the common good. Both behaviors imply a moral dimension and are influenced by the social contexts in which they unfold. In the present study we test these associations, assessing the effect of moral disengagement and peer social norms on prosocial and proenvironmental behaviors. We analyzed the first data wave of an ongoing longitudinal study including 704 Chilean adolescents (301 male, 378 female and 25 do not answer; from 6th to 10th graders). Structural Equation Models showed that prosocial and proenvironmental behaviors were significantly associated with each other, and both with moral disengagement. Direct and cross effects of peer social norms were found for prosocial and proenvironmental behaviors. Moreover, peer social norms on proenvironmental behavior moderated the association between moral disengagement and individual proenvironmental behavior, but the same moderation effect for prosocial norms was not observed. These results highlight the moral nature of prosocial and proenvironmental behaviors and the relevant role that peers have in promoting these behaviors. Results are further discussed regarding their educational and developmental implications.

Integrando comportamientos prosociales y proambientales: el rol de la ausencia de compromiso moral y las normas sociales de pares

PALABRAS CLAVE

Prosocial
Proambiental
Compromiso moral
Normas sociales

RESUMEN

El comportamiento prosocial, y más recientemente el comportamiento proambiental, han sido propuestos como dimensiones de una disposición supraordenada orientada hacia el bien común. Ambos comportamientos implican una dimensión moral y son influidos por los contextos sociales en los cuales se despliegan. En el presente trabajo testeamos estas asociaciones, evaluando el efecto de la ausencia de compromiso moral y las normas sociales de pares en los comportamientos prosociales y proambientales. Analizamos los datos de la primera medición de un estudio longitudinal en curso que incluye a 704 adolescentes chilenos (301 hombres, 378 mujeres y 25 prefieren no decir; de 6^o a 10^o grado). Análisis de ecuaciones estructurales mostraron que tanto la prosocialidad como la proambientalidad están asociadas, y ambas con la ausencia de compromiso moral. Encontramos efectos directos y cruzados de las normas sociales de pares para comportamientos prosociales y proambientales. Además, normas sociales proambientales moderaron la asociación entre la ausencia de compromiso moral y comportamiento proambiental, aunque no se observó este efecto de moderación para la prosocialidad. Los resultados de este estudio destacan la naturaleza moral de los comportamientos prosociales y proambientales y la relevancia de los pares en la promoción de estos comportamientos. Se discuten los resultados en relación con sus implicancias evolutivas y educacionales.

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Climate change and the ecological crisis have made it clear that sustainability constitutes a moral action (Dunn & Hart-Steffes, 2012). Among the 2030 Sustainable Development Goals defined by the United Nations (2015), both promoting positive and nurturing interpersonal relationships and fostering care and responsibility for the environment stand as main features that should be enhanced, particularly in educational settings. As several authors argue, children and adolescents carry the weight of older generations' environmental (and social) neglect, but also constitute a powerful force for social and cultural change (De Leeuw et al., 2015; Wray-Lake et al., 2010). In fact, educating for sustainable development is intimately related to cultural change and social participation (Læssøe, 2010; Opoku, 2015). Sustainable behaviors need to be promoted, valued, and considered key indicators of educational and developmental positive trajectories. Thus, understanding the development of both prosocial and proenvironmental behaviors and the factors that might promote them seems crucial to inform educational practices.

Prosocial and proenvironmental behaviors

Prosociality is defined as the tendency to act voluntarily to benefit others (Caprara & Steca, 2007). Prosocial behaviors include different actions, such as helping, sharing, supporting, caring, and defending, among others (Dunfield, 2014). On the other hand, proenvironmental behavior can be defined as "a form of cooperation, that is, a joint effort of individuals for a shared benefit, in this case, sustaining common resources" (Klein et al., 2022, p. 182).

Prosociality constitutes a foundational feature of any group since the group's development and success depend on its members' contribution to the common good, helping each other, acting fairly and with consideration towards others' well-being (Lindenberg et al., 2006). In fact, a core aspect of prosocial behavior is its relevance for building reciprocal social relationships (Crone & Achterberg, 2022). From a broader perspective, and in midst of the current environmental crisis, caring for the environment becomes fundamental for the continuation of humanity. Thus, several authors (Klein et al., 2022; Reese, 2016) argue that proenvironmental behavior can be thought of as prosocial.

In fact, prosocial and proenvironmental behaviors have several commonalities. Both prosociality (Gaete et al., 2016; Hui et al., 2020) and proenvironmentality (Dadvand et al., 2015; Engemann et al., 2019) are associated with indicators of wellbeing and mental health among children and adolescents. Seemingly, proenvironmental behavior has been consistently associated with cooperation, a form of prosocial behavior (Barclay & Barker, 2020; Vesely et al., 2020), and a study with adults showed that honesty and humility (assessed as a personality trait), which is associated with active cooperation, was predictive of both prosocial and proenvironmental tendencies (Klein et al., 2017).

Although prosocial and proenvironmental behaviors seem to address distinct dimensions of human activities, it has been argued that both might refer to an overarching orientation towards the common good (Otto et al., 2021). In fact, Neaman

and colleagues (2018), while evaluating measurement tools for assessing both prosocial and proenvironmental behaviors, showed that both represent a similar class of behavior, or different facets of an overarching orientation. In a later study, Otto and colleagues (2021) suggest that this overarching orientation towards common good might be translated into different behavioral dimensions (care for others' wellbeing and care for the environment), depending on the individuals' experience of connection with that specific dimension (in this case, with others and with nature). Altogether, the present study builds on the premise that behaviors oriented to caring for others and for the environment share fundamental features, which emerge from the orientation towards the common good and the experience of belonging or connectedness, either to others or to nature and the environment.

The moral dimension of prosociality and proenvironmentality

Underneath this overarching orientation appears the notion of common good (Klein et al., 2017), which is intimately related to sustainability (Lotz-Sisitka, 2017). Here, common good does not only refer to humans, but also the common good of individuals as part of nature, in line with the theory of moral expansiveness (Crimston et al., 2016; 2018). Acting both in prosocial and proenvironmental ways has relevant implications for wellbeing at the individual, group, and societal levels (Dunfield, 2014). Thus, the moral dimension of these behaviors, which appears evident for prosocial behavior (Carlo & Padilla-Walker, 2020), appears also essential for proenvironmental behavior (Dunn & Hart-Steffes, 2012; Klein et al., 2017; Li et al., 2019).

In this line of research, Flanagan and colleagues (2016) evidence the continuity of youth concern and activism from social justice to care for the environment. In the same line, Ojala (2005) shows that youth with altruistic values display higher concerns about the environment. As evidenced by earlier studies, morality constitutes a predictor of both proenvironmental behavior (Rees et al., 2015; Sweetman & Whitmarsh, 2016) and prosociality (Christner et al., 2020). Understanding both behaviors as facets of an overarching moral orientation towards common good opens interesting synergies. For instance, Uitto et al. (2015) show how participatory school activities are translated into proenvironmental attitudes and behaviors, which they explain as a psychosocial process. Despite these considerations, studies assessing both behaviors simultaneously are scarce.

However, specific processes might also hinder moral agency, affecting the display of behaviors oriented towards the common good. In particular, moral disengagement has been identified as a mechanism that fosters detrimental behavior (Bandura et al., 1996). Moral disengagement refers to different psychological mechanisms by which moral self-sanctions can be disengaged from immoral conduct (Bandura, 2002). In this sense, adolescents who do not behave in prosocial or proenvironmental ways might not experience moral self-sanctions; in other words, despite the moral dimension of prosocial and proenvironmental behavior, not behaving accordingly to this orientation might not be perceived by themselves as immoral.

From a developmental perspective, it is noticeable that studies on prosociality have been carried out mostly with children (Grueneisen & Warneken, 2022), and increasingly with adolescent samples (Bushing & Krahe, 2020; Carlo & Padilla-Walker, 2020; Crone & Achterberg, 2022). By contrast, the study on proenvironmentality has usually feature adult samples (Klein et al., 2017; Lu et al., 2021), and more recently started to include adolescent and younger samples (Krettenauer, 2017; Simas, 2020). While research on both dimensions is converging in featuring adolescent samples, a focus on developmental processes takes relevance. If, as argued, both prosocial and proenvironmental behaviors share a moral dimension anchored in an orientation towards common good, they might also follow similar developmental patterns. In particular, considering the relevant role of peers during adolescence and the extant literature evidencing the effect of social norms on individual behavior, we focus on these peer processes.

Peer social norms and individual behavior

Current evidence shows little disagreement on the key role that social norms play in guiding social behavior (Gross & Vostroknutov, 2022). Social norms refer to behaviors and attitudes that are valued within a specific context, and guide the behaviors of members of that particular group by setting accepted and valued standards (Cialdini & Trost, 1998; Miller & Prentice, 2016; Schultz et al., 2007). As argued by Rutland and Killen (2015), from early childhood individuals start to identify with their group, fostering a preference towards the ingroup and consequently valuing group norms.

During adolescence, peer social norms constitute a key process for explaining peer influence. Studies have evidenced the effect of peer social norms on several dimensions, such as aggression (Berger & Rodkin, 2012), academic performance (Gremmen et al., 2019; Palacios & Berger, 2022), drug consumption (Duan et al., 2009) and intergroup attitudes (Tropp et al., 2016), among others. Particularly in the realm of prosociality, the literature consistently shows how adolescents tend to comply with the norms of their group (van Hoorn et al., 2016). For instance, a recent study with a large sample of German adolescents shows that classrooms with higher collective levels of prosocial behavior predicted increases in individual prosocial behavior over a period of two years (Bushing & Krahe, 2020). Berger and Rodkin (2012) showed that adolescents who change their peer group affiliations modify their prosocial behaviors according to the peer group they are joining. Overall, the literature is consistent in showing the unique effect of friends' (Farrell et al., 2017) and classmates' prosocial behaviors (Hoffman & Müller, 2018) on adolescents' individual behaviors. A growing body of studies is also showing a relevant role of peer norms on proenvironmental behaviors and attitudes during adolescence. Collado et al. (2019) evidenced an effect of peer norms on adolescents' proenvironmental behavior, but also indirectly through enhancing personal norms. In this line, Krettenauer and Lefebvre (2021) showed that the moral endorsement of these norms is relevant for explaining peer influence.

A long tradition in studying prosocial behavior understands its multilevel nature; factors at the individual, the group, and the societal levels have direct and interactive effects on prosociality (Padilla-Walker & Carlo, 2015; Penner et al., 2005). Recent studies on proenvironmental behavior are also suggesting that both contextual and individual factors, but more so their interaction, explain proenvironmentality (Fritsche et al., 2017; Li et al., 2019; Simas, 2020).

The present study

Prosocial and proenvironmental behaviors can be thought of as expressions of an overarching orientation towards the common good. By means of caring for the wellbeing of others and of the environment, both behaviors address shared goals of the contexts in which they unfold, either social or natural. Thus, these behaviors seem to be morally driven. In light of the aforementioned antecedents, the present study first assesses the association between prosocial and proenvironmental behaviors, and then the role of moral disengagement in both behaviors.

During adolescence, the peer group plays a significant role in establishing what is socially valued and accepted, therefore influencing individual behaviors. Consequently, this study also focuses on the influence of peer social norms both on the same behavior (i.e., peer norms on prosociality influencing prosocial behavior) and cross behavior (i.e., peer norms on prosociality influencing proenvironmental behavior). Finally, and in light of previous literature highlighting the interaction effect of both individual and social factors on prosocial and proenvironmental behaviors, this study also tests the moderation effect of social norms on the association between moral disengagement and individual behaviors.

The present study features a sample of Chilean adolescents, contributing to the existing literature based on populations mostly from WEIRD countries. Earlier studies in this context on adolescent prosocial behavior have shown similar trends to those observed worldwide, for instance on the association between prosocial behavior and social status indicators (Chávez et al., 2022), its association with empathy (Berger et al., 2015) and the effects of educational interventions (Luengo Kanacri et al., 2020). Studies on proenvironmental behavior among Chileans are scarce (see Bronfman et al., 2015; Díaz-Sieffer et al., 2015) and even scarcer for adolescent samples (Barazarte Castro et al., 2014). Nevertheless, even though the present study is exploratory, there are no reasons to expect different trends for Chilean adolescents compared to earlier studies on other populations.

Method

Participants

Participants were adolescents from 6th to 10th grade (12 to 16 years old; 177, 141, 108, 153, and 125 from grades 6th to 10th, respectively) from 14 schools in four different regions in Chile, who were part of a larger longitudinal study. From the original sample of 810 participants, 797 had parental consent for par-

ticipating in the study. The final sample for this study consisted of 704 participants who had complete data in the first wave (301 males, 378 females, and 25 students who preferred not to report their sex).

Instruments

Prosociality. We used the Prosociality Scale developed by Caprara et al. (2005), consisting of 16 items with a Likert type scale of 5 levels (1 = *never* to 5 = *always*). This scale has been validated for late adolescent and adult population in Chile (Luengo Kanacri et al., 2021) and used with Chilean adolescents (Chávez et al., 2022). Sample items are: “I’m willing to help those in need”, “I try to comfort who is sad”, and “I support immediately those in need”. Confirmatory Factor Analysis (CFA) showed a good fit for a second-order model, having four dimensions (helping, caring, sharing, and empathy) related to a second-order factor of prosociality. Chi-squared fit index was significant ($\chi^2(100) = 536.750, p < .001$); however, this statistic tends to be very restrictive and sensitive to large sample sizes (Hooper et al., 2008), so relative fit indexes are needed for a better interpretation (CFI over .95 means a good fit and over .90 corresponds to an acceptable fit; RMSEA and SRMR values less than .08 are acceptable and under .05 means a good fit). These indexes showed a good and acceptable fit (CFI = .97; SRMR = .03; RMSEA = .079). Factor loadings were homogenous. Reliability was estimated using separation reliability as one of the internal consistency estimations Wilson (2005) suggests. It considers the reliability of the factor scores of the latent model. We had good reliability coefficients for each dimension: Helping $r = .88$, Sharing $r = .85$, Caring $r = .92$, and Empathy $r = .85$.

Proenvironmental Behavior. We used the instrument developed by Kaiser et al. (2007) for adolescents. A preliminary analysis with Chilean adolescents suggested the need for adapting the instrument because of cultural differences between the original context of the instrument and the Chilean context. Therefore, we ran two CFA with two different samples. In the first CFA, we tested different models considering all the scale items. We used the second CFA to confirm the best fitting model. This was a unidimensional model removing the items with low loadings and which had worst fit on a Partial Credit Model. We were careful in ensuring that the final model included all contents that were part of the original scale. The final solution considered 20 items and a one-dimensional structure, in line with Kaiser and Wilson’s (2004) and Kaiser et al. (2007) proposal. The scale included dichotomic items and a Likert scale of five levels that was reduced to three for better interpretation and because of low variability found on some of the levels of the scale. The version used in this study had a significant chi-squared ($\chi^2(170) = 764.794, p < .001$) and relatively acceptable indexes (RMSEA = .07; SRMR = .09; CFI = .86). Factor loadings were homogenous, except for one item with a lower loading. The separation reliability for this instrument was $r = .80$, having a good reliability index. Sample items are “I use a reusable bottle, which I refill”, “I recycle or reuse used paper”, and “I turn off the TV, computer, or other appliances when not in use”.

Moral Disengagement. We used the instrument developed by Caprara and colleagues (1996), which has already been used in Latin-American adolescent samples (Concha-Salgado et al., 2022; Romera et al., 2022). It has 32 items and uses a Likert type scale of five levels (*completely disagree* to *agree completely*). Sample items are “telling little lies is not that bad, because it harms nobody”, “It is ok to use violence against those who offend your family”. We tested a one-dimensional model through CFA, removing item 4 because of its low factor loading. The final version showed a significant chi-squared and acceptable indexes ($\chi^2(434) = 2370.401, p < .001$; RMSEA = .08; SRMR = .068; CFI = .87). The separation reliability for this instrument was $r = .92$, having a good reliability index.

Prosocial peer social norms. We used the instrument CNPROS developed by Berger et al. (2016) for Chilean adolescents. It has nine items and uses a Likert type scale of four levels (*completely disagree* to *agree completely*). Sample items are “My wellbeing and others’ wellbeing are equally important”, and “It is not ok to repeat nasty comments about others”. We tested a one-dimensional model. The models fit had a good CFI and SRMR fit but no good RMSEA fit ($\chi^2(26) = 198.038, p < .001$; CFI = .96; SRMR = .04; RMSEA = .097). The separation reliability for this instrument was $r = .77$, having a good reliability index.

Proenvironmental peer social norms. We used the instrument developed by Collado et al. (2019). It has eight items addressing friends’ proenvironmental behavior, and uses a five-points Likert type scale (*never* to *always*). Sample items are “My friends separate plastic from other waste”, and “My friends participate in initiatives to promote care for the environment”. CFA showed a one-dimensional structure ($\chi^2(20) = 899.871, p < .001$), having an acceptable CFI and SRMR fit, but not acceptable RMSEA (CFI = .92; SRMR = .09; RMSEA = .25), probably because of a high correlation between the errors of some items, in some cases explained by similar wording. The separation reliability for this instrument was $r = .90$, having a good reliability index.

Procedure

Data was gathered during 2021 through an online survey (due to restrictions associated to the COVID-19 pandemic). First, we contacted school principals. After their consent, we gathered parental informed consents. Students who were authorized were invited to participate; in order to do so they first signed an assent. All instruments and procedures were reviewed and approved by the Scientific Ethics Committee on Social Sciences, Arts and Humanities, from the Pontificia Universidad Católica de Chile. Students answered the online questionnaire at their convenience, taking approximately 30 minutes.

Analytical strategy

Data were analyzed using Mplus 8.8 (Muthén & Muthén, 1998-2017). One general model was tested using Structural Equation Modeling. This model included moral disengagement

and prosocial and proenvironmental norms as predictors of prosocial and proenvironmental behavior. Two other interactional models were tested to check the moderation role of each norm (prosocial and proenvironmental) in the relationship between moral disengagement and prosocial and proenvironmental behaviors, respectively. Each of these models was contrasted with the same model without the interaction term. Because of the use of categorical variables, none of these models gave fit indexes others than log-likelihood; therefore, we used a third continuous model (model 2C and 3C) as a reference of fit indexes. In this case if model 2.0 or 3.0 (without interaction) fits better than the continuous model, we can infer that it has better fit than the reference one, and if the log-likelihood difference between model 2.1 or 3.1 (with interaction) and model 2.0 or 3.0 (without interaction) is significant we can infer that the model with interaction improves the interpretation of the data over the model without interaction.

For contrasting these models, we followed the formula suggested by Cheung et al. (2021): $TRd = 2[(\log\text{-likelihood for Model 0}) - (\log\text{-likelihood for Model 1}) / (\text{scaling correction factor model 1} * \text{Free parameters Model 1}) - (\text{scaling correction factor model 0} * \text{Free parameters Model 0})]$. Finally, because of the use of categorical variables, we used the robust estimator of maximum likelihood, MLR, and we reported standardized values in each model.

Results

The descriptive results of the study variables are presented in Tables 1 and 2, considering sex and grade differences. As shown, girls scored higher than boys in most variables except for moral disengagement, where no differences were found. According to grade differences, no general differences were found except for proenvironmental norms and moral disengagement, which showed lower scores in later grades.

Correlations between observable study variables are presented in Table 3. As expected, prosocial and proenvironmental behaviors were significantly associated with each other, and both were negatively associated with moral disengagement. Seemingly, social norms on both behaviors were also associated between them and with both individual behaviors. Moral disengagement was only negatively associated with proenvironmental norms, but not with prosocial norms.

In model 1 (Figure 1), we tested moral disengagement and prosocial and proenvironmental norms as predictors of prosocial and proenvironmental behavior. Prosocial and proenvironmental behaviors were positively associated ($r = .26, p < .001$). Seemingly, norms for both behaviors were also associated ($r = .13, p = .018$). Moral disengagement was associated with prosocial norms ($r = -.18, p = .001$) but not with proenvironmental norms ($r = -.06, p = .17$).

Table 1

Mean (standard deviation) of study variables, by sex

	Total	Girls	Boys	No sex specified	F	p
Pro-environmental Behavior	2.37 (0.25)	2.41 (0.23)	2.32 (0.26)	2.44 (0.26)	26.72	< .001
Prosocial Behavior	3.83 (0.70)	3.94 (0.64)	3.68 (0.76)	3.98 (0.58)	23.94	< .001
Proenvironmental Norms	3.11 (0.77)	3.15 (0.77)	3.04 (0.76)	3.20 (0.78)	4.99	.03
Prosocial Norms	3.27 (0.45)	3.32 (0.44)	3.19 (0.45)	3.37 (0.36)	17.74	< .001
Moral Disengagement	3.97 (0.52)	4.04 (0.47)	3.91 (0.59)	3.86 (0.47)	2.86	.09

Table 2

Mean (standard deviation) of study variables, by grade

	Total	6 th	7 th	8 th	9 th	10 th	F	p
Pro-environmental Behavior	2.37 (0.25)	2.39 (0.26)	2.34 (0.27)	2.38 (0.25)	2.33 (0.19)	2.42 (0.26)	.25	.62
Prosocial Behavior	3.83 (0.70)	3.86 (0.61)	3.79 (0.80)	3.92 (0.67)	3.79 (0.62)	3.78 (0.82)	.87	.35
Proenvironmental Norms	3.11 (0.77)	3.32 (0.76)	3.10 (0.87)	3.13 (0.73)	2.98 (0.69)	2.95 (0.70)	20.73	< .001
Prosocial Norms	3.27 (0.45)	3.28 (0.49)	3.31 (0.44)	3.35 (0.42)	3.11 (0.39)	3.31 (0.46)	2.03	.15
Moral Disengagement	3.97 (0.52)	2.07 (0.44)	2.21 (0.50)	2.08 (0.47)	1.83 (0.59)	1.99 (0.54)	15.71	< .001

Table 3

Pearson Correlations between observable study variables

	1	2	3	4	5
1. Pro-environmental Behavior	-				
2. Prosocial Behavior	.43**	-			
3. Proenvironmental Norms	.42**	.40**	-		
4. Prosocial Norms	.22**	.39**	.18**	-	
5. Moral Disengagement	-.17**	-.17**	-.09*	-.05	-

* $p < .01$. ** $p < .001$.

Prosocial behavior was predicted by moral disengagement ($b = -.15, p = .001$) and prosocial norms ($b = .44, p < .001$). Proenvironmental behavior was also significantly predicted by moral disengagement ($b = -.12, p = .004$) and proenvironmental norms ($b = .43, p < .001$).

Cross effects were also observed, with proenvironmental norms predicting prosocial behavior ($b = .29, p < .001$), and prosocial norms predicting proenvironmental behavior ($b = .17, p = .003$).

In models 2 and 3, we tested the moderation role of norms on the relationship between moral disengagement and proenvironmental and prosocial behaviors, respectively.

For proenvironmental behavior (Figure 2), the log-likelihood for model 2.1 with interaction was $L_{(254)} = -41204.744$, and for model 2.0, without interaction, was $L_{(253)} = -41212.301$. Model 2.C, estimated only as a baseline with continuous variables, had a log-likelihood of $L_{(180)} = -45937.317$. This model has a statistically significant chi-squared ($\chi^2_{(1649)} = 4460.903, p = < .001$) and adequate fit indexes ($RMSEA = .05, SRMR = .06$). However, CFI was .73, which can be explained by a poor measurement model for the proenvironmental behavior instrument when the variables are considered as continuous. Model 2.0 had a significantly better fit than Model 2.C which considered the variables as continuous ($TRd_{(73)} = 12650.46$), and Model 1 fit significantly better than Model 10 ($TRd_{(1)} = 35.60$). This

Figure 1

Model 1: Norms and moral disengagement as predictors of prosocial and proenvironmental behavior

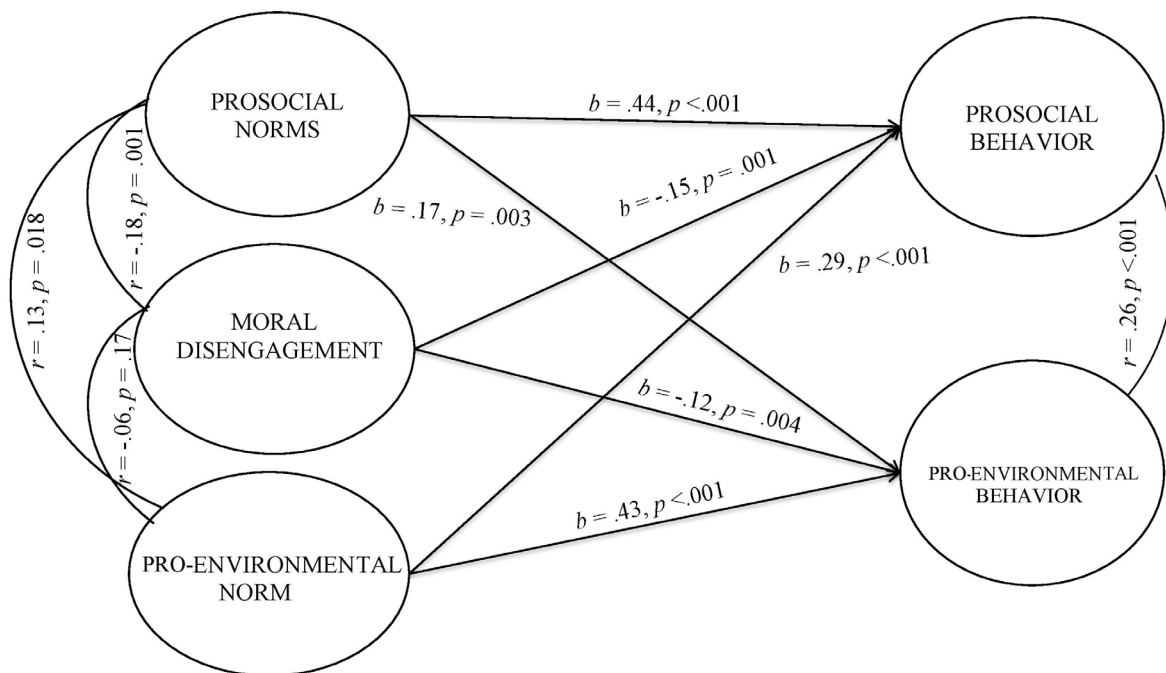
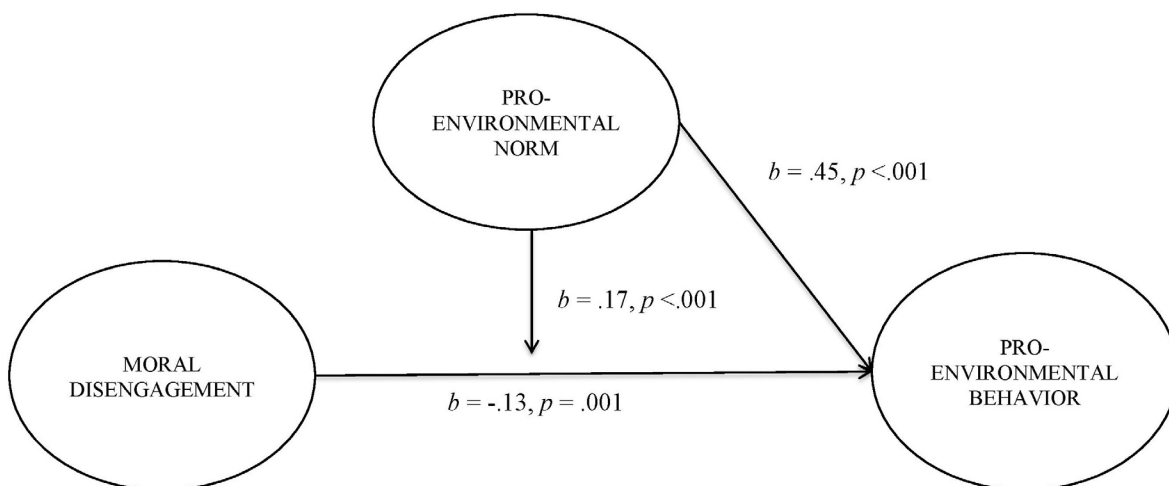


Figure 2

Model 2: Moderation model for proenvironmental behavior



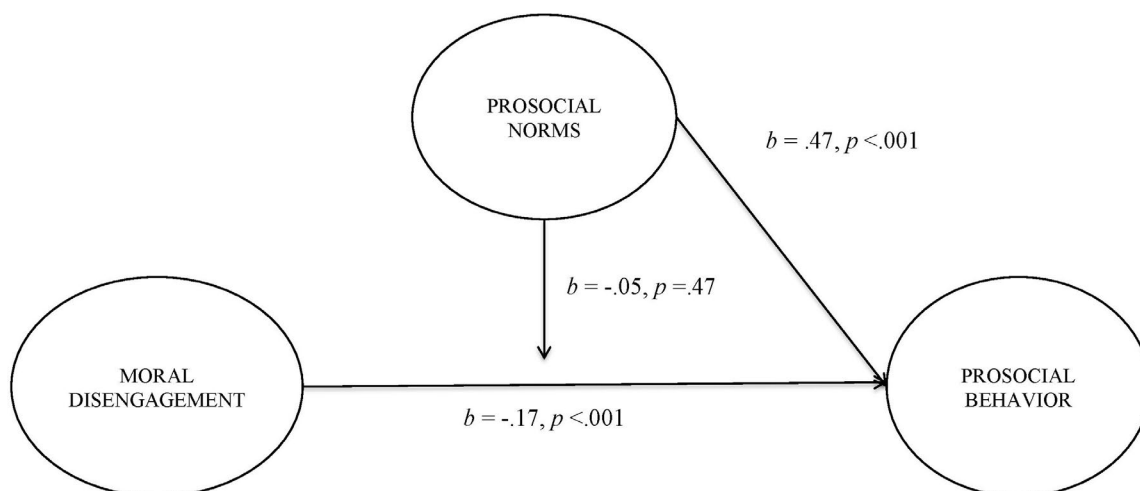
means that the model with interaction significantly improved the model fit compared with the model without interaction.

In this model, there was a significant interaction between moral disengagement and proenvironmental norms ($b = .17, p < .001$), meaning that the effect of moral disengagement on proenvironmental behavior varied according to the level of proenvironmental norms. There was also a significant direct effect of moral disengagement on proenvironmental behavior ($b = -.13, p = .001$) and between proenvironmental norms and proenvironmental behavior ($b = .45, p < .001$). Finally, there is no correlation between moral disengagement and proenvironmental norms ($r = -.06, p = .17$).

Next, we tested the same analyses for prosocial behavior (Figure 3). The log-likelihood for the Model 3.1 (with interaction), Model 3.0 (without interaction) and Model 3.C (only baseline with continuous variables) were $L_{(279)} = -41907.078$, $L_{(278)} = -41907.886$, and $L_{(175)} = -47625.975$. This model has a statistically significant chi-squared ($\chi^2_{(1477)} = 3565.277; p < .001$) and mixed fit indexes ($RMSEA = .05$, $SRMR = .07$, and $CFI = .83$; this CFI can be explained by a decrease in the fit of the measurement model when variables are considered continuous). Comparisons between Model 3.C and Model 3.0 ($TRd_{(103)} = 19884$) and between Model 3.0 and Model 3.1 ($TRd_{(1)} = 0.51$), showed that Model 3.0 had a significantly better fit than Model 3.C, but also than Model 3.1. This means that the model with interaction significantly decreased the model fit compared with the model without interaction. This is coherent with the estimates of the model. In this case, the interaction between moral disengagement and prosocial norms was not significant ($b = -.05, p = .47$), meaning that the effect of moral disengagement on prosocial behavior was the same on different levels of prosocial norms. There was a significant direct effect between moral disengagement and prosocial behavior ($b = -.17, p < .001$) and between prosocial norms and prosocial behavior ($b = .47, p < .001$). Also, there is a significant correlation between prosocial norm and moral disengagement ($r = -.18, p = .001$).

Figure 3

Model 3: Moderation model of prosocial behavior



Discussion

Considering the UN 2030 Agenda for Sustainable Developmental, sustainable behaviors should be central within educational practices, targeting not only environmental issues, but also a global perspective that considers caring for the environment and for others. In fact, the notion of a sustainable education based on a broader understanding of the common good is not new (Lotz-Sisitka, 2017).

Aligned with this perspective, the literature increasingly shows that prosocial and proenvironmental behaviors are intertwined as dimensions of an overarching orientation towards the common good – which might be thought of as sustainability (Neaman et al., 2018; Otto et al., 2021). Understanding both dimensions as integrated allows assuming significant synergies between them, and as Neaman and colleagues (2022) argue, proposing a single and unified approach to sustainability education. However, this has not been systematically considered from a developmental perspective. The present study shows that prosocial and proenvironmental behavior are related to each other among adolescents, and further explores factors that might be associated with both.

As proposed by the social cognitive theory, both personal and social influences and their reciprocal interplay constitute foundations of moral actions (Bandura, 2002). In this line, Bamberg and Möser (2007) in their meta-analysis show the role of both psychological and social factors in predicting proenvironmental behavior. Their findings place moral norms as an important factor in caring for the environment. The role of morality in adolescent proenvironmental behavior has been reported (Krettenauer, 2017), and our findings expand this evidence, showing the relevant role of moral disengagement in both prosocial and proenvironmental behaviors. Reducing moral disengagement in adolescents might not only favor socioemotional wellbeing and mental health indicators (Gómez-Tabares et al., 2021), but also foster the display of prosocial and proenvironmental behaviors.

Social norms, which have been shown to influence several adolescent behaviors, also play a relevant role for prosocial and proenvironmental behaviors. Above confirming this evidence, our study expands this by showing the cross associations of norms in one domain with individual behavior in the other. Analyzing cross-behavior effects constitute a recent approach in developmental research, broadening an ecological understanding of adolescent development within a complex peer normative environment. This finding, along with enhancing the shared nature of prosociality and proenvironmentality, opens significant avenues for educational interventions and developmental trajectories.

The findings of this study contribute to the literature on prosocial development by showing that both moral disengagement and social norms have unique effects on individual behavior. However, and contrary to proenvironmental behavior, we did not find a moderating effect of social norms on prosocial behavior. The detrimental role of moral disengagement on proenvironmental behavior seems to change at different levels of peer social norms for this behavior. In contrast, the link between moral disengagement and prosocial behavior appears to be the same across different levels of social norms for prosociality. These findings should be further explored in future studies.

The present study has several limitations that should be acknowledged, and that open future research avenues. First, the cross-sectional nature of the data does not allow drawing causal relations between the study variables. Future analyses including new waves of data will allow identifying longitudinal associations and therefore proposing developmental trajectories of prosocial and proenvironmental behaviors. Regarding the method, social norms for prosociality and proenvironmentality were assessed with different approaches (although both avoided the use of aggregated individual scores and relied on individual reports). This might be relevant for explaining the differences observed in the moderation analyses, and future studies should test both prescriptive and descriptive norms to control for potential differences. Also, although the instruments used showed overall good fit indexes, some poor fit indexes were also observed and could be improved in future research.

Featuring a Latin-American sample contributes to the literature, mostly based on studies in WEIRD societies. As mentioned above, earlier studies on adolescent prosocial behavior with Chilean samples show similar trends to those carried out in other western societies, but studies on Chileans' proenvironmental behavior are scarce. Thus, our findings contribute to identifying normative trends among youth in their prosocial and proenvironmental orientations.

Altogether, our study broadens our understanding of prosociality and proenvironmentality as intertwined dimensions of and overarching orientation towards sustainability, and informs developmental theory and educational practices and policies in order to foster sustainable societies.

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Conflict of interest

The authors have no conflicts of interest to declare.

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