UCLouvain Psychological Sciences Research Institute IPSY

Does motivation and emotions predict the evolution of pro-environmental behaviors among children?

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« The cumulative scientific evidence is unequivocal: Climate change is a threat to human well-being and planetary health. Any further delay in concerted anticipatory global action on adaptation and mitigation will miss a brief and rapidly closing window of opportunity to secure a liveable and sustainable future for all. » (IPCC, 2022a, p. 33).

What can we do as educational scientists conducting research on motivation and emotions?

Environmental education

- An important goal of environmental education is to foster **pro-environmental behaviors** among learners (UNESCO, 1977; Hungerford & Volk, 1990).
  - behaviors that omit to harm the environment or to harm it in the least extent possible, or that benefit the environment (Steg & Vlek, 2009).
- What is the role of motivational and emotional factors in fostering these behaviors?
  - Relevant target in educational interventions?
- Vivid debate among the environmental education community regarding the contribution of various factors to the prediction of pro-environmental behaviors (Ardoin et al., 2018).
    - Knowledge
    - Emotions
    - Motivation (ex. self-efficacy)
    - Contact and connection with nature
    - Etc.

Knowledge

- Many educational interventions aim to provide information and raise awareness about environmental issues, hoping that will lead to change in behaviors.
- But the links between knowledge and behaviors are **not consistent** among studies (Boeve-de Pauw & Van Petegem, 2018; Kollmuss & Agyeman, 2002).
- Some scholars propose to identify **different kinds of** « environmental » **knowledge** (Kaiser & Frick, 2002; Roczen et al., 2014):
  - Systemic knowledge / Action knowledge / Efficacy knowledge
  - Action and efficacy knowledge seem to be more consistently associated with behavioral intentions than systemic knowledge (Baierl et al., 2022).

Motivation and emotions

- Motivational theories put forward the role of outcome expectancy or **self-efficacy** in explaining pro-environmental behaviors (Bandura, 1997).
- Several studies found an association between self-efficacy and pro-environmental behaviors (Tabernero & Hernández, 2011).
- A growing number of studies also found that environmental issues could elicit strong emotions like eco-anxiety, eco-anger, guilt, hope, solastalgia, etc. (Heeren et al., 2022; Ojala, 2015).
- Some **eco-emotions** were found to be associated with pro-environmental behaviors (Bamberg & Möser, 2007; Collado et al., 2013; Stanley et al., 2021).

Contact and connection with nature

- Other scholars put forward the importance of contact or connection with nature (reflecting experiential and affective relationship with nature) to understand pro-environmental behaviors (Hughes, et al., 2018; Rosa & Collado, 2019; Soga & Gaston, 2016).
- Contact with nature and connection with nature were found to be associated with pro-environmental behaviors (Mackay & Schmitt, 2019; Whitburn et al., 2020).

Limitations of available studies

- Different theoretical models suggest different predictors.
  - e.g. norm activation theory (Schwartz, 1977), expectency-value theory (Eccles et al., 1983), value-beliefs-norms model (Stern, 2000), theory of planed behavior (Fishbein & Ajzen, 2011)
- A large number of variables were found to be **associated** with pro-environmental behaviors (Gifford & Nilsson, 2014; Klöckner, 2013).
- Most of the time, these variables have been investigated **separately** in **cross-sectional** studies (Lundholm, 2019).
- The few available longitudinal studies often failed to find predictive effects of many psycho-social factors (Prati et al., 2017).
- Most studies were conducted amons **adults**, while intervention effectiveness seems to decrease with age (Świątkowski et al., 2024).

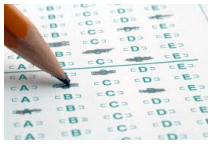
Research question

- Do action knowledge, self-efficacy beliefs, emotions, contact with nature, and connection with nature, predict change in pro-environmental behaviors among primary school students?

Sample & procedure

- 1068 students in 57 classrooms from 22 schools (Belgium)
- Grade 4, 5, 6
- 8 to 14 years old (M age =10,5)
- Girls 48%, boys 49,6%, others 2,4%
- Self-reported paper and pencil questionnaires
- T1 October-November 2022 – T2 April-May 2023 (same school year)
- 899 participants provided data at T1 and T2

Measures



- Action knowledge: 10 items, α_{T1}=.82, α_{T2}= 0.75
- Contact with nature: 10 items, α_{T1} =.78, α_{T2} = 0.76
- Connexion with nature (CNI, Chen & Monroe, 2012)
  - enjoyement of nature: 7 items, α_{T1} =.80, α_{T2} = 0.81
  - empathy for creatures: 4 items, α_{T1} =.72, α_{T2} = 0.79
- Negative eco-emotions: 5 items, α_{T1} =.79, α_{T2} = 0.83
- Pro-environmental self-efficacy: 8 items, α_{T1} =.85, α_{T2} = 0.88
- Pro-environmental behaviors: 13 items, α_{T1} =.80, α_{T2} = 0.81

Results

Cross-sectional relationships:

All variables are positively associated with pro-environmental behaviors

Prospective relationships:

Multiple regression (stepwise)- **Pro-environmental behaviors T2**

	Model 1	Model 2
Pro-environmental behaviors T1	.56***	.41***
Gender	-	
Age	-	-.07*
Family wealth	-	
Nbre of books at home	-	.08**
Action knowledge	-	
Contact with nature	-	
Enjoyment of nature	-	.14**
Empathy for creatures	-	
Negative emotions	-	
Self-efficacy	-	.09*
R^2	*.32*	*.36*

Additional analyses

- No reciprocal effect of pro-environmental behaviors at T1 on self-efficacy and enjoyment of nature at T2.
- Reciprocal time-lagged association between enjoyement of nature and self-efficacy.

Discussion

- « most contemporary climate change education focuses primarily on individual's knowledge about climate science, which research suggests has limited utility in supporting collective response to climate change » (Allen & Crowley, 2017).
- Age decline is consistent with other developmental findings (Otto et al., 2019).
- Results support the role of self-efficacy beliefs in promoting pro-environmental behaviors among children.
- They also suggest that activities fostering positive emotional experience in natural settings (enjoyment of nature) could nurture engagement in pro-environmental actions (source of intrinsic motivation?).
- Further studies should test these hypotheses more directly.

Perspectives

- Use more advanced analytical strategies
  - Test interactions, but which ones, based on which theoretical framework?
  - SEM with indirect effects, but the direction of effect between most variables remains hypothetical!
- Take into account the muldimensional nature of pro-environmental behaviors (Mateer et al., 2022)
- Include other potential predictors as values and perceived norms (Gkargkavouzi et al., 2019)
- Replicate among adolescents
- More measurement points

- Opportunities for new projects and collaborations.
- More longitudinal and intervention studies are needed (Nielsen et al., 2021).

Thank you for your attention!

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