

Discrete emotions in the face of climate change and dimensions of pro-environmental behaviors

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Introduction

Climate change arouses **emotions** (Brosch, 2021)

→ *What are the **effects** of these emotions ?*

→ ***How could them be used in Environmental Education ?***

Emerging literature on emotions in relation to climate change (Doherty & Clayton, 2011 ; Hickman, et al., 2021 ; Ojala, 2012 ; Rees et al., 2015)

Introduction

Adopting more **environmentally-friendly behavior** is a suggested way to mitigate climate change (UNESCO, 1977)

→ One major aim of Environmental Education (Stevenson, 2007)

But many **barriers** hinder that change (Gifford, 2011)

→ A better understanding of the factors potentially supporting this change is needed (Ojala, 2023)

Introduction

Issues especially important for **young people** (Huoponen, 2024 ; Ojala, 2023)

Leaders and decision-makers of tomorrow

Their future at risk

They will have to cope with the more severe and complex climate issues

→ What role do emotions play in the adoption of environmentally friendly behaviors of young people ?

Theoretical framework

Emotions

Different types of emotions

(Carver & Harmon-Jones, 2009 ; Larsen, 2017 ; Posner et al., 2005)

- Positive or negative
- Activating ou deactivating
- Approach or avoidance orientation
- Mixed

Empirically, emotions are often studied separatley (Ojala, 2012)

→ Few studies exploring **multiple emotions simultaneously** in regard to pro-environmental behaviors (Brosch, 2021 ; Doherty & Clayton, 2011 ; Hickman, et al., 2021 ; Rees et al., 2015)

Theoretical framework

Pro-environmental behaviors

Global scale or several dimensions ?

If multidimensional, which dimensions ? Lack of consensus on that question

(Kaiser et al., 2007 ; Larson et al., 2015 ; Mateer, et al., 2022)

- Level of impact
- Isolated or repeated cost
- Private or social
- ...

→ Are relationships with **emotions similar across dimensions** of pro-environmental behaviors (Menardo et al., 2020 ; Stanley et al., 2021)

Theoretical framework

Specificity of the contribution of emotions

Multiple factors have been proposed as predictors of behavior in the literature
(Hoover, 2021)

Ex. : attitudes, norms, self-efficacy from the Theory of Planned Behavior (Ajzen, 2011)

Limited scope of research on the emotions-behaviors link : either a single emotion or a single factor (Bissing-Olson et al., 2016 ; Innocenti et al, 2023 ; Landmann & Rohmann, 2020)

→ Identify the **added-value of emotions** in the explanation of pro-environmental behaviors

Aim and hypotheses

To develop an **integrative vision** of the relationships between various emotions and different dimensions of pro-environmental behaviors, **while controlling for the effect** of other traditional predictors of behavior

H1 : some emotions are linked to different dimensions of pro-environmental behavior, even when controlling for the effect of other predictors

H2 : importance of the (de)activating character of emotions, in addition to their valence

Methodology

Cross-sectional study (2019)

Self-report online questionnaire (Qualtrics)

Convenience sample : youth from Belgian general population ($N = 241$)

Age	15 to 25 ($M = 21,52$)
Gender	70,4 % women
Status	66,4% students

Methodology

Measures

Methodology

Measures

Socio-demographic controls

Methodology

Measures

Socio-demographic controls

Emotions

Methodology

Measures

Socio-demographic controls

Emotions (14 items) (Smith & Leiserowitz, 2014)

« Please indicate the intensity of the following emotions that you are feeling right now when you think about global warming and its consequences »

Intensity scale from 1 to 5

Examples :

Sad

Guilty

Angry

Anxious

...

Helpless

Interested

Methodology

Measures

Socio-demographic controls

Emotions

Pro-environmental behaviors

Methodology

Measures

Socio-demographic controls

Emotions

Pro-environmental behaviors (24 items) (de Leeuwe, 2015 ; Larson et al., 2015 ; Markle, 2013)

« To what extent do you carry out the following behaviors? »

Frequency scale from 1 to 5

Examples :

Use recycled and recyclable products

Use public transport

Replace meat with a vegetarian alternative

Reduce my heating consumption

Share and discuss your pro-environmental initiatives and behaviors

Methodology

Measures

- Socio-demographic controls

- Emotions

- Pro-environmental behavior

- Other predictors

Methodology

Measures

Socio-demographic controls

Emotions

Pro-environmental behavior

Other predictors (TCP) (Yuriev et al., 2020)

« Indicate your level of agreement with each following point »

Agreement scale from 1 to 5

Self-efficacy (4 items)

Ex. : *I am confident in my ability to adopt greener behaviors*

Norms (6 items)

Ex. : *People around me encourages me to adopt greener behaviors*

Attitudes (7 items)

Ex. : *Adopting greener behaviors is difficult and complicated*

Results

Exploratory Factor Analysis (EFA) : Emotions

5 dimensions

Sadness (3 items, $\alpha = .61$)

Anxiety (3 items, $\alpha = .75$)

Anger (2 items, $\alpha = .66$)

Serenity (2 items, $\alpha = .84$)

Hope (2 items, $\alpha = .80$)

Helpless

Interested

Results

Exploratory Factor Analysis (EFA) : Pro-environmental behaviors

5 dimensions

Mobility (3 items, $\alpha = .67$)

Use of public transport

Energy and water consumption (6 items, $\alpha = .70$)

Reduce my electricity consumption (turn off the TV when I leave the room, unplug appliances in standby mode)

Invest in renewable energy (building insulation, installing solar panels, etc.)

Vegetarianism (2 items, $\alpha = .80$)

Replace meat with a vegetarian alternative

Lifestyle (6 items, $\alpha = .77$)

Repair broken objects rather than replace them

Consume more locally and organically (fruit, vegetables, clothing, etc.)

→ Private sphere

Activism (6 items, $\alpha = .80$)

Actively participate in pro-environmental groups

Vote in favour of policies/politicians favouring the environment and ecological transition

→ Public sphere

Results : global

Regressions

Few emotions linked to behaviors

	Pro-environmental behavior		
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
Gender	-.078	.024	.117
Age	.101	.044	.057
Workers (vs students)	-.159*	-.114	-.064
Unemployed (vs students)	-.021	-.055	-.032
Sadness		.083	.038
Anxiety		.157	.138
Anger		.189*	.093
Serenity		.039	.023
Hope		.065	-.051
Helpless		.043	.071
Interest		.156*	.130*
Norms			.159**
Self-efficacy			.368***
Attitudes			.058
<i>R² adjusted</i>	<i>.007</i>	<i>.163***</i>	<i>.315***</i>
<i>ΔR² adjusted</i>		<i>.156</i>	<i>.152</i>

Note. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Results : global

Regressions

Few emotions linked to behaviors

When controlling for TCP factors

Anger no longer matters

No link with any other emotion

Interest stays important

Prevalence of self-efficacy and in a lesser extent norms

	Pro-environmental behavior		
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
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Results : dimensions

Regressions

No emotions linked to mobility behaviors

	Mobility		Energy & Water		Vegetarianism		Lifestyle		Activism	
	<i>Model 2</i>	<i>Model 3</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 2</i>	<i>Model 3</i>
Sadness	.027	.005	-.088	-.199	.162	.134	.063	.024	.162*	.124
Anxiety	.054	.041	.096	.074	.066	.073	.108	.076	.203*	.205*
Anger	.148	.116	.141	.076	.095	.002	.225**	.155	.059	-.029
Serenity	.002	-.004	.034	.015	.069	.065	.069	.046	-.023	-.025
Hope	.030	-.018	.013	-.072	-.071	-.158*	.121	.021	.078	-.016
Helpless	.013	.020	.117	.146*	.020	.042	-.037	-.004	.041	.052
Interest	.048	.039	.156*	.137*	.054	.032	.074	.053	.192**	.171**
Norms		.097		.144*		.013		.203***		.068
Self-efficacy		.150*		.235***		.312***		.269***		.354***
Attitudes		-.005		.079		.070		.075		-.009
<i>R² adjusted</i>	<i>.063</i>	<i>.081</i>	<i>.053**</i>	<i>.129***</i>	<i>.106**</i>	<i>.190***</i>	<i>.095***</i>	<i>.211***</i>	<i>.214***</i>	<i>.317***</i>
<i>ΔR² adjusted</i>	<i>.019</i>	<i>.018</i>	<i>.049</i>	<i>.076</i>	<i>.049</i>	<i>.084</i>	<i>.105</i>	<i>.116</i>	<i>.195</i>	<i>.103</i>

Note. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Results : dimensions

Regressions

Emotions as only
predictor of behaviors

Specificity of the
relationships

Ex. : sadness and
activism

Ex. : anger and lifestyle

	Mobility		Energy & Water		Vegetarianism		Lifestyle		Activism	
	Model 2	Model 3	Model 2	Model 3	Model 2	Model 3	Model 2	Model 3	Model 2	Model 3
Sadness	.027	.005	-.088	-.199	.162	.134	.063	.024	.162*	.124
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Note. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Results : dimensions

Regressions

Emotions and TCP
factors taken into
account

Changes (sadness, anger,
hope, helpless) and
stability (anxiety, interest)
in emotions-
behaviors
relationships

Global prevalence of
self-efficacy
Norms count too
Not attitudes

	Mobility		Energy & Water		Vegetarianism		Lifestyle		Activism	
	Model 2	Model 3	Model 2	Model 3	Model 2	Model 3	Model 2	Model 3	Model 2	Model 3
Sadness	.027	.005	-.088	-.199	.162	.134	.063	.024	.162*	.124
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Discussion

H1 : some emotions are linked to different dimensions of pro-environmental behaviors, even when controlling for the effect of other predictors

- When the only predictor, **emotions are linked** to pro-environmental behaviors
 - Anxiety, anger, sadness, interest
 - Specificity of the relationships
 - Visible with measures of dimensions, hidden by global score
- Differences when **other predictors** taken into account
 - Stability of **self-efficacy** : global predictor
 - Norms seem also important

Discussion

Summary of results

When **measured globally**, pro-environmental behaviors are linked to interest, norms and above all self-efficacy

Relationships when **dimensions** are measured

- 2 emotions : anxiety and hope

- Helpless and interest

- No links with mobility dimension of behaviors

Discussion

H2 : importance of the (de)activating character of emotions,
in addition to their valence

→ **Aroused emotions = activating**, whatever their valence (positive or negative)

Consistent with theories of emotions

Importance of considering the different characteristics of emotions

Discussion

Limitations

Factors measured generally, without focusing specifically on the targeted behaviors

Measurement of emotions

Fewer items on positive emotions

Questioning the considered emotions (ex. : optimism)

Discussion

Futur research

- **Stop** studying emotions in **isolation**
- **Longitudinal or intervention studies** to test the direction of the effects
- Measures : considering the **multidimensionality** of pro-environmental behaviors

Practical implications

- Importance of supporting the development of **self-efficacy** and perceived norms
- Thinking more in terms of (de)activation, in addition to positive and negative (**diversity of emotions**)
- However, the associations between emotions and behaviors are weak
- Importance of raising interest about climate change

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Thank you for your attention !

Any questions ?

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Results

Exploratory Factor analysis (EFA) : Theory of Planned Behavior

Self-efficacy (3 items, $\alpha = .77$)

Social norms (6 items, $\alpha = .90$)

Attitudes (7 items, $\alpha = .75$)