

How are eco-emotions related to different pro-environmental behaviors among university graduate? A longitudinal study

Zoé Davreux & Benoit Galand



Introduction

Our **behaviors** are the main cause of climate change. We need to **change** them, but it is not a simple task (Gibert, 2020 ; Gifford, 2011 ; Menardo et al., 2020 ; UNESCO, 1977)

Emotions are highlighted as a potential **lever** (Brosch, 2021)

However, the results of existing studies do not converge :



International Journal of
*Environmental Research
and Public Health*



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Article

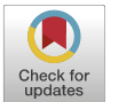
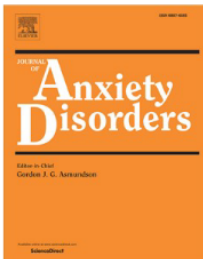
How Can
Pro-Env
Mediat

Matteo Innocenti,
Mattia Di Russo^{2,3} and Chiara Cadeddu

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

temporal network approach to the emotional experience of climate change

Alba Contreras^{a,b,1}, M. Annelise Blanchard^{a,2}, Camille Mouguiama-Daouda^{a,3},
Alexandre Heeren^{a,c,d,*,4}



Theoretical framework

Emotions

Different types of emotions

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

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

Empirically, emotions in young people are often studied separately (Ojala, 2012)

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

Theoretical framework

Pro-environmental behaviors

Global factor or several dimensions ?

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

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

- Level of impact
- Isolated or repeated cost
- Similar nature/thematic (diet, consumerism, social interactions)
- ...

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

Theoretical framework

Research designs

Most studies are cross-sectional (Stern et al., 2014)

There are few longitudinal studies, however specific emotions can be induced (Schaefer et al., 2010)

What are the **directions of the relationships** between eco-emotions and dimensions of pro-environmental behaviors ?



*To better understand the **specificity** and **directions** of the relations between different eco-emotions and the dimensions of pro-environmental behaviors*

Study 1 - Method

Cross-sectional study

Self-report online questionnaire (Qualtrics)

Convenience sample : youth from Belgian general population ($N = 599$)

October – Novembre 2023

Age	12 to 25 ($M = 16.66$)
Gender	59,9 % women

→ Investigate the *specificity* of the relationships

Study 1 - Measures

Eco-emotions

When I think about climate change, I feel...

5-point intensity scale

17 items

Anxious

Angry

Full of hope

...

Pro-environmental behaviors

How often have you done the following things lately?

5-point frequency scale

31 items

I eat vegetarian food

I walk, cycle or take public transport to school

...



Study 1 - Results

Confirmatory Factor Analysis (CFA) : Eco-emotions

5 eco-emotions

Eco-anxiety (3 items, $\alpha = .83$, $\Omega = .83$)

Eco-anger (4 items, $\alpha = .82$, $\Omega = .82$)

Eco-sadness (2 items, $\alpha = .70$)

Eco-guilt (2 items, $\alpha = .74$)

Eco-hope (2 items, $\alpha = .71$)

χ^2 (df)	CFI	TLI	RMSEA	RMSEA 90% IC	SRMR
126 (43)	0.98	0.96	0.057	[0.046-0.069]	0.026

Study 1 - Results

Confirmatory Factor Analysis (CFA) : Pro-environmental behaviors

5 dimensions

Soft mobility (2 items, $\alpha = .74$)

I walk, cycle or take public transport to school.

Meat diet (2 items, $\alpha = .71$)

I eat meat (beef, pork, chicken, etc.).

Lifestyle (10 items, $\alpha = .83$, $\Omega = .83$)

I repair or ask to have broken items repaired rather than replacing them.

Activism (6 items, $\alpha = .79$, $\Omega = .78$)

I took part in a climate march or a demonstration for environmental protection.

Social interactions (6 items, $\alpha = .89$, $\Omega = .89$)

I take the initiative of talking to my friends about environmental issues.

χ^2 (df)	CFI	TLI	RMSEA	RMSEA 90% IC	SRMR
747 (261)	0.92	0.91	0.057	[0.052-0.062]	0.063

Study 1 - Results

Multiple
hierarchical
regressions

→ Specific
relationships that
will be tested in
study 2

	Soft mobility	Meat diet	Lifestyle	Social interactions	Activism
	<i>Model 3</i>	<i>Model 3</i>	<i>Model 3</i>	<i>Model 3</i>	<i>Model 3</i>
Norms	.020	-.048	.191***	.170***	.182***
Attitudes	.183***	.046	.178***	.129***	-.062
Perceived control	.068	-.014	.264***	.203***	.094*
Anger	-.093	-.060	.146**	.167**	.153*
Anxiety	.171*	-.094	.010	.108*	-.127
Sadness	.014	-.015	.074	.085	.148*
Guilt	-.033	-.092	.017	.101**	.193***
Hope	-.028	.052	.054	.077*	.106**
<i>R² adjusted</i>	<i>.084</i>	<i>.114***</i>	<i>.468***</i>	<i>.494***</i>	<i>.245***</i>
<i>ΔR² adjusted</i>	<i>.012</i>	<i>.037</i>	<i>.043</i>	<i>.130</i>	<i>.114</i>

Note. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$. β are standardized. The predicting variables from Model 1: age, gender, number of books.

Study 2 - Method

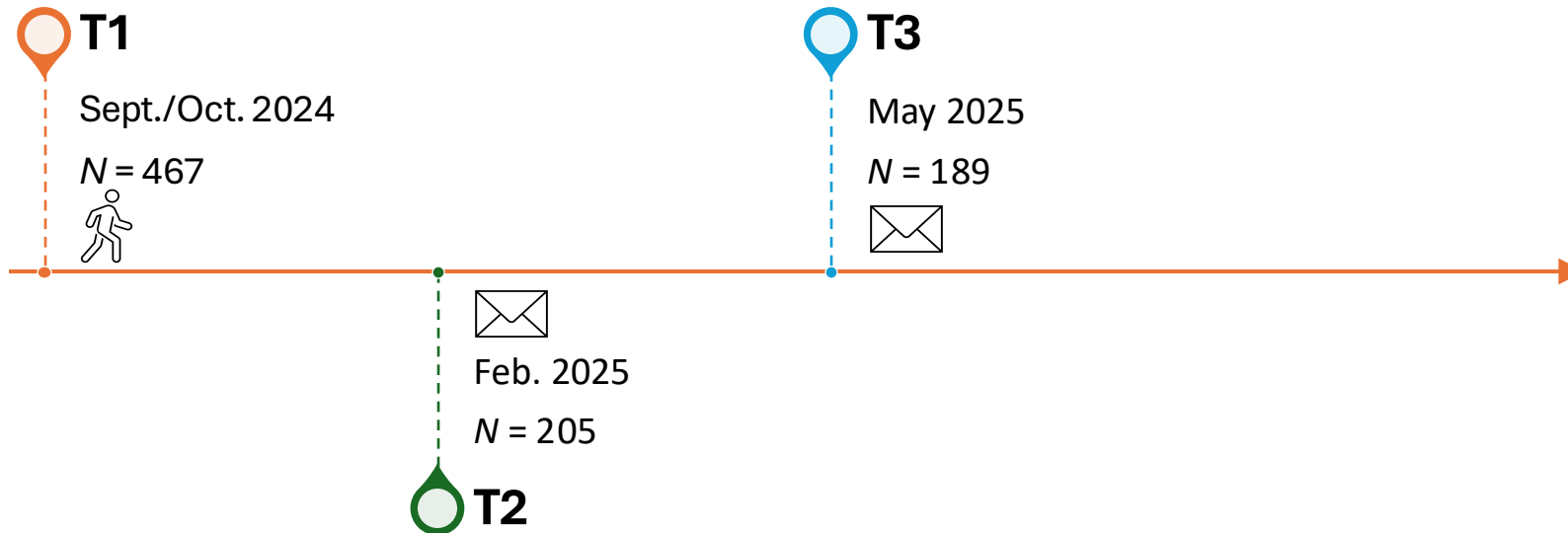
Longitudinal study

Self-report online questionnaire (Qualtrics)

Same measures as in study 1

Convenience sample : graduate students ($N = 189$)

Age	$M = 22.31$
Gender	60,0 % women

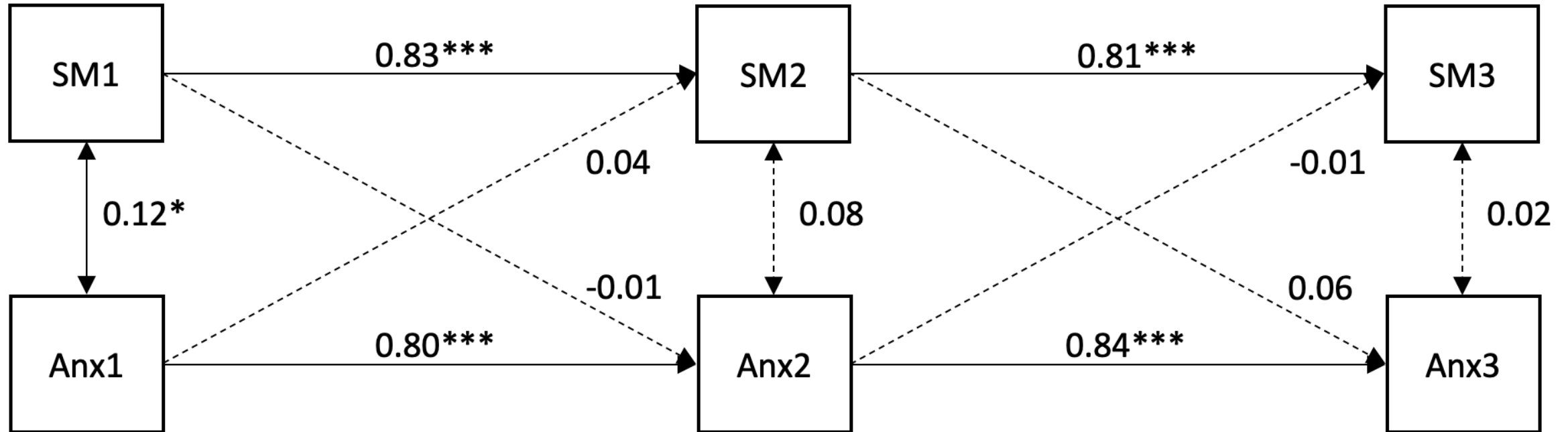
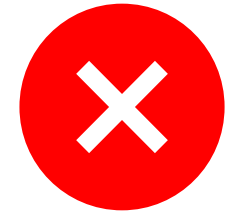


→ Investigate the **directions** of the relationships

Study 2 - Results

Structural Equation Modeling (SEM) : cross-lagged panel model

Anger & Soft Mobility

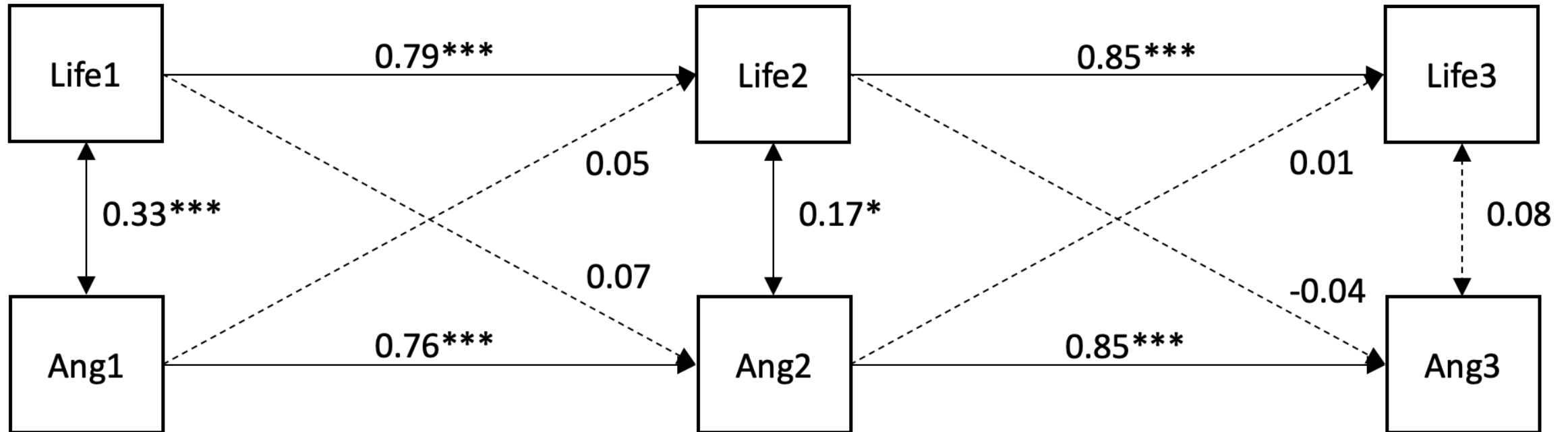
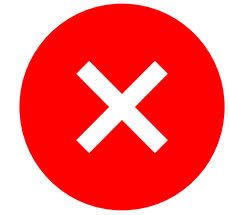


χ^2 (df)	CFI	TLI	RMSEA	RMSEA 90% IC	SRMR
74.30 (4)	0.92	0.68	0.193	[0.156-0.233]	0.043

Study 2 - Results

Structural Equation Modeling (SEM) : cross-lagged panel model

Anger & Lifestyle

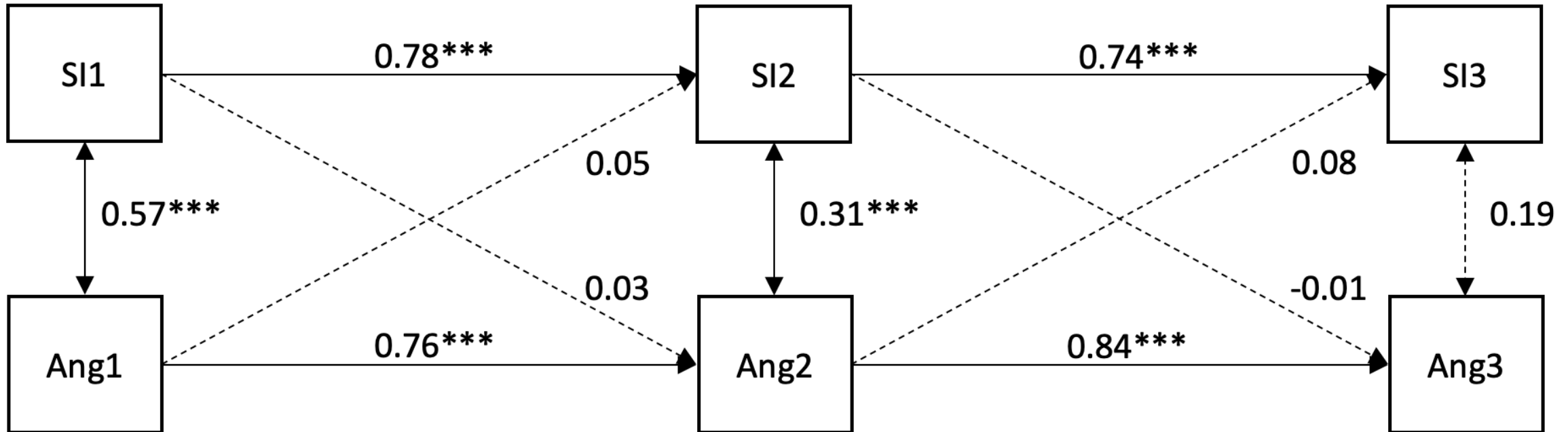
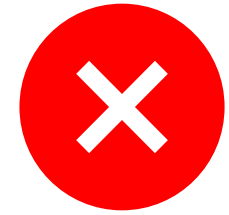


χ^2 (df)	CFI	TLI	RMSEA	RMSEA 90% IC	SRMR
36.20 (4)	0.96	0.85	0.131	[0.094-0.172]	0.031

Study 2 - Results

Structural Equation Modeling (SEM) : cross-lagged panel model

Anger & Social Interactions

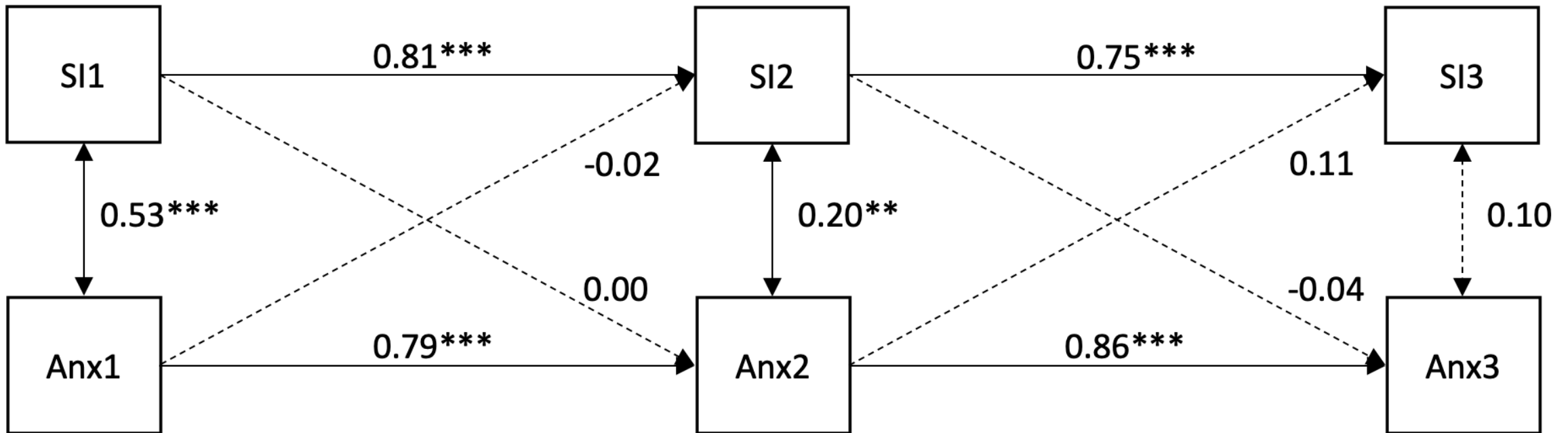
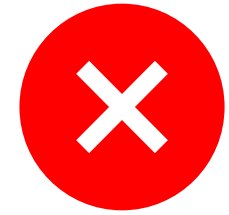


χ^2 (df)	CFI	TLI	RMSEA	RMSEA 90% IC	SRMR
26.82 (4)	0.98	0.91	0.11	[0.073-0.151]	0.026

Study 2 - Results

Structural Equation Modeling (SEM) : cross-lagged panel model

Anxiety & Social Interactions

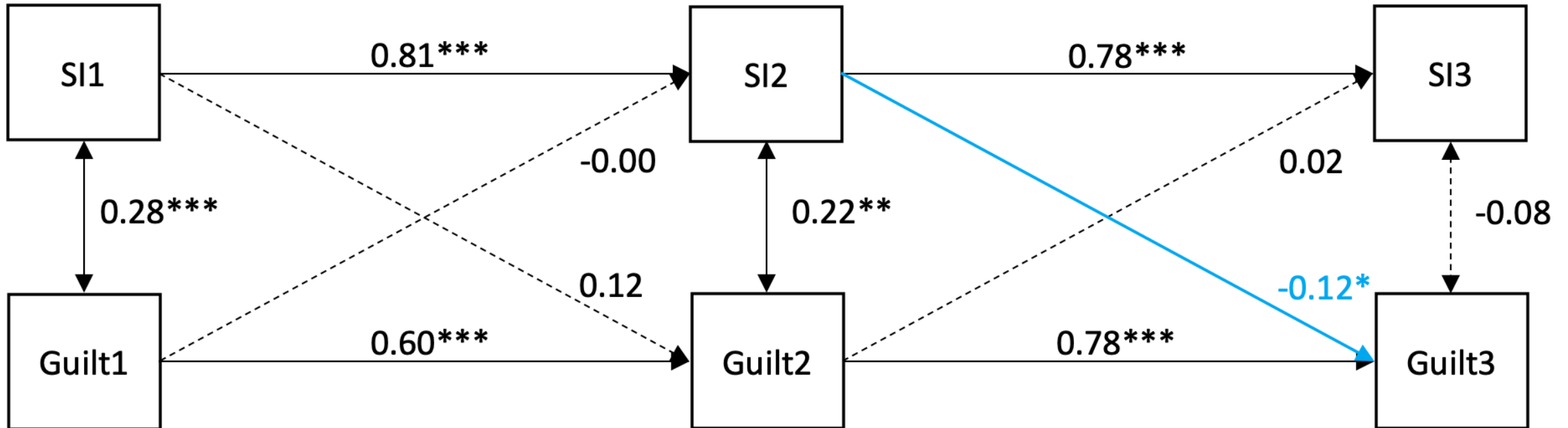


χ^2 (df)	CFI	TLI	RMSEA	RMSEA 90% IC	SRMR
53.21 (4)	0.95	0.80	0.162	[0.125-0.202]	0.034

Study 2 - Results

Structural Equation Modeling (SEM) : cross-lagged panel model

Guilt & Social Interactions



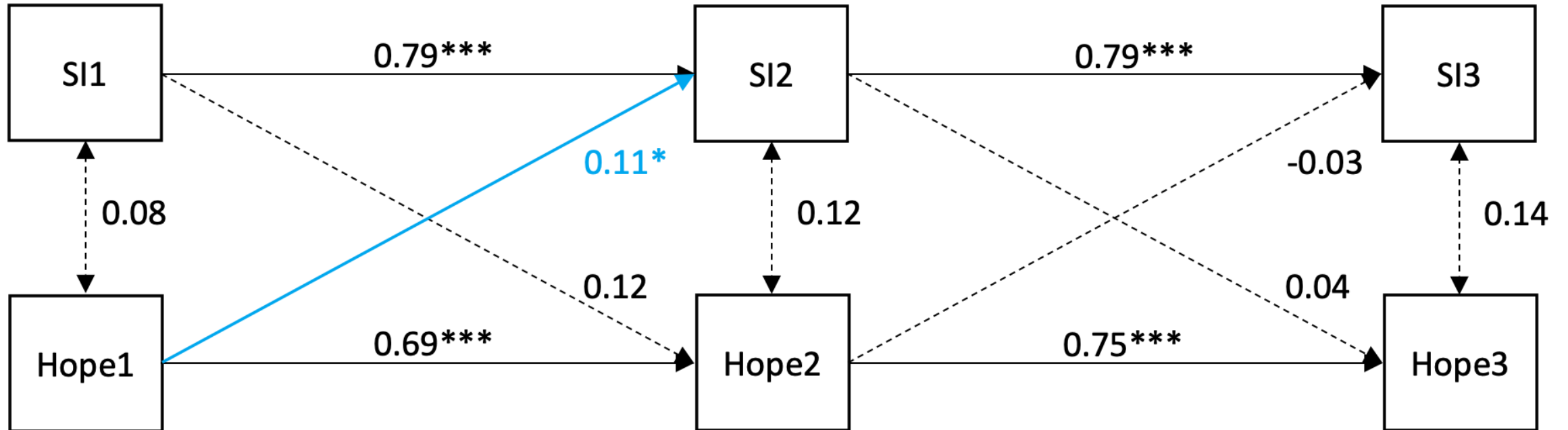
χ^2 (df)	CFI	TLI	RMSEA	RMSEA 90% IC	SRMR
31.36 (4)	0.96	0.83	0.121	[0.084-0.162]	0.037

Study 2 - Results

Structural Equation Modeling (SEM) : cross-lagged panel model



Hope & Social Interactions

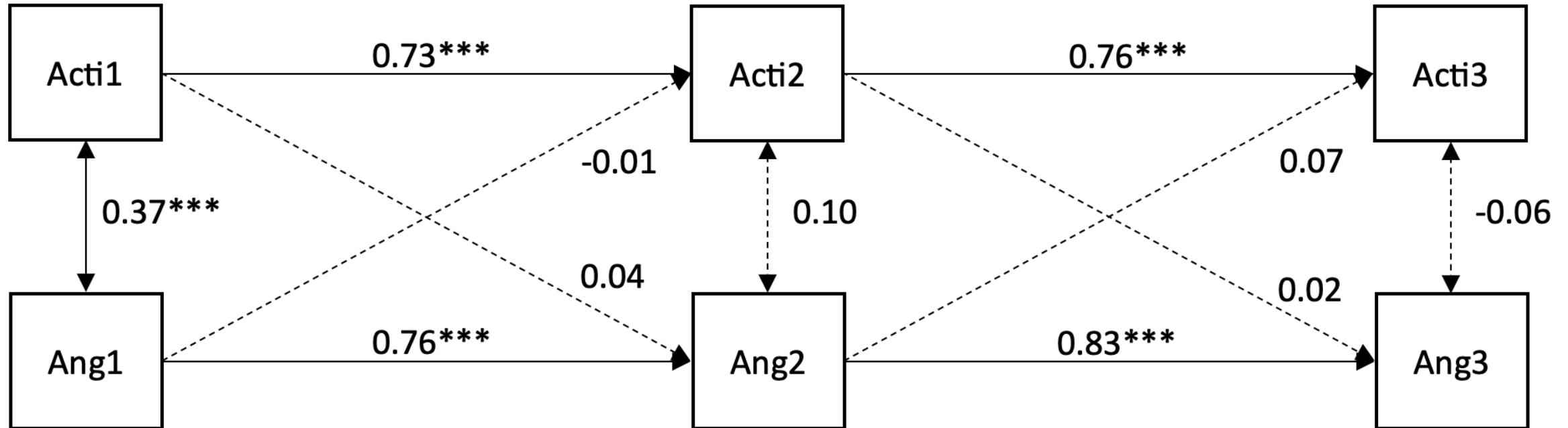
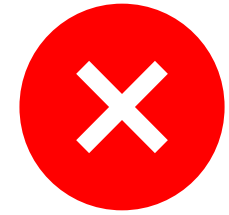


χ^2 (df)	CFI	TLI	RMSEA	RMSEA 90% IC	SRMR
31.10 (4)	0.95	0.80	0.133	[0.096-0.173]	0.043

Study 2 - Results

Structural Equation Modeling (SEM) : cross-lagged panel model

Anger & Activism

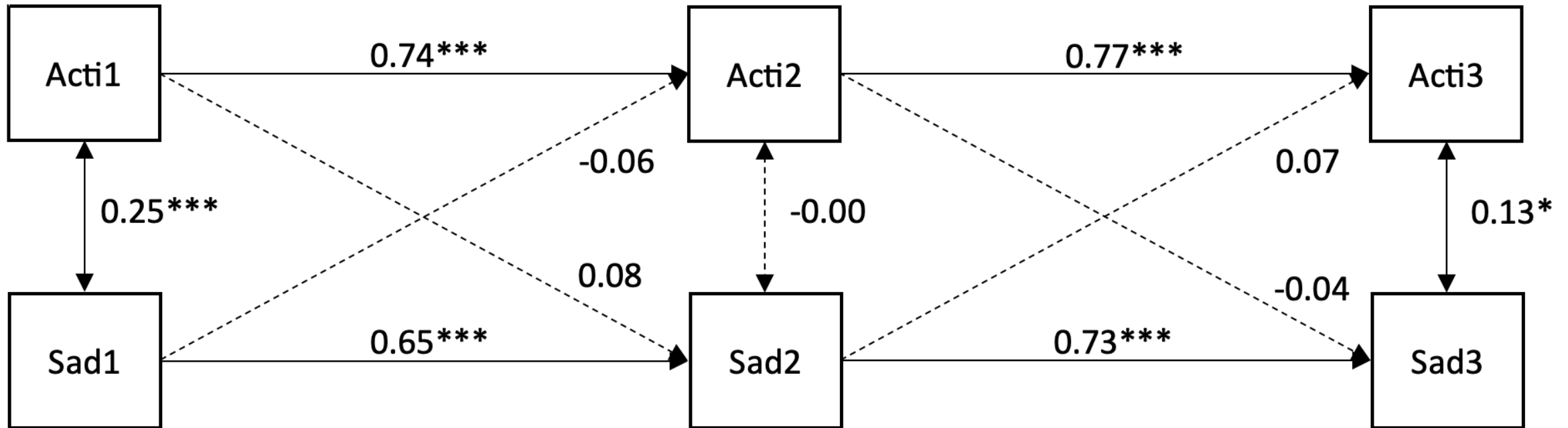
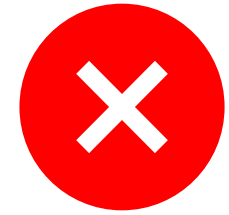


χ^2 (df)	CFI	TLI	RMSEA	RMSEA 90% IC	SRMR
40.86 (4)	0.96	0.84	0.140	[0.103-0.180]	0.033

Study 2 - Results

Structural Equation Modeling (SEM) : cross-lagged panel model

Sadness & Activism

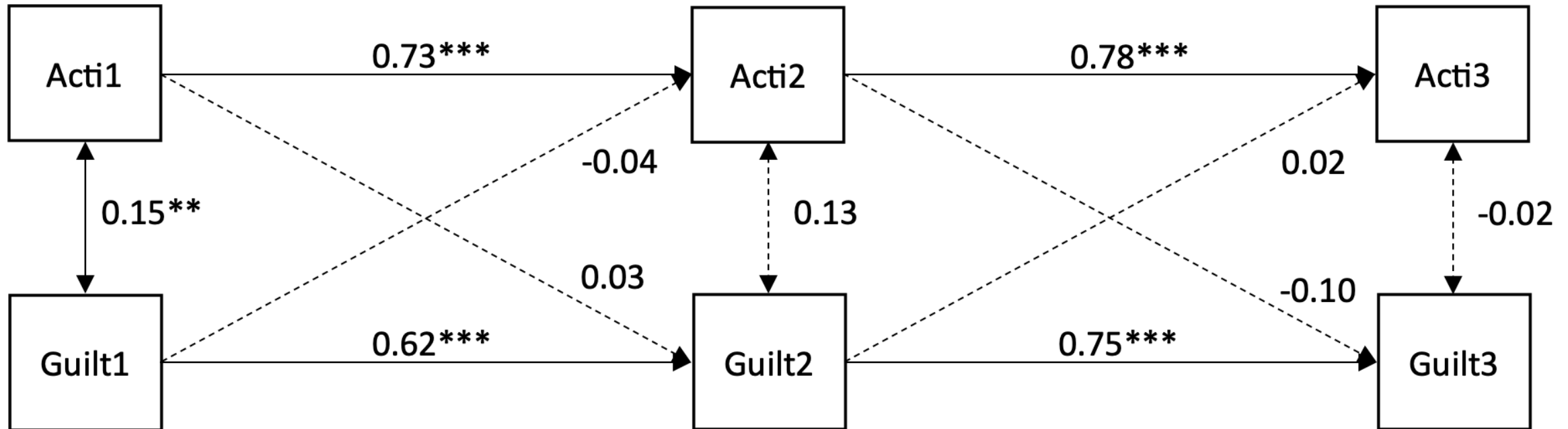
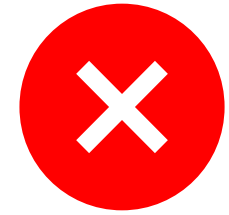


χ^2 (df)	CFI	TLI	RMSEA	RMSEA 90% IC	SRMR
63.70 (4)	0.91	0.67	0.178	[0.141-0.218]	0.052

Study 2 - Results

Structural Equation Modeling (SEM) : cross-lagged panel model

Guilt & Activism

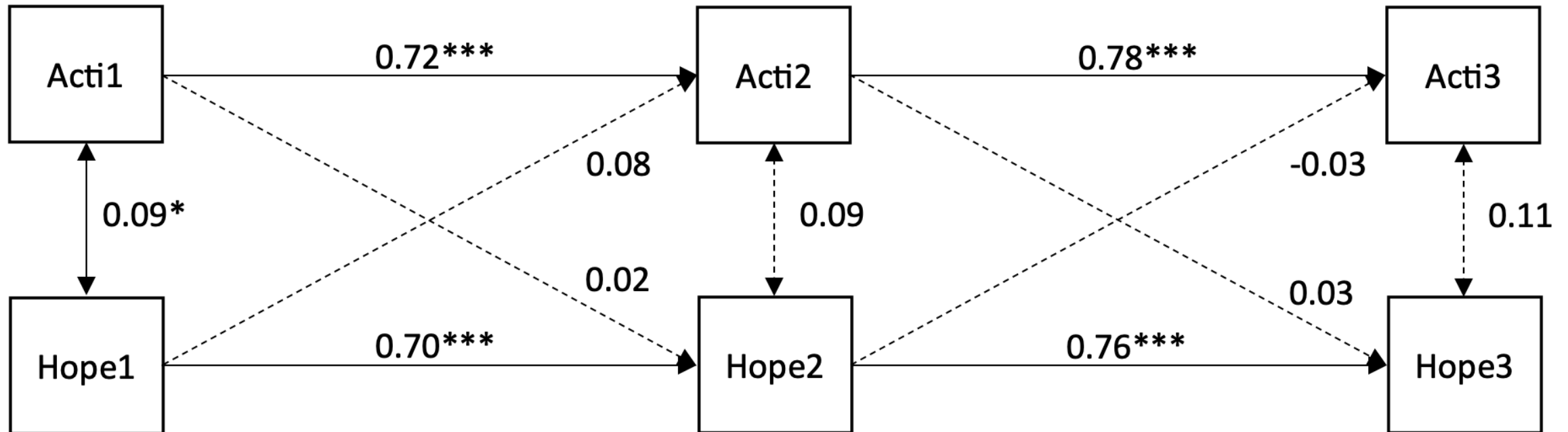
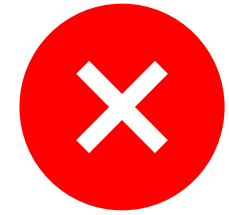


χ^2 (df)	CFI	TLI	RMSEA	RMSEA 90% IC	SRMR
48.46 (4)	0.93	0.75	0.154	[0.117-0.194]	0.043

Study 2 - Results

Structural Equation Modeling (SEM) : cross-lagged panel model

Hope & Activism



χ^2 (df)	CFI	TLI	RMSEA	RMSEA 90% IC	SRMR
56.43 (4)	0.92	0.71	0.167	[0.130-0.207]	0.047

Discussion

Only 2 cross-lagged effects were significant

Eco-hope predicts **social interactions** positively

Positive activating emotion

Social interactions negatively predict **eco-guilt**

Neither anger, anxiety, sadness nor guilt influence the dimensions of pro-environmental behaviors

All negative emotions

No reciprocal effects were found between eco-emotions and pro-environmental behaviors

! The sample comprised only young people

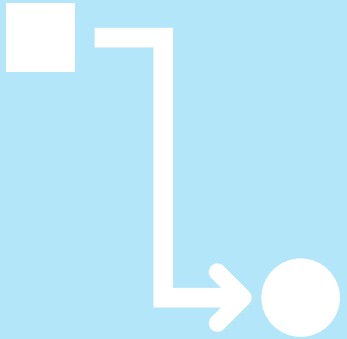


Implications

Eco-emotions and pro-environmental behaviors seem to have **little influence** on each other

We need to **be cautious** when suggesting eco-emotions as a lever for adopting behaviors

More **longitudinal** and **quasi-experimental** studies are needed to better understand the directions of the effects



Perspectives

Thinking about **emotions** in their **diversity** : they're not just positive or negative but also (de)activating

Going deeper into the **analysis**

Cross-lagged panel model with random intercepts

Would the results be similar with...

...a more **varied sample** ?

...other **measures of eco-emotions** ?

Testing **other predictors of behaviors** as levers for pro-environmental behaviors

Ex. : Perceived behavioral control, attitudes, norms (see study 1)



Thank you for your attention !

zoe.davreux@uclouvain.be