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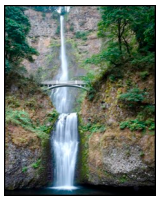

What predicts environmental activism? The roles of identification with nature and politicized environmental identity

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ABSTRACT

Abundant evidence suggests that pro-environmental behaviour (PEB) is promoted by a subjective sense of oneness with nature—what we conceptualize as "identification with nature." For environmental activist behaviour, however, we hypothesize that a stronger, more direct predictor is "politicized environmental identification"—identification with a group that is engaged in a collective struggle to create pro-environmental social change. Furthermore, we predicted that politicized identification would mediate an indirect relationship between identification with nature and environmental activism. Cross-sectional evidence for these predictions was found in Studies 1 and 2. In Study 3, a longitudinal study, change in politicized environmental identification over a three-month period predicted change in activist PEB, but change in identification with nature did not. Overall results suggest that politicized environmental identification is a proximal predictor of activism that warrants increased attention in theory, research and interventions aimed at motivating PEB.

In the face of climate change and other environmental crises, it is urgent that people act to mitigate environmental harm. Psychologists can play a role by providing insight into the psychological processes that facilitate pro-environmental behaviour (PEB). One such process is "nature connection" or the subjective sense of "oneness with the natural world" (Mayer & Frantz, 2004; Nisbet, Zelenski, & Murphy, 2008; Schultz, 2002). Indeed, recent reviews point to a wealth of evidence that nature connection correlates with PEB (Frantz & Mayer, 2014; Restall & Conrad, 2015), and a few experiments that manipulated nature connection provide evidence for a causal effect on PEB (e.g., Davis, Green, & Reed, 2009; Zelenski, Dopko, & Capaldi, 2015).

In this paper, we add to existing work by considering the role of nature connection in promoting environmental *activist* behaviours. Our focus on activist behaviours is informed by the assumption that in order to successfully mitigate climate change and other environmental problems, change needs to extend beyond individual people voluntarily limiting their own consumption (e.g. driving less, eating a vegetarian diet, turning down residential heating), and must also involve behaviours that lead to systemic social change, such as improvements in environmental regulation of industry, economic incentives for transition to carbon-neutral sources of energy, cultural shifts away from materialism, and restriction of the political power of fossil fuel companies (Fielding & Hornsey, 2016; Klein, 2014; Rees & Bamberg, 2014).

Although there are dozens of studies that find a relationship between nature connection and consumption-based PEBs, less work has focussed on whether it also predicts activist behaviours. Nisbet et al. (2008) found that nature relatedness predicted self-reports of belonging to environmental organizations and self-declaration as an environmental activist. In two other studies, connectedness to nature (Mayer & Frantz, 2004) predicted a 10-item scale of environmental movement support (Tam, 2013; Tam, Lee, & Cho, 2013). While there are some other studies that find similar evidence for a link, they are limited by measures of connection to nature that include items about behaviours and intentions and are thus confounded with measures of behaviour (Alisat, Norris, Pratt, Matsuba, & Mcadams, 2014; Hedlund-de Witt, de Boer, & Boersema, 2014; Perkins, 2010), or rely on only a few items to measure identification with nature or activist behaviour (Black, Laird, & Perez-Mujica, 2017; Kals, Schumacher, & Montada, 1999; Watson, Johnson, Hegtvedt, & Parris, 2015).

Thus, given the small size and limitations of the existing empirical literature, further tests of the relationship between connection to nature and environmental activism are warranted. We addressed this gap and also extended the existing literature by considering the psychological processes that might account for that relationship. Our theorizing is informed by the social identity theory approach (Reicher, Spears, & Haslam, 2010; Tajfel & Turner, 1979) and intergroup relations research more generally. Accordingly, we suggest that the association between connection to nature and environmental activism can be understood as resulting from collective identity processes.

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1. Connection to nature as a form of collective identity

PEB is predicted by multiple measures of nature connection: environmental identity (Clayton, 2003), nature connectedness (Mayer & Frantz, 2004), nature relatedness (Nisbet et al., 2008), emotional affinity for nature (Kals et al., 1999), and inclusion of nature in the self (Schultz, 2002). While these constructs measure nature connection in slightly different ways, they are highly intercorrelated and have similarly-sized relationships with other variables (Capaldi, Dopko, & Zelenski, 2014; Restall & Conrad, 2015; Tam, 2013). What the measures share in common are the subjective sense of oneness with the natural world and self-definition as part of the natural world. Nature connection therefore aligns with the concept of collective identification with human groups, in that collective identification is experienced as oneness with a group, with the individual self being only one part of a larger whole (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987).

Furthermore, items used to measure nature connection are highly similar to items used to measure identification with human groups, reflecting many of the psychological manifestations of collective identification (Tajfel & Turner, 1979; Turner et al., 1987). These include the accentuation of similarities between ingroup members (e.g., "I feel that I have a lot in common with other species"; Clayton, 2003), a sense of mutual interdependence ("The state of non-human species is an indicator of the future of humans"; Nisbet et al., 2008), an affective connection to the category ("I often feel emotionally close to nature"; Perkins, 2010) and its members ("I often feel a kinship with animals and plants"; Mayer & Frantz, 2004). Similarly, the measure of "inclusion of nature in the self" (Schultz, 2002) parallels measures of inclusion of human groups in the self, which has been used as an indicator of group identification (Tropp & Wright, 2001). Thus, in our work, we refer to nature connection as "identification with nature" and measure it with items previously used to measure identification with human groups, adapted to measure identification with nature.

2. Identification with nature and environmental activism: the role of politicized identity

Conceptualizing connection to nature as collective identification with nature allows us to draw on theorizing and evidence regarding how identification with a human social category leads to action on behalf of that category. Defining the self at the level of a collective identity leads individuals to "take on" the collective's interests, values, and norms, and to work to protect that category (Ellemers, Spears, & Doosje, 2002). In other words, people identified with the category "nature" will be motivated to protect nature in the same way that people identified with a human group (e.g., Canadians, psychologists, Black Americans) will be motivated to protect that group.

Social change behaviour, such as participation in collective action and social movements, is predicted by identification with broad social categories, like "Chinese Canadians" or "women." However, social change behaviour is much more strongly predicted by identification with a politicized group—one that defines itself in terms of a collective resistance or social movement within a wider context of social conflict and competing interests (Simon & Klandermans, 2001; Stürmer & Simon, 2004; van Zomeren, Postmes, & Spears, 2008). A politicized identity affirms the sense that there are injustices in the social system and the power relations within it, and that the politicized ingroup must act together to correct those problems. Without a sense of social injustice and supportive norms, people tend to be reluctant to challenge the existing social system (e.g., Wright, Taylor, & Moghaddam, 1990). Thus, compared to identification with a broader category, politicized identification is stronger predictor of collective action.

For example, Simon et al. (1998) found that identification with older adults predicted engagement in collective action on behalf of older adults, but that relationship was not significant when controlling for identification with a more politicized identity—an activist group called the "gray panthers". Furthermore, identification with the gray panthers fully mediated the relationship between identification with older adults and collective action. In our case, the natural world is the broad social category, which might promote environmental activism only indirectly by making it more likely that people will adopt a *politicized* environmental identity, such as with environmental activists, the environmental movement, or a specific environmental organization (Horwitz, 1996).

A few studies provide evidence that politicized environmental identification predicts environmental activism. People who more strongly identified with a local environmental group were more likely to indicate intentions to participate in the group's activities (Bamberg, Rees, & Seebauer, 2015). Similarly, identification with environmental activists has been found to predict self-reports of environmental activism (Dono, Webb, & Richardson, 2010) and general intentions to participate in environmental activism (Fielding, McDonald, & Louis, 2008). Aside from these few papers, however, the link between politicized environmental identification and environmental activism remains under-researched.[1] In addition to addressing that empirical gap, the current studies are the first to examine politicized environmental identification and identification with nature as simultaneous predictors of activism.

3. Awareness of environmental threats and moral obligation

In addition to politicized identification, there are other identity-based processes that might account for indirect relationships between identification with nature and environmental activism. Collective identification leads to a greater sensitivity to threats to the collective (Branscombe & Wann, 1994; Fischer, Haslam, & Smith, 2010); similarly, people identified with nature might be more likely to notice and take seriously environmental threats (Frantz & Mayer, 2009). Identification with nature might also increase people's sense of moral obligation to protect the environment (Frantz & Mayer, 2009), in the same way that identification with a human category leads to a greater sense of responsibility to protect members of that category (Levine & Manning, 2013). PEB is predicted by both environmental threat (Johnson & Frickel, 2011; Lubell, Zahran, & Vedlitz, 2007; Schmitt, Aknin, Axsen, & Shwom, 2018) and moral obligation to protect the environment (Bamberg & Möser, 2007; Bratanova, Loughnan, & Gatersleben, 2012; Kaiser, Schultz, Berenguer, Corral-Verdugo, & Tankha, 2008). Therefore, in the current studies we included perceived threats and moral obligation as possible mediators of indirect relationships between identification with nature and activist PEB.

Although our focus is on politicized environmental identity, it is important to include moral obligation and perceived threat for multiple reasons. As known predictors of PEB, and probable correlates of both identification with nature and politicized environmental identification, controlling for these variables provides a stronger test of our hypotheses and allows us to rule out alternative explanations. These variables are also interesting theoretically, as they may partially explain the link between identification with nature and politicized environmental identification. In other words, identification with nature might give rise to perceptions of threat and a sense of moral obligation, which in turn predicts politicized identification.

4. Overview of hypotheses

Although prior social identity theory approaches to PEB exist (e.g., Fielding & Hornsey, 2016; Fritsche, Barth, Jugert, Masson, & Reese,

[1] Other studies have found links between pro-environmental behaviour and identifying as an *environmentalist* (e.g., Brick, Sherman, & Kim, 2017; Owen, Videras, & Wu, 2010). However, the environmentalist identity is not necessarily a politicized environmental identity, and can reflect self-definition as a pro-environmental consumer, without necessarily reflecting self-definition in a group that is advocating for changes in the social structure.

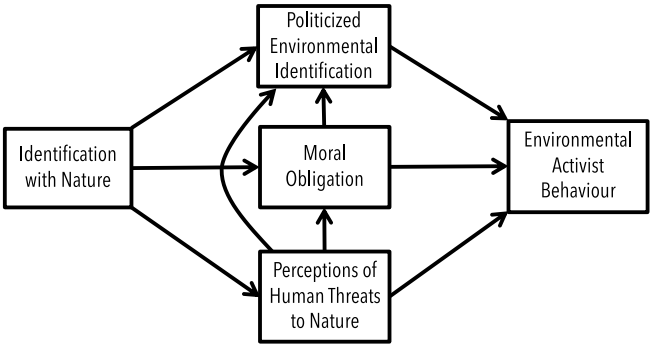


Fig. 1. A collective identity model of identification with nature and pro-environmental activist behaviour.

2018), they have not considered nature connection in collective identity terms, nor addressed the processes that might mediate relationships between identification with nature and environmental activism. Our central and most basic prediction is that politicized environmental identification is a more proximal predictor of activist PEB than is identification with nature.

Hypothesis 1. When considered simultaneously, and controlling for moral obligation to protect the environment and perceived environmental threats, politicized environmental identity will predict activist PEB, but identification with nature will not.

Even if identification with nature is not a direct predictor of activist PEB, it might have indirect relationships with PEB though politicized identification, moral obligation or perceived threats. As shown in Fig. 1, we tested a model that allows for multiple processes by which identification with nature might predict activist PEB. Our key mediational prediction concerns the role of politicized environmental identification:

Hypothesis 2. Controlling for perceived environmental threat and moral obligation, politicized environmental identification will mediate a positive relationship between identification with nature and activist PEB.

In a more exploratory way, we also considered the relationships *between* the proposed mediators, and the possibility of serial mediation paths. Moral obligation to protect the environment might make people more likely to identify with others who would share that sense of moral obligation—i.e., politicized environmental identities (van Zomeren, Postmes, & Spears, 2011). Similarly, the perception that humans are causing harm to the environment is likely to lead to a greater sense of moral obligation to mitigate that harm (e.g., Story & Forsyth, 2008). Thus, we consider whether moral obligation and perceived threats might be involved in serial mediation pathways including politicized environmental identification as the most proximal predictor of activist PEB. Not only might these analyses illuminate the processes that account for a relationship between identification with nature and activist PEB, but they also examine the possibility that the relationship between identification with nature and politicized identification is at least partly indirect, occurring through perceived threats, moral obligation, or both:

Hypothesis 3. Perceived threats to the environment and politicized environmental identification will, in that order, serially mediate a positive relationship between identification with nature and activist PEB.

Hypothesis 4. Moral obligation and politicized environmental identification will, in that order, serially mediate a positive relationship between identification with nature and activist PEB, controlling for perceived threats to the environment.

Hypothesis 5. Perceived threats to the environment, moral obligation, and politicized environmental identification will, in that order, serially mediate a positive relationship between identification with nature and activist PEB.

Although we tested all the possible indirect paths implied in Fig. 1, we do not make any specific predictions for the other pathways (those that include threat or moral obligation, but do not include politicized identification). If they are significant, that can point to important directions for future research; however, their more important role in this context is as "controls" when testing politicized identification as a direct predictor of activist PEB and mediator of the relationship between identification with nature and activist PEB.

In Studies 1 and 2, we tested Hypotheses 1-5 cross-sectionally. In Study 3, we used longitudinal data to compare the unique effects of temporal change in identification with nature and change in politicized environmental identification on change in self-reported activism.

Our predictions for the role of politicized environmental identification apply most clearly to activist behaviour, as politicized identities motivate behaviours aimed at creating social change. It is not clear that politicized identification would be critical for motivating more normative, consumption-based PEBs, which focus more on individual impact than social change. However, politicized identities might promote consumer PEB because those behaviours are perceived as part of an activist "lifestyle," or because people are motivated to bring their consumer behaviour in line with their political behaviour. Thus, although we do not have strong expectations, we did test our predictions for consumer PEB as well, for exploratory and comparative purposes.

5. Study 1

In Study 1 we measured politicized environmental identification by asking participants how much they identified with environmental activists. Because our key hypotheses concern comparing the roles of identification with nature and politicized environmental identification, we used parallel measures that differed only in the categories to which they referred, but otherwise had identical item wording. We measured moral obligation as collective guilt over humans' harm to the environment. People experience collective guilt when they perceive that the human ingroup has unjustly harmed the natural environment, and that guilt tends to motivate PEB (Ferguson & Branscombe, 2010; Kaiser et al., 2008). Participants also completed a measure of perceived threats to the environment, and self-reports of activist PEB and consumer PEB.

5.1. Method

5.1.1. Participants and procedure

Undergraduates participated for course credit ($N = 152$, 103 women, 49 men). By an a priori decision, the target sample size was 150. Based on past experience, 150 is the number of participants we could confidently expect to recruit from the departmental research participant pool in one semester. Age ranged from 17 to 30 years ($M = 20$, $SD = 2.26$). Fifty-eight participants were East Asian, 38 White, 26 South Asian, 5 Middle Eastern, 5 Pacific Islander, 1 First Nations/Indigenous, 18 other, and 1 did not indicate their ethnicity.

5.1.2. Materials

Measures are described below. All items used in Studies 1–3 are provided in full in *Supplement A*. Unless otherwise specified, items were rated on a Likert-type scale from 1 (*strongly disagree*) to 7 (*strongly agree*).

Identification with nature and politicized environmental identity. We measured identification with environmental activists and identification with nature using Cameron's (2004) well-established measure of collective identity adapted to each category (e.g., "I have a lot in common with other species/with environmental activists").

Environmental threat. We measured perceived threats to the environment with four items from the New Environmental Paradigm scale (e.g., "Over-consumption is posing a serious risk to humankind and life on planet earth"; Dunlap, Van Liere, Mertig, & Jones, 2000).

Collective guilt. We measured moral obligation with the collective guilt acceptance subscale (Branscombe, Slugoski, & Kappen, 2004),

adapted to measure guilt over human's harm to the environment (e.g., "I feel guilty about the negative things humans have done to the environment").

Pro-environmental activist behaviour. We asked participants how frequently they engaged in seven activist behaviours, including, "How often do you get involved with any groups whose main aim is to preserve or protect the environment?" and "How often do you go to a political demonstration or protest because you feel a company or the government is harming the environment?" Participants responded by choosing one of the following: *never* (1), *once or twice a year* (2), *a few times a year* (3), *once a month* (4), *a couple times a month* (5), *once a week* (6), or *at least a couple times a week* (7).

Pro-environmental consumption behaviour. We measured pro-environmental consumption behaviours using 16 items (e.g., "I use reusable containers rather than disposable ones", "I take energy use and greenhouse gas emissions into consideration when making commuting decisions"). Participants responded using the same response scale as for the activist PEB items.

5.2. Results

The means, standard deviations, correlations, and reliabilities for the measured variables are presented in Table 1. Except for Activist PEB, all the variables were significantly intercorrelated with each other. Activist PEB, however, was significantly related to only politicized identification and to consumer PEB. Identification with nature was significantly correlated with consumer PEB, but not with activist PEB. It is worth noting that the mean for activist PEB was quite low, potentially limiting its association with the other variables.

5.2.1. Pro-environmental activist behaviour

We tested predictions using Model 6 (i.e. serial mediation) of the PROCESS macro for SPSS (Hayes, 2013), which combines multiple regression with bootstrapping to test the significance of indirect effects.

The total relationship between identification with nature and activist PEB was small, positive, and not significant, $b = .08$, $SE = 0.07$, $\beta = 0.10$, $t\ (150) = 1.19$, $p = .24$. When controlling for politicized identification and the other potential mediators, the direct effect of identification was again non-significant, $b = -0.10$, $SE = 0.08$, $\beta = -0.12$, $t\ (147) = -1.31$, $p = .19$; however, the direct effect of politicized identification was significant, $b = 0.37$, $SE = 0.08$, $\beta = 0.41$, $t(147) = 4.54$, $p < .001$, supporting Hypotheses 1.

Although the total effect was not significant, there was evidence of *indirect* relationships between identification with nature and activist PEB, as the total indirect effect was significant (Fig. 2). Supporting Hypothesis 2, politicized environmental identification mediated an indirect relationship between identification with nature and activist PEBs. The only other significant indirect relationship was the serial mediation involving threat, collective guilt, and politicized identity, in that order (Hypothesis 5). Only politicized identification had a significant direct relationship with activist PEB.

Table 1
Means, standard deviations, correlations and reliabilities of variables in Study 1.

	M	*SD*	1	2	3	4	5	6
1. Identification with nature	4.61	.83	*.87*					
2. Environmental threat	4.99	.95	.24	*.70*				
3. Collective guilt	5.06	1.16	.37	.51	*.90*			
4. Politicized environmental identification	3.87	.78	.50	.31	.38	*.84*		
5. Consumer PEBs	4.01	.92	.35	.30	.41	.45	*.86*	
6. Activist PEBs	1.61	.70	.10	.03	.15	.36	.27	*.81*

Note. For $rs > 0.16, p < .05$; for $rs > 0.21, p < .01$. Reliabilities (Cronbach's α) appear along the diagonal.

5.2.2. Pro-environmental consumer behaviour

The total relationship between identification with nature and consumer PEB was significant and positive, $b = .39$, $SE = 0.08$, $\beta = 0.35$, $t\ (150) = 4.58$, $p < .001$. The direct effect of identification with nature was not significant, $b = 0.12$, $SE = 0.09$, $\beta = 0.11$, $t(147) = 1.30$, $p = .20$. However, similar to the results for activist PEB, the direct effect of politicized identification was significant for consumer PEB, $b = 0.34$, $SE = 0.10$, $\beta = 0.29$, $t(147) = 3.42$, $p = .001$.

As shown in Fig. 2, the simple mediation via politicized identification was again significant. Two of the three serial mediation paths that include politicized identification as a proximal predictor were also significant: the serial mediation through collective guilt and politicized environmental identification, and the serial mediation involving perceived threat, collective guilt, and politicized environmental identification. Additionally, collective guilt was also a unique predictor of consumer PEB, and it was a significant mediator of the relationship between identification with nature and consumer PEB, as well as in the serial mediation through perceived threat and collective guilt (in that order).

5.3. Discussion

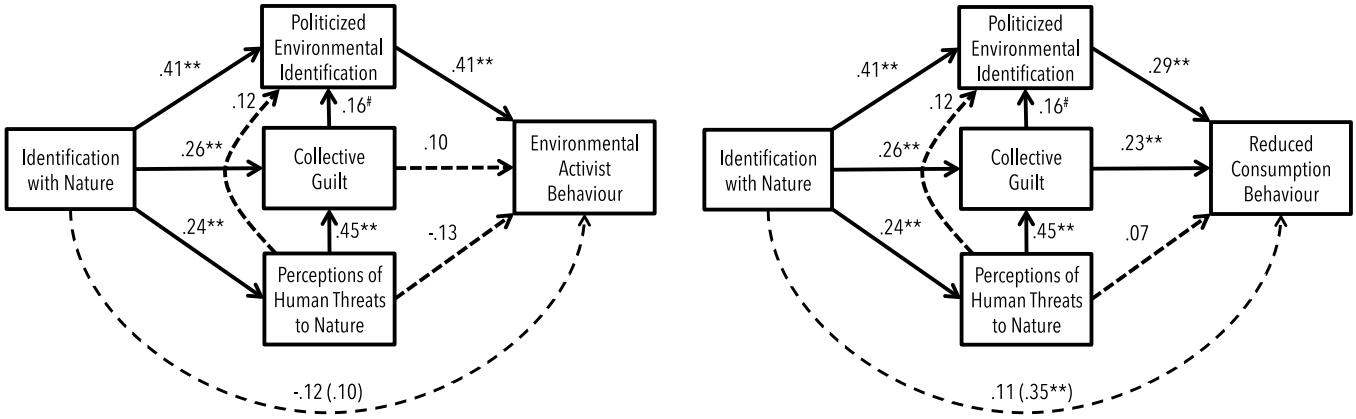
When considered simultaneously, politicized environmental identification predicted self-reports of activist PEB, but identification with nature did not, supporting Hypotheses 1. Indeed, even the total relationship between identification with nature and activist PEB was non-significant. This fits our expectation that, compared to identification with nature, politicized identification will be a stronger and more proximal predictor of environmental activism. Although strictly speaking, there was no total relationship to mediate between identification with nature and activist PEB, we did find evidence for our predicted indirect relationship via politicized identification.[2] We also found evidence for serial mediation involving perceived environmental threat and collective guilt, but with politicized environmental identification being the more proximal predictor of activist PEB.

Results were largely similar for consumer PEB; politicized identification mediated an indirect relationship between identification with nature and self-reported behaviour. The main difference was that collective guilt was an additional direct predictor of consumer PEB, and a significant mediator independent of politicized identification. In other words, politicized identification was a significant predictor and mediator, but its relationship with consumer PEB was weaker, and politicized identification was not the only predictor of consumer PEB, as it was for activist PEB.

6. Study 2

Study 1 used a small sample of undergraduates, limiting generalizability and power to detect small effects. In Study 2 we attempted to replicate findings with a larger, broader sample of people in the United States. In addition, we made several improvements to the materials. Rather than using collective guilt as an indicator of moral obligation, we used a more general measure. As our theoretical reasoning is not specific to guilt, we included a more general measure that should tap

[2] We also replicated our findings in an initial study that is not reported in here, but is described full in *Supplement B*. That study used similar measures as those used in Study 1, and tested the same hypotheses among a sample of undergraduates ($N = 70$). Hypotheses 1, 2, 4, and 5 were confirmed for both activist PEB and consumer PEB. To address the possibility that our particular construction of identification with nature might produce idiosyncratic findings that are not relevant to prior work, we also retested our model using other measures in place of our identification with nature measure—Environmental Identity (Clayton, 2003) and Nature Connectedness (Mayer & Frantz, 2004). Results replicated the main findings with only trivial differences. For these two commonly used constructions of "identification with nature", we found that politicized environmental identification had a role in explaining their association with PEB.



	Activist PEB			Reduced Consumption PEB		
Indirect Effects	Effect	SE_{Boot}	95% CI_{Boot}	Effect	SE_{Boot}	95% CI_{Boot}
Total Indirect Effect	**.18**	.05	.10, .29	**.27**	.06	.16, .40
Simple Mediation By Politicized Identity						
NatureID → PoliticizedID →PEB	**.14**	.04	.08, .25	**.13**	.05	.05, .25
Serial Mediations involving Politicized Identity						
NatureID → Threat → PoliticizedID → PEB	.01	.01	-.002, .04	.01	.01	-.001, .04
NatureID → Collective Guilt → PoliticizedID → PEB	.01	.01	-.0001, .05	**.01**	.01	.0002, .04
NatureID → Threat → Collective Guilt → PoliticizedID → PEB	**.01**	.00	.001, .02	**.01**	.00	.001, .02
Additional Indirect Paths						
NatureID → Threat → PEB	-.03	.02	-.08, .001	.02	.03	-.02, .09
NatureID → Collective Guilt → PEB	.02	.02	-.01, .08	**.07**	.04	.01, .17
NatureID → Threat → Collective Guilt → PEB	.01	.01	-.005, .04	**.03**	.02	.003, .08

Fig. 2. Tests of politicized environmental identification, collective guilt, and perceptions of environmental threat as mediators of the relationship between identification with nature and pro-environmental behaviour, Study 1

Note. NatureID = Identification with Nature; Threat = Perceived Environmental Threat; Collective Guilt = Collective guilt over humans' harm to the environment; PoliticizedID = Politicized Environmental Identification. Coefficients in the model figure are standardized, $^{\#}p = .055$, $^{*}p < .05$, $^{**}p < .01$; Indirect effects in the table are unstandardized. Indirect effects with confidence intervals that do not include zero are bolded.

multiple forms of moral obligation, including guilt, shame, and a sense of duty.

In Study 1, the mean for self-reports of activist PEB was quite low, limiting the variance and potentially resulting in attenuation of the relationships we could observe. We addressed this concern by switching to a measure of *willingness* to engage in activist PEB. At the same time, we added items to the activist PEB measure, particularly ones that were more explicitly activist behaviours (e.g., protesting, civil disobedience).

We also included another type of identity—"environmental self-identity." Environmental self-identity is a more individual-level and less politicized form of environmental identity (e.g. "I see myself as an environmentally-friendly person") that has also been found to be a relatively proximal predictor of PEB (van der Werff, Steg, & Keizer, 2014; Whitmarsh & O'Neill, 2010). Thus, we retested our models while controlling for environmental self-identification, and also compared the unique effects of the two forms of identity when examining them as simultaneous predictors. We anticipated that while environmental self-identification would be a proximal predictor of reduced consumption PEB, it would not be a proximal predictor of activist PEB.

6.1. Method

6.1.1. Participants and procedure

The study was preregistered with AsPredicted (https://tinyurl.com/y9uzkmbt). Sample size was determined a priori based on a power analysis. For power = .8, and an effect size of $r = 0.15$, we needed 347 participants. Thus, we aimed to collect data from 375 participants, assuming that some participants' data would be dropped from analysis. A total of 379 participants from the United States were recruited online using Prolific.ac. Participants received $4.74 USD for their participation. Twenty participants were excluded from analysis because of missing data; eight were excluded for failing an attention check. Of the remaining 351 participants, 162 were women, 183 men, 5 nonbinary, and 1 agender. Age ranged from 18 to 73 years ($M = 33$, $SD = 11.71$). Two-hundred-and-fifty-four were White, 37 Asian, 26 African American, 13 Hispanic/Latino/a, 19 mixed or other, and 2 did not indicate their ethnicity.

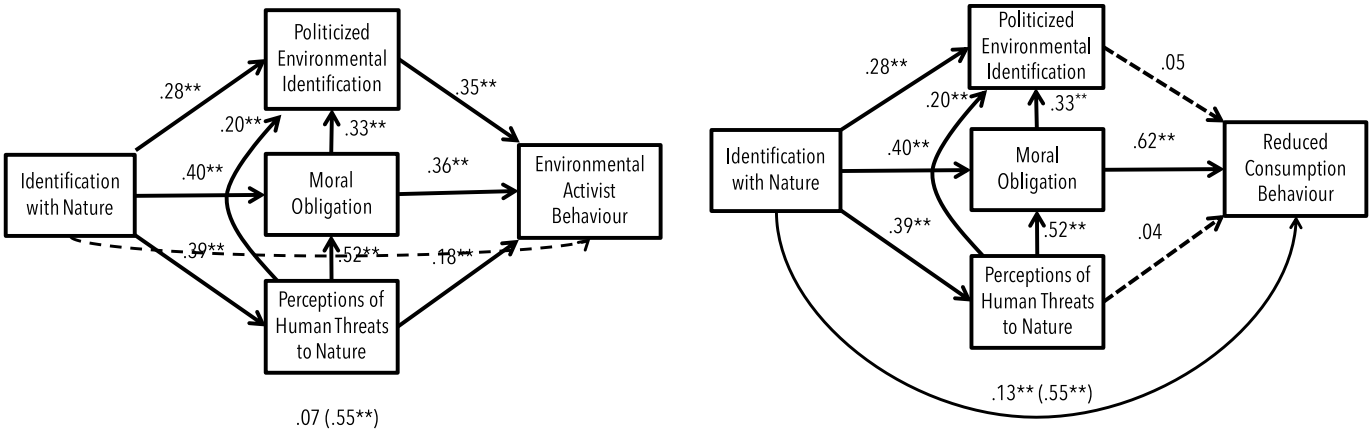
6.1.2. Materials

As in Study 1, we measured identification with environmental activists and identification with nature using adaptations of Cameron's (2004) collective identity scale, with eight items each. In addition, we included a measure of environmental self-identity (van der Werff et al., 2014) as a possible alternative mediator (e.g., "I am the type of person who acts environmentally friendly"). We measured perceived threats to the environment with the same four items as in Study 1 with a slight adaptation to one of the items; we added the phrase "Because of climate change and other environmental problems" to the beginning of the item "Life as we know it is under imminent threat" (see *Supplement A*). We measured moral obligation using six items, including "As part of the human race, I feel responsible for the negative impact we are having on the environment". To measure activist PEB, we asked participants how willing they would be to engage in 10 activist behaviours, including, "attend meetings of environmental groups", "go to a political demonstration or protest to support environmental protection", and "take nonviolent action to block projects that may harm the environment (e.g., standing in the path of work trucks)." Participants responded on a scale from 1 (*very unwilling)* to 7 (*extremely willing*). Using the same response scale, we measured participants' willingness to engage in consumer PEB using 10 items (e.g., "use reusable containers rather than disposable ones" and "reduce the number of trips I take by airplane.").

Table 2
Means, standard deviations, correlations and reliabilities of variables in Study 2.

	M	*SD*	1	2	3	4	5	6	7	8
1. Identification with nature	4.81	1.22	*.94*							
2. Environmental threat	5.58	1.38	.39	*.92*						
3. Moral obligation	5.08	1.27	.60	.67	*.90*					
4. Collective guilt	5.09	1.43	.52	.72	.77	*.92*				
5. Politicized environmental identification	3.48	1.39	.56	.53	.63	.56	*.91*			
6. Environmental self-identity	4.92	1.39	.62	.52	.76	.62	.64	*.94*		
7. Consumer PEBs	5.53	1.03	.55	.53	.75	.62	.53	.69	*.89*	
8. Activist PEBs	4.02	1.44	.55	.63	.74	.66	.70	.63	.64	*.94*

Note. For all *r*s, $p < .001$. Reliabilities (Cronbach's α) appear along the diagonal.



		Activist PEB			Reduced Consumption PEB	
Indirect Effects	Effect	SE_{Boot}	95% CI_{Boot}	Effect	SE_{Boot}	95% CI_{Boot}
Total Indirect Effect	**.56**	.05	.47, .66	**.35**	.04	.28, .43
Simple Mediation By Politicized Identity						
NatureID → PoliticizedID →PEB	**.12**	.02	.07, .16	.01	.01	-.01, .05
Serial Mediations involving Politicized Identity						
NatureID → Threat → PoliticizedID → PEB	**.03**	.01	.02, .06	.003	.004	-.003, .01
NatureID → Moral Obligation → PoliticizedID → PEB	**.05**	.01	.03, .09	.01	.01	-.005, .02
NatureID → Threat → Moral Obligation → PoliticizedID → PEB	**.03**	.01	.02, .05	.003	.003	-.002, .01
Additional Indirect Paths						
NatureID → Threat → PEB	**.08**	.02	.04, .13	.01	.02	-.03, .06
NatureID → Moral Obligation → PEB	**.17**	.03	.11, .24	**.21**	.03	.15, .29
NatureID → Threat → Moral Obligation → PEB	**.08**	.02	.05, .13	**.11**	.02	.07, .15

Fig. 3. Tests of politicized environmental identification, moral obligation, and perceptions of environmental threat as mediators of the relationship between identification with nature and pro-environmental behaviour, Study 2
Note. NatureID = Identification with Nature; Threat = Perceived Environmental Threat; Moral Obligation = Moral Obligation to Protect the Enviroment; PoliticizedID = Politicized Environmental Identification. Coefficients in the model figure are standardized, $*p < .05$, $**p < .01$; Indirect effects in the table are unstandardized. Indirect effects with confidence intervals that do not include zero are bolded.

6.2. Results

All the variables were positively inter-correlated (Table 2). As intended, switching to a measure of willingness rather than reports of past behaviour resulted in a higher mean for activist PEB, avoiding the possible floor effect in Study 1.

6.2.1. Willingness to engage in pro-environmental activism

We again tested predictions using PROCESS, Model 6 (Hayes, 2013). The total relationship between identification with nature and activist PEB was significant, $b = .64$, $SE = 0.05$, $\beta = 0.55$, t (349) = 12.27, $p < .001$. The direct effect of identification with nature was only "marginally significant", $b = 0.09$, $SE = 0.05$, $\beta = 0.07$, t (346) = 1.78, $p = .08$; however, politicized identification was a direct predictor of activist PEB, supporting Hypotheses 1, $b = 0.36$, $SE = 0.05$, $\beta = 0.35$, t (346) = 8.06, $p < .001$.

As shown in Fig. 3, politicized environmental identification mediated an indirect relationship between identification with nature and activist PEBs (Hypothesis 2). Furthermore, all three serial mediation paths that included politicized identification as a proximal predictor of activist PEB were significant (Hypotheses 3–5). Specifically, there were significant indirect relationships between identification with nature and activist PEB via perceived threats and politicized identification, via moral obligation and politicized identification, and via the path through perceived threat, moral obligation and politicized identification.

All the other indirect paths in the model (i.e., those that did not include politicized identification) were also significant. In particular, moral obligation was a direct predictor of activist PEB and mediated an indirect relationship between identification with nature and activist PEB. The serial mediation pathway through threat and moral obligation was also significant. Finally, threat significantly predicted activist PEB, and the indirect pathway through threat was significant according to the bootstrapping analysis. Comparing the size of the indirect

relationships, most of the total indirect relationship was accounted for by two of the "simple" indirect pathways—through moral obligation and through politicized identification.[3]

6.2.2. Willingness to engage in pro-environmental consumption

The total relationship between identification with nature and consumer PEB was significant and positive, $b = .46$, $SE = 0.04$, $\beta = 0.55$, $t(349) = 12.21$, $p < .001$. The direct effect of identification with nature was also significant, $b = 0.11$, $SE = 0.04$, $\beta = 0.13$, $t(346) = 2.94$, $p = .003$, but the direct effect of politicized identification was not, $b = 0.04$, $SE = 0.04$, $\beta = 0.05$, $t(346) = 1.06$, $p = .29$. Thus, unlike for activist PEB, Hypothesis 1 was not supported with consumer PEB. Similarly, Hypothesis 2 was not supported, as politicized environmental identity did not mediate a relationship between identification with nature and reduced consumption behaviours, and there were no significant serial mediations involving politicized environmental identity (Hypotheses 3–5). However, two mediation pathways that did not involve politicized identification were significant. As seen in Fig. 3, moral obligation significantly mediated an indirect relationship between identification with nature and environmental activism, and perceived threat and moral obligation also serially mediated an indirect relationship.

6.2.3. Comparing politicized identity and environmental self-identity

To rule out environmental self-identity as an explanation for our findings with politicized environmental identification, we retested our main predictions for politicized identification while including environmental self-identity as a covariate. Findings were replicated with only trivial differences. Politicized identification still predicted activist PEB even when controlling for environmental self-identity, $b = .36$, $SE = 0.05$, $\beta = 0.35$, $t(345) = 7.72$, $p < .001$. In contrast, environmental self-identity did not significantly predict activist behaviours, $b = 0.01$, $SE = 0.06$, $\beta = 0.01$, $t(345) = 0.21$, $p = .83$. Thus, when considered simultaneously, only politicized identification predicted activism. When we repeated this analysis for reduced consumption behaviours, the converse was true. Environmental self-identity significantly predicted consumer behaviour, $b = 0.18$, $SE = 0.04$, $\beta = 0.24$, $t(345) = 4.23$, $p < .001$; politicized environmental identification did not, $b = -0.001$, $SE = 0.04$, $\beta = -0.001$, $t(345) = -0.03$, $p = .98$. These findings fit our expectation that environmental self-identity is more relevant to individual consumer behaviour, and politicized identification is more relevant to activist behaviours.

6.3. Discussion

Study 2 offers additional support for our key hypotheses with a broader sample. Supporting Hypotheses 1 and 2, politicized environmental identification was a direct predictor of willingness to engage in activist PEB, and mediated an indirect relationship between identification with nature and willingness to engage in activism. Although the direct effect of identification with nature was marginally significant in this more highly-powered study, the effect size was small, particularly in comparison to the direct effect of politicized identification. Thus, as in Study 1, results find that compared to identification with nature, politicized identification was a stronger, more proximal predictor of activist PEB.

We also found evidence for other indirect paths, including paths through moral obligation and perceived threat that did not include politicized identification. Thus compared to Study 1, in which the indirect relationship between identification with nature and activist PEB was limited to paths that included politicized identification as a proximal predictor, Study 2 found evidence for mediation by perceived threat and moral obligation. The strongest indirect effects, however, were the two simple mediations through politicized identification and through moral obligation. Thus the findings for moral obligation are particularly compelling, and consistent with prior work on the importance of moral obligation for both PEB (Bamberg & Möser, 2007) and for engaging in collective action (e.g., van Zomeren et al., 2011). For our current focus, however, what is important is that even while controlling for moral obligation, politicized identification is a direct predictor of activist PEB and mediator of a relationship between identification with nature and activism.

Unlike in Study 1, we did not find that politicized environmental identification was a predictor of reduced consumption PEB. Indeed, in those analyses, most of the mediation occurred via moral obligation. Instead, we were able to compare activist identity with another measure of identity put forth by other scholars to explain PEB—environmental self-identity (e.g., van der Werff et al., 2014). When considered simultaneously, we found consumer PEB was predicted by environmental self-identity, and activist PEB was by predicted by politicized identification. These results help to rule out environmental self-identity as an alternate explanation for our findings with politicized identification and activism. Furthermore, they support our expectation that environmental self-identity is more personal and less political, and thus more predictive of consumer PEB, but that politicized identification is more predictive of activism.

7. Study 3

In Study 3, we longitudinally tested the relationships between identification with nature, politicized environmental identification, and self-reported activist behaviours. With a sample of participants in an undergraduate course on psychology and environmental sustainability, we measured identification with nature, politicized environmental identification, activist PEB, and consumer PEB at the beginning and end of the term. In the context of the course, students were exposed to information on a number of environmental issues, and as is evident in the data, students' attitudes, beliefs, and behaviours regarding environmental issues underwent significant change. For that reason, the context offers a good opportunity for examining change across time, and in particular whether changes in identification with nature or changes in politicized environmental identification can better account for changes in activist PEB across time. Because Study 3 utilizes as fairly small sample, we kept our hypothesis testing as simple as possible, and only focussed on whether change in politicized identification or change in identification with nature had direct (unique) relationships with activist PEB (conceptually similar to Hypothesis 1 in Studies 1 & 2):

Hypothesis 6. When considered simultaneously, change in politicized environmental identification will predict change in activist PEB, but change in identification with nature will not.

7.1. Method

7.1.1. Participants and procedure

Participants were undergraduates enrolled in a 3rd-year course on Psychology and Environmental Sustainability (taught by the first author). All students in the course (133) completed anonymous online questionnaires at several points throughout the term as part of their course work. The variables reported here were measured at the beginning of the term and at the end, about 3 months later. At the end of the term, we asked students whether they would consent to their responses being used as part of a research study. Sixty-two students (50 women, 12 men) volunteered. Because the other 71 students did not consent to have their data analysed for this study, we were not able to

[3] For purposes of comparison, we also measured moral obligation using the same collective guilt scale used in Study 1 ($\alpha = 0.92$). When we repeated our analysis with collective guilt in place of our more general measure of moral obligation, we again found that politicized identification mediated a relationship between nature identification and activist PEB. Indeed all the indirect effects that were significant in the main analysis were replicated. The main difference was that collective guilt was a weaker predictor of activist PEB than the more general operationalization of moral obligation we used in Study 2.

Table 3
Means, standard deviations, correlations and reliabilities of variables in Study 3.

	M	*SD*	1	2	3	4	5	6	7	8
1. Nature Identification Time 1	4.90	1.12	*.85*							
2. Politicized Identification Time 1	3.30	1.17	.57	*.90*						
3. Consumer PEBs Time 1	3.27	0.64	.42	.45	*.62*					
4. Activist PEBs Time 1	1.78	0.65	.45	.60	.61	*.69*				
5. Nature Identification Time 2	5.66	1.12	.65	.52	.35	.48	*.91*			
6. Politicized Identification Time 2	4.14	1.42	.62	.67	.41	.49	.73	*.92*		
7. Consumer PEBs Time 2	3.46	0.60	.38	.46	.61	.52	.45	.55	*.55*	
8. Activist PEBs Time 2	2.14	0.82	.48	.55	.36	.68	.51	.60	.51	*.76*

Note. For all *r*s, $p < .01$. Reliabilities (Cronbach's α) appear along the diagonal.

estimate any effects of self-selection or any differences between students who did and did not consent to have their data used. The number of students in the course who chose to participate was the sole determinant of sample size. Age ranged from 19 to 43, $M = 22.56$, $SD = 3.82$. Participants were from a range of racial/ethnic backgrounds, including 25 White/European, 14 South Asian, 12 East Asian, 2 Pacific Asian (e.g. Filipino, Malaysian), 2 Latino(a), 7 of mixed heritage or who preferred another label that was not listed.

7.1.2. Measures

We created two measures of identification based on six items from the Cameron (2004) scale, adapted to measure identification with nature or identification with environmental activists. We measured activist PEB with five items and consumer PEB with six items, to which participants responded using a scale ranging from 1 (*Never*) to 5 (*Always/At every opportunity*). The behaviours were similar to those used in the prior studies.

7.1. Results

As shown in Table 3, all of the variables increased over time, becoming more pro-environmental, *p*'s < 0.01. All of the variables were significantly intercorrelated across both time points.

Our hypothesis concerns how activist PEB was uniquely predicted by changes in identification with nature and changes in politicized identification. Thus, we regressed activist PEB at Time 2 on identification with nature at Time 2 and politicized identification at Time 2, while controlling for Time 1 measurements of identification with nature, politicized identification and activist PEB. Aside from activist PEB at Time 1, only politicized environmental identification at Time 2 (representing change in politicized identification) predicted activist PEB at Time 2, $b = 0.18$, $SE = 0.09$, $t(56) = 2.11$, $p = .04$. Identification with nature at Time 2 did not predict activist PEB at Time 2, $p > .90$. The analysis predicting change in consumer PEB produced similar results. Aside from consumer PEB at Time 1, only politicized identification at Time 2 predicted consumer PEB at Time 2, $b = 0.14$, $SE = 0.07$, $t(56) = 2.10$, $p = .04$. Identification with nature at Time 2 did not predict consumer PEB at Time 2 ($p > .5$).

7.3. Discussion

Consistent with Hypothesis 6, when examined simultaneously, identification with nature did not predict change in self-reported activism, but change in politicized identification did. This result conceptually replicates the cross-sectional finding in Studies 1 and 2 that politicized identification is a more proximal predictor of activism than identification with nature, but extends those findings by demonstrating the same for change across time. As in Study 1 (but not Study 2), results were similar for self-reported consumer PEB.

The sample size for Study 3 was small, and only represents the students in the course who self-selected into the study. It possible that these students were the ones most affected by the course and most likely to demonstrate changes in identities and in behaviour. Even so, it is still interesting to examine how those changes relate to one another, particularly when change in politicized identity, but not identification with nature, predicted change in behaviour.

8. General discussion

Abundant evidence suggests a link between identification with nature and PEB; however, there is less evidence that identification with nature might support pro-environmental activism—actions intended to create social change. Based on the assumption that meaningful mitigation of climate change and other environmental issues requires significant change in many of our social systems and institutions, the lack of research on identification with nature and environmental activism represents a serious gap. We addressed this gap by examining how identification with nature predicted self-reports of pro-environmental activism in Studies 1 and 3, and a measure of willingness to engage in activist behaviours in Study 2.

Furthermore, we extended previous research by examining the processes that might account for a relationship between identification with nature and pro-environmental activism—processes previously under-theorized and under-researched. Drawing on collective action research (e.g., Simon et al., 1998), we reasoned that compared to identification with nature, identification with a politicized environmental identity would be a stronger direct predictor of environmental activism. This hypothesis was supported across studies. Indeed, in Study 1, even the total (zero-order) relationship between identification with nature and activism was non-significant. We further hypothesized that politicized environmental identification would mediate an indirect relationship between identification with nature and activist PEB. This hypothesis was supported in both Studies 1 and 2, while controlling for moral obligation to protect nature and perceptions of environmental threats.[4] These findings conceptually replicate prior work that finds that compared to politicized identities, identification with a broad social category is a relatively distal predictor of collective action and efforts at social change (van Zomeren et al., 2008). Additionally, these studies are the first to demonstrate that the relationship between nature identification and environmental activism is indirect and occurs to a large degree through politicized environmental identification.

Our findings have important implications for interventions and campaigns aimed at promoting PEB by increasing people's sense of identification with the natural world. Given that our work suggests that the relationship between identification with nature and activism is almost entirely indirect, campaigns and interventions might increase their effectiveness if they also incorporate and encourage an awareness of environmental threats, a sense of moral obligation to protect nature, and perhaps

[4] This hypothesis was also supported when tested longitudinally in Study 3. Initial levels of identification with nature predicted residualized change in politicized identification ($p = .004$), which mediated a significant indirect relationship between initial levels of identification with nature and residualized change in activist PEB. Similarly, in another analysis focusing only on residualized change, changes in politicized identification mediated an indirect relationship between change in identification with nature and change in activist PEB.

most importantly a sense of politicized environmental identity. The relationships between identification with nature and perceptions of threat, moral obligation and politicized identification are imperfect, and in some contexts, and for certain kinds of people, the relationships might be small or nonexistent. Thus nature identification interventions might be more effective if they also facilitated people's movement through the processes that appear to be more proximal predictors of behaviour.

8.1. Perceived environmental threats and moral obligation. In Studies 1 and 2 we examined moral obligation to protect the environment and perceived environmental threats. In Study 1, neither collective guilt nor perceived threat directly predicted activist PEB when controlling for politicized environmental identification. In Study 2, however, willingness to engage in activism was predicted by moral obligation, and both threat and moral obligation were involved in significant indirect relationships between identification with nature and activist PEB, independent of politicized identification. Additionally, in both studies moral obligation and threat were involved in serial mediations in which identification with nature predicted threat and/or moral obligation, which in turn predicted politicized identification, and then activism. Thus we obtained evidence that the relationship between identification with nature and environmental activism is not just mediated by politicized identification, but by moral obligation and perceived threats as well—both in indirect pathways that are independent of politicized identification, and in indirect relationships that have politicized identification as the most proximal predictor.

8.2. Politicized environmental identification and consumer PEB. Our predictions regarding politicized environmental identification were specific to activist behaviours, as it was not clear whether politicized environmental identification would matter so much for consumer PEB—behaviour not explicitly related to social change. While the differences between the two forms of behaviour were quite small in Studies 1 and 3, they were more pronounced in Study 2. Politicized identification was a direct predictor of activism, but, unlike the other two studies, was not a direct predictor of consumer PEB. Instead, we found that moral obligation was the strongest direct predictor of consumer PEB. Finally, when it comes to predicting pro-environmental consumption, Study 2 found that environmental self-identity was a better predictor of consumer behaviour than politicized identification.

In sum, we found that politicized identification sometimes directly predicts consumer behaviour, but is a less strong and consistent predictor of pro-environmental consumption than of environmental activism. Thus we speculate that the direct link between politicized identification and consumer behaviour will be contingent on other factors. Why might politicized identification be important for behaviours like buying local food, eating a vegetarian diet, or turning off lights when leaving a room? To the extent that someone advocates for protection of the environment, they will likely feel intrapsychic and social pressures to bring their personal consumption practices in line with their political behaviour. Furthermore, consumer behaviours need not be seen as individual, but could be experienced as part of a collective effort. And although advocating exclusively for consumer-based PEB is arguably protective of the status quo, *engaging* in consumer PEB is not inherently so. And at least some consumer PEBs can be political, in that they challenge the status quo and call for social change. For example, eating a vegetarian diet arguably challenges the current food system, at least on a symbolic level. On the other hand, for some forms of politicized identification, people might believe individual consumption behaviours are a distraction from behaviours that might lead to social change, thus attenuating the relationship between politicized identity and consumer PEB. In general we speculate that the link between politicized identification and consumer behaviour will depend on how people define activism, how they believe social change takes place, and the degree to which particular consumer behaviour is subjectively understood as political. Such issues are ripe for future investigation.

8.3. Limitations and future directions. There are some obvious limitations to our studies that can be addressed in future research. We relied on samples of undergraduates in Studies 1 and 3, and all our datasets are from people in North America; therefore it is important in future work to test the generalizability of findings across cultures and contexts. Additionally, this program of research, and work on identification with nature and politicized environmental identity more generally, would benefit from experimental studies that could provide causal evidence for the effects of these identities. Similarly, future research in this area should include observations of PEB, rather than just self-reports or intentions that tend to produce inflated estimates of actual behaviour (Kormos & Gifford, 2014).

Future research should also more deeply explore the processes by which identification with nature might encourage politicized environmental identification. Studies 1 and 2 suggest that identification with nature might encourage politicized identification in part by increasing perceptions of perceived threat and a moral obligation to protect the environment. Empirically speaking, however, the relationship between identification with nature and politicized identification was mostly direct, and the indirect relationships via moral obligation and perceived threat accounted for a small amount of the relationship between the two forms of identification. Thus, there is more to be explored in terms of how politicization arises from identification with nature.

Additionally, future work might examine factors that facilitate or attenuate the relationship between identification with nature and politicized identification. In general, it seems reasonable to assume that identification with nature will predispose people to identify more with a politicized environmental identity, but this relationship will be contingent on a number of contextual and psychological factors. In particular, identification with nature is less likely to lead to politicized environmental identification if it is not also accompanied by the perception of conflict between groups with competing interests (e.g., environmentalists vs. fossil fuel companies) within the context of a larger social system (Simon & Klandermans, 2001). Politicization will also be enhanced by the sense that one's opponents are acting immorally, and that the intentions of the ingroup are just (van Zomeren et al., 2011). These psychological variables (i.e., perceptions of social injustice, power relations, and the need for social change) overlap with other variables, such as political orientation and political ideology, which would be worthy of consideration in future work.

We operationalized politicized environmental identification as identification with environmental activists, but future research might consider identification with other politicized categories: e.g., the environmental movement, climate justice movement, or a specific environmental organization. It is also worth exploring the ways in which non-environmental identities can become politicized for the environment; an organization or other group that is not solely defined in terms of its environmentalism can nonetheless become politicized on environmental issues.

8.4. Conclusions. In three studies we found that politicized environmental identification was a stronger direct predictor of environmental activism than was identification with nature. In other words, our findings suggest that environmental activism is driven less by feeling a part of the natural world, and more directly motivated by feeling a part of a collective of people who comes together to create pro-environmental social change. More generally, our work suggests that people's environmentally-relevant behaviour is not exclusively or even primarily a function of people's attitudes toward the natural world. Rather, it depends to a large degree on people's conceptions of human social relations and within what *human* identities they situate themselves. We hope this work inspires researchers and mobilisers to look beyond identification with the natural world, or environmental variables more generally, to consider how people identify themselves in relation to other humans, and particularly if they align themselves with human categories that are promoting systemic change.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jenvp.2018.11.003.

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