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Our Right to a Steady Ground: Perceived Rights Violations Motivate Collective Action Against Human-Caused Earthquakes

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Abstract

We surveyed 351 inhabitants of a part of the Netherlands that suffers from gas-extraction-induced (and thus “human-caused”) earthquakes. Based on geological reports, we distinguished between three differently affected subregions. We first tested whether being more strongly, objectively affected also implies a stronger subjective disadvantage. Second, we tested whether objective disadvantage moderates which type of perceived rights violations (i.e., perceived violations of personal/family, or collective rights to safety, health, and financial stability) predict collective action intentions. In line with our hypotheses, the participants living in the objectively most affected area perceived their rights to be violated the most, and their collective action intentions were motivated by perceived violations of personal/family rights. In contrast, the collective action intentions of those in the least affected areas were motivated by perceived violations of collective rights. We discuss the importance of understanding the interplay between objective disadvantage, perceived rights violations, and collective action.

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psychology, academic field, disasters, content areas, values, quantitative research, research methods, quasi-experiment/field study, neighborhood/community, research setting/place type

Social-psychological theory and research typically defines “collective action” as any action performed by group members to improve the status of a whole group (Van Zomeren & Iyer, 2009) in the context of collective disadvantage. As such, this literature typically focuses on contexts characterized by long-term structural inequalities and discrimination (e.g., Civil Rights Movement; lesbian, gay, bisexual, and transgender [LGBT]; or feminist movements) and studies how people come to collectively protest and change their situation. Far less attention in social-psychological literature has been given to collective action in contexts characterized by human-caused technological and environmental catastrophes, such as nuclear power accidents or fracking (Klandermans, 1997; Van Zomeren, Postmes, & Spears, 2008). However, public responses to undesired technological developments have been the topic of environmental research on NIMBY (NIMBY Not in My Back Yard) phenomena (Dear, 1992), though the two literatures have mostly remained separate (for exceptions, see Mannarini, Roccato, Fedi, & Rovere, 2009; Roccato, Mannarini, & Pacilli, 2017; Walsh, 1981, 1987). We propose a novel way to integrate the insights from social-psychological theories of collective action and the environmental research on NIMBY phenomena to better understand what prompts those affected by technological developments to act collectively to reduce harmful consequences of these (potentially) disastrous situations.

The current research made use of an emerging real-life situation, namely that of gas-extraction-induced (and thus human-caused) earthquakes in the northern province of Groningen in the Netherlands. The Groningen gas field has been a significant pillar of the national economy. However, the gas extraction is the main cause of mild tremors that have been happening for the past 30 years, which was acknowledged nationally only after a stronger earthquake that took place in 2012 (Dost & Kraaijpoel, 2013; Van der Voort & Vanclay, 2015). In fact, the Dutch Safety Board (Muntendam-Bos & de Waal, 2013) has recognized that the situation includes a direct, and for years ongoing, violation of individuals’ basic rights to safety.

In line with theory and research on collective disadvantage, we differentiate collective action (e.g., intention to engage in a protest against further gas extraction) aimed at changing the situation for all (potentially) affected, from

the actions aimed at improving the situation for the individual (e.g., fortifying one's house or moving away, see Ellemers, 1993; Lazarus, 1991; Tajfel & Turner, 1979; Van Zomeren, Leach, & Spears, 2012). Moreover, we build on previous work in two important ways. In line with previous research on the psychological importance of distance to technological developments (Devine-Wright, 2009, 2011; Krause, Carley, Warren, Rupp, & Graham, 2014), we look at the impact of different levels of objective disadvantage (an environmental factor operationalized as the distance to the epicenter of an earthquake felt in 2012) on collective and individual actions against this potentially disastrous situation. Due to the specific nature of these shallow human-caused earthquakes, different parts of the province are not objectively affected to the same extent (Van der Voort & Vanclay, 2015), which may give rise to differing interests and less motivation to change the status quo.

Second, as suggested by social-psychological models of collective action, these contexts violate individuals' basic rights to a safe existence (Van Der Pligt & De Boer, 1991; Van Zomeren, Leach, & Spears, 2012), and the strength of perceived rights violations should motivate individuals to take part in collective action (e.g., Mazzoni, van Zomeren, & Cicognani, 2015; Van Zomeren, Postmes, & Spears, 2012). Importantly, we distinguish between perceived violations of personal/family and collective rights, because those reflect different types of concerns people might have. Thus, this context offered a unique opportunity to examine the importance of objective disadvantage (i.e., earthquake intensity), subjective disadvantage (i.e., perceived rights violations), and their interaction in motivating people to act against further gas extraction.

Human-Caused Earthquakes in the Province of Groningen (The Netherlands)

Acronyms like NIMBY, NUMBY (Not Under My Back Yard) or LULU (Locally Unwanted Land Use) denote public awareness of potential health and safety risks associated with projects involving the location of factories, waste storages, or fracking in their neighborhoods. The underlying premise is that these technological projects are generally well supported, but locally opposed (Devine-Wright, 2009, 2011; Greenberg, 2009). In contrast to the previous explanation that reduced the opposition to selfish interests (Burningham, 2000; Devine-Wright, 2009, 2011), the recent view is that these developments may disrupt people's emotional bonds or attachment to the place, eliciting place protective actions (Devine-Wright, 2009, 2011). Moreover, these concerns may be well-founded (Devine-Wright, 2011) because the situations involving technological and environmental disasters

usually have short- and long-term effects on the environment, physical, and mental health of the affected population (Krause et al., 2014; Stone & Levine, 1985; Van Der Pligt & De Boer, 1991).

The context of human-caused earthquakes in the province of Groningen is a unique example of a NIMBY-like situation due to increasingly worsening negative effects of gas extraction (land subsidence and earthquakes) and long years of neglect by the authorities (Van der Voort & Vanclay, 2015). Gas extraction was for many years seen as solely beneficial because it secured jobs and investments for the province and the country. The first earthquake took place in 1986 (this area had no prior natural earthquakes); however, due to the very specific type of soil, the majority of earthquakes were either of small magnitude, and thus passed without noticing (below 1 point on Richter scale), or they only affected small regions, sometimes only a single village. Therefore, for a long time, the gas company and the government did not consider these tremors as a real problem (Van der Voort & Vanclay, 2015).

However, in 2012, an earthquake of an unexpectedly stronger magnitude (3.6 points Richter scale) hit a small village of Huizinge, situated in the municipality of Loppersum, which has been dealing with the strongest negative consequences of gas extraction (Van der Voort & Vanclay, 2015). The significance of this event was large for the following reasons: First, the intensity of the earthquake was rather unexpected based on the previous available calculations, and it was the first time the situation in the province raised the national awareness of the severity of the consequences of gas extraction (Van der Voort & Vanclay, 2015). The earthquake in Huizinge generated more interest in and national concern for the local community and it has resulted in the first official report communicating a clear link between gas extraction and earthquakes, and exposing years-long negligence of both the gas company and the Dutch government (Muntendam-Bos & de Waal, 2013). Still, the Minister of Economic Affairs at that time decided not to reduce gas extraction, but ordered several reports on the matter.

Distance to the “Danger Zone”

One important predictor of how people respond to technological developments is the distance to a potential “danger zone.” It is assumed that those closer to it are more likely to oppose. However, recent findings speak against the hypothesis that the proximity to the location is unequivocally linked to more opposition (Greenberg, 2009; Jones & Eiser, 2009). This is because these technological projects also have positive outcomes for local communities. The opinions in the communities may diverge to a large extent and sometimes result in conflicts between supporters and opponents (Mannarini et al.,

2009; Roccato et al., 2017). This may prove to be a serious obstacle when dealing with an actual disaster, which requires effective responses from the authorities, as well as a collective and unified response from those more and less affected. However, this may not be achieved, as diverging interests arise within those communities caused by different appraisals of risks and benefits, as well as possibilities to cope with stress (Van Der Pligt & De Boer, 1991).

In the current case of human-caused earthquakes, little is known about the concerns people have and the actions they intend to take. Moreover, it is not clear whether those who live further away from the region most strongly suffering from these earthquakes are motivated to take collective action to the same extent as those who live closer to it. For example, people living in the most objectively affected areas may be those who experience the most subjective disadvantage (Van Zomeren et al., 2008), which should motivate them to act collectively. Another possibility is that those who are most objectively disadvantaged feel both personally and collectively deprived (Smith, Pettigrew, Pippin, & Bialosiewicz, 2012), leaving them few psychological resources available to act collectively (Jost et al., 2012; Smith et al., 2012). In addition, those living closer to the extraction sites may also have the most benefits and ties with the gas company, which may demotivate them from taking direct action against the company (Greenberg, 2009).

Acknowledging these different possibilities, we decided to examine the relation between objective disadvantage and collective action. In typical collective action contexts, this is hardly ever tested, because objective and subjective disadvantage are intertwined, or there seems to be a lack of consensus on how to measure objective disadvantage (as is the case with socioeconomic status, for example; Bradley & Corwyn, 2002). Our study context provided the opportunity to clearly operationalize objective disadvantage by using the distance to the source of the strongest earthquake (i.e., its epicenter), as an indicator of the objective level of exposure to the human-caused earthquakes.¹ We hypothesize that those in objectively more affected areas are more willing to engage in collective action, but possibly also individual action, to alleviate their situation (Hypothesis 1).

Different Types of Perceived Rights Violations

Our second set of predictions focuses on the psychological processes involved. Prior research investigated various emotional (e.g., fear or worry) and rational factors related to risk assessment (see Mitchell, 1982; Slovic, 1993; Van Der Pligt & De Boer, 1991), which altogether speak against simple cost-benefit analysis in shaping public responses to these contexts (Covello, von Winterfeldt, & Slovic, 1987; Van Der Pligt & De Boer, 1991; Wester-Herber,

2004). In fact, Van der Pligt and De Boer (1991) emphasized the relevance of social and ideological concerns in risk assessments, and went on to define the process as the comparison between the available objective information and one's subjective values. This suggests that in the context of a technological disaster, individuals' perceived rights violations should play a key role in coping with the situation.

We focus on the notion of perceived rights violation (i.e., the perception that one's right to a safety has been violated) because rights reflect individually held beliefs that something is morally right or wrong in an absolute sense, and the perceived violation of a specific right should motivate individuals to protect it (Van Zomeren, 2013). Indeed, moral violations evoke strong emotional reactions and motivate the individual to act against the moral violator (Skitka & Bauman, 2008; Tetlock, Kirstel, Elson, Green, & Lerner, 2000). Moreover, the perceived violation of moral standards can help to define the content of emerging group identities, that is, communities of believers or opinion-based groups, in this case those living in the affected areas (Mazzoni et al., 2015; Van Zomeren, Postmes, & Spears, 2012). In typical collective action contexts, movements can use existing injustice narratives and group identities built in the broader social structure to mobilize their followers (as is the case with gender or race; see Van Zomeren et al., 2008). This is not possible in the contexts of technological and environmental catastrophes, where movements are rather heterogeneous and gather members of local communities who do not have prior experience of protest (Mannarini et al., 2009). Although people may have strong bonds with their community and the place they live (Devine-Wright, 2011), the injustice is not yet part of the group narrative. Thus, morals can help create a sense of common fate, redefine, and politicize preexisting community identities, so they become a psychological base for collective action (Thomas & McGarty, 2009).

We move beyond previous work by differentiating perceptions that reflect violations of one's own right to safety and the safety of one's primary group (referred to as personal/family rights violations) or that of those in the whole province (a form of category-based rights violations, referred to as collective rights violations). Personal/family rights violations reflect attachment to primary groups that individuals tend to value the most, while collective rights reflect attachment to a more loosely defined group (Lickel et al., 2000; Prentice, Miller, & Lightdale, 1994). In line with the research on personal and group deprivation (Pettigrew et al., 2008; Smith et al., 2012), we expect both type of rights to motivate identification with the disadvantaged group and collective action intentions (Hypothesis 2).

However, we expect the motivation for collective action to be different in more, in contrast to less, objectively affected areas, taking into consideration

that individual experiences and feelings of subjective disadvantage may differ to a considerable extent across the province (Baum, Gatchel, & Schaeffer, 1983; Van Der Pligt & De Boer, 1991). Specifically, we assume that those living in more affected areas, who objectively face the strongest threats to their safety, will be primarily driven by the perceived violations of personal/family rights, motivating them to undertake collective action (Hypothesis 2a). In contrast, we expect the individuals in the objectively less affected areas, whose lives are less objectively affected by the earthquakes, to be primarily driven by the perceived violations of collective rights (Hypothesis 2b). In addition, we also examined whether perceived violations of personal/family rights, but not collective rights, are predictive of intention to fortify a house and move away, actions aimed to change an individual disadvantage (Hypothesis 3). This fits with the research on personal deprivation and individual coping with collective disadvantage (Smith et al., 2012; see also Ellemers, 1993; Lazarus, 1991; Tajfel & Turner, 1979; Van Zomeren, Leach, & Spears, 2012), and enables us to test whether the two types of rights violations are indeed conceptually different.

Method

Participants

Three hundred fifty-one inhabitants of the northern Dutch province of Groningen agreed to participate in a survey about the perception of gas-induced earthquakes. We excluded the data of four participants from the analyses: Three questionnaires were clearly filled out jointly by two people (indicated both by our research assistants and by different handwriting) and one arrived by regular mail 3 months after the data collection had finished. The average age of the participants was 51.17 ($SD = 15.11$) and 53.3% were women (5.5% of the sample did not fill out the demographic questions). About half of the sample had middle school education (42.1%), 6% held a university degree with the average monthly income between 1,000 and 3,000 euros. The majority owned the house (71.8%). For more details, please see Table 1.

Measures

The survey was a product of a larger collaborative research project and consisted of several different parts. Only the variables related to our specific research questions will be described below.² We used 5-point Likert-type scales (1 = *strongly disagree* to 5 = *strongly agree*).

Table 1. Sample Characteristics.

	Area		
	Most affected	Moderately affected	Least affected
Average age	51.8 (SD = 15.4)	52.6 (SD = 14.5)	47.6 (SD = 15.7)
Gender	57.9% women	57.5% women	53.2% women
Homeowners	75.5%	73.9%	83.1%
Average income in euro	58.7% (1,000-3,000)	66% (1,000-3,000)	54.2% (1,000-3,000)
Educational background			
Primary education	18.30%	15.10%	8.10%
Middle school	53.80%	42.80%	41.90%
Higher education (including professional education)	22.60%	35.50%	41.90%
University education	5.40%	6.60%	8.10%

Personal/family and collective rights violations. Based on inspection of newspaper materials and debates organized by local communities, we identified three relevant rights that people perceived to be violated by the earthquakes: safety, financial stability, and health. Van der Voort and Vanclay (2015) outlined similar key impacts of earthquakes ranging from property damage and devaluation, to health and psychological issues. Both perceived personal/family and collective rights violations referred to all three specific rights and were operationalized by two items. Perceived personal/family rights violations were framed as referring to participants themselves and/or their family (e.g., “I see the earthquakes as violating my safety and/or safety of my family” and “I feel the need to protect my safety and/or safety of my family”), whereas collective rights violations referred to the province as a whole (e.g., “I see the earthquakes as violating the safety of the inhabitants of the province of Groningen” and “I feel the need to protect the safety of the inhabitants of the province of Groningen”). The reason for framing the second item in more motivational terms reflects the broader notion of moral motivation, based in approaches such as Tetlock et al.’s (2000) sacred value protection model and Skitka and Bauman’s (2008) moral conviction theory (see also Van Zomeren, 2013).³

We ran a principal axis factor analysis with Oblimin rotation on the six personal/family and the six collective rights violations, which explained 59.51% variance (first factor accounted for 50.52% of the variance and second factor for 8.99% of the variance). In support of our research question, the two factors clearly distinguished personal/family (with loadings from .64 to .88) from collective rights violations (with loadings .52 to .99, except for one item with lower loading of .38), though the two factors were positively

correlated ($r = .65$). The cross-loadings were below .30 (for more details see Supplemental Material). Principal components analysis using an eigenvalue larger than 1 as a criterion yielded similar results. We computed the average across original item scores for personal/family (Cronbach's $\alpha = .91$) and collective rights violations (Cronbach's $\alpha = .87$).

Disadvantaged group identification. As there was no clear preexisting group and thus group identity that would define people affected by this situation, we asked to what extent individuals saw themselves as members of and felt connected to the province of Groningen.⁴ Those items were specifically introduced in the context of the earthquake and allowed for the different meanings of this group identity (as based in the perceived violation of personal/family, or category-based, rights). We computed the mean score over the two items as the reliability was satisfactory, $r(331) = .86$, $p < .001$, Spearman–Brown reliability coefficient was equal to .92.

Collective and individual action intentions. We differentiated between two different types of action in which one could engage to cope with the disadvantaged situation, that is, individual and collective action, and we asked participants to indicate the likelihood of engaging in these actions. More specifically, we introduced these actions as different ways of decreasing and/or preventing future damages from the earthquakes. Collective action intentions were measured with three items: signing a petition, demonstrating against the gas production, and participating in “ludieke” actions (this Dutch term refers to actions that humorously, yet provocatively, border on an antinormative or illegal domain). Individual actions were measured by one item each: “How likely is it that you will fortify your house?” and “How likely is it that you will move away to another place?”

Principal components analysis with Oblimin rotation extracted two factors explaining 69.79% of the variance and distinguished between collective (loadings ranged from .86 to .92) and individual action intentions (loadings ranged from .69 and .80; the cross-loadings were less than .08). The two factors were not highly correlated $r = .18$. We computed one score for intentions to engage in collective action (Cronbach's $\alpha = .86$). We kept the individual actions as separate as their consequences are very different: Fortifying a house implies staying in the region, whereas moving out is an individual exit strategy.

Control variables. We also controlled for the feelings of anger and beliefs about the group efficacy as they are theoretically relevant predictors of collective action (e.g., Van Zomeren et al., 2008). At the end of the questionnaire, participants were asked to fill out sociodemographic questions (age, gender,

Figure 1. The reported intensity of the earthquake near Huizinge taken from Dost and Kraaijpoel (2013, p. 18).

Note. The original figure has been adapted: We projected the picture onto the map of the area.

education, whether they owned a house or not). In addition, we asked if they had any damages to their houses due to the earthquakes (response categories: yes/no), as an individual-level indicator of objective affectedness. This item enabled us to check whether our division of the province based on the geological maps (see below) corresponded with the actual damage people had on their houses, and to potentially correct for any bias in the sample (e.g., those with damages may have been more motivated to participate in the study).

Sampling Procedure

We used a publicly available geological report on the earthquake in Huizinge conducted by the researchers of the Royal Netherlands Meteorological Institute (KNMI; Dost & Kraaijpoel, 2013) to operationalize our objective disadvantage variable. Specifically, they created a map of the tremor's impact differentiating six levels of intensity (see Figure 1), which combined the objective measures of the earthquake's strength and individuals' perception of its intensity. Using this geological map of the region, we differentiated

Table 2. Number of Inhabitants and Surveys Collected.

Place	Total inhabitants	<i>n</i> of surveys collected	<i>n</i> of people who reported damages	Distance to earthquake epicenter (km)
Most affected area				
Kantens	680	33	20	3.48
Stedum	1,665	34	16	2.86
Uithuizen	5,040	37	22	6.82
Moderately affected area				
Baflo	1,630	50	16	10.76
Warffum ^a	2,080	60	31	9.3
Winsum (village)	7,631	49	15	10.02
Least affected area				
Harkstede	4,150	37	8	14.73
Schildwolde	1,505	18	9	15.75
Siddeburen	3,935	28	7	16.71

Note. Data on number of inhabitants collected were retrieved from <http://www.stadindex.nl/>
^aData for Winsum village were retrieved from http://www.winsum.nl/vrije_tijd/dorpen_in_beeld/winsum. Straight line distances to the earthquake epicenter in Huizinge were retrieved from <http://www.afstand-berekenen.com/>

between the most affected (3-6 km from the epicenter, represented by red and dark orange circles), moderately affected (9-10 km, light orange circle), and the least affected area (more than 14 km from the epicenter, green circle).

From each area (most, moderate, and least affected), we selected three towns of similar size (see Table 2). The city of Groningen was excluded from the sampling procedure as it is larger, has a higher number of highly educated inhabitants, and has not been much affected by the earthquakes. We opted for a door-to-door data collection and instructed research assistants to aim to include about 50 participants from each town with a restriction not to hand out more than five questionnaires per one street to ensure complete coverage of the towns. One questionnaire was given per household, and a person who opened the door was asked to fill out the survey.⁵ Thus, we covered different parts of the province and more specifically reached not only people who reported damages and overall concerns about the earthquakes, but also those who seem to be less affected by the tremors.

Participants completed the survey in private, but were encouraged to do so as soon as possible and make an appointment with a research assistant to pick them up. We handed out 500 surveys in total and managed to collect 90% of our data within a 2-week period limiting a number of potential events that

could influence our sample (there were no earthquakes reported during the period of the data collection). Our door-to-door survey took place in November 2013, just before these reports were due and the new decision regarding the continuation of the gas extraction was made.⁶ A small number of surveys arrived later through post until mid-January 2014 (less than 3%). Participants were thanked and given a small notepad as a token of appreciation.

Results

Damage Distribution

We collected 104 surveys in the most affected area, 159 in the moderately affected area, and 83 in the least affected area (one person did not indicate the place), meaning that we collected 69.4% of our planned sample size (as we distributed 500 surveys in total). We had roughly equal numbers of people who reported having or not having damages on their household due to the earthquakes (41.5% with reported damage vs. 52.4% without, 6.1% missing values). However, as expected, the distribution of reported damages significantly differed across the areas, $\chi^2(2, N = 325) = 17.07, p < .001$: The percentage of people who had damages was higher in the most affected area (61.1%) compared with the moderately and least affected area (40.5% and 31.2%, respectively). Thus, the distribution of damages supports our operationalization of objective disadvantage. However, this measure is less precise as the damages may have been caused by other local tremors and may depend on the type of building. However, to avoid any potential bias, we controlled for presence of damages in the analyses to follow.

Testing Hypothesis 1: The Relation Between Objective and Subjective Disadvantage

Overall, participants perceived the situation as rather negative and their rights to be violated to a great extent (all the average scores were above the scale mean, see Table 3). However, participants were, on average, more willing to stay in the region and alleviate their situation either by acting collectively or individually by fortifying their households. We expected that people living in the more affected areas would perceive the situation as more threatening and would be more likely to act.

A one-way ANOVA with Area as a between-subject factor found significant differences between the areas on collective and individual action intentions, as well as perceived rights violations (see Table 3). Post hoc analyses with Bonferroni correction confirmed that people living in the most affected

Table 3. Mean Differences in Action Intentions and Perceived Rights Violations Across Differently Affected Areas.

Variables	Most affected area	Moderately affected area	Least affected area	F test
	M (SD)	M (SD)	M (SD)	
1. Personal/family rights violations	3.69 ^a (0.83)	3.36 ^b (0.90)	3.21 ^b (0.81)	$F(2, 318) = 7.67, p = .001, \eta^2 = .04$
2. Collective rights violations	3.83 ^a (0.76)	3.82 ^a (0.65)	3.60 ^b (0.64)	$F(2, 337) = 3.18, p = .04, \eta^2 = .02$
3. Disadvantaged group identification	3.54 (1.12)	3.46 (1.11)	3.37 (1.00)	$F(2, 335) = 0.54, p = .58, \eta^2 = .003$
4. Collective action intentions	2.77 ^a (1.05)	2.76 ^a (1.16)	2.25 ^b (1.03)	$F(2, 328) = 6.64, p = .001, \eta^2 = .04$
5. Intention to fortify a house	2.82 ^a (1.11)	2.46 ^b (1.17)	2.35 ^b (1.01)	$F(2, 325) = 4.53, p = .011, \eta^2 = .03$
6. Intention to move away	1.91 ^a (1.19)	1.56 ^b (0.91)	1.53 ^b (0.92)	$F(2, 330) = 4.33, p = .014, \eta^2 = .03$
7. Anger	3.06 ^a (1.37)	2.68 ^b (1.32)	2.25 ^c (1.24)	$F(2, 328) = 8.47, p < .001, \eta^2 = .05$
8. Group efficacy	2.79 (1.13)	2.94 (1.05)	2.84 (1.08)	$F(2, 333) = 0.62, p = .54, \eta^2 = .004$

Note. Different superscripts refer to statistically different means. All the scales ranged from 1 to 5.

areas perceived themselves to be the most subjectively affected and were also more willing to act collectively and individually, especially in contrast to those in the least affected area. This was particularly evident when it comes to perceptions and actions related to the participants' individual situation, as those living in the objectively most affected area perceived their personal/family rights to be violated more strongly and reported higher intention to fortify and/or move away compared with those living in the lesser affected areas. This supports a straightforward relationship between objective and subjective disadvantage.

The differences between the areas in terms of perceived collective rights violations and collective action intentions were smaller, though again those living in the least affected area were less willing to act. Interestingly, the participants living in the moderately affected area did not differ from those in the most affected area, which implies a more complex relationship between objective and subjective disadvantage. This is why we turned to our second hypothesis that predicts different processes motivating collective action in more and less objectively affected areas.

Testing Hypothesis 2: The Relation Between Rights Violations and Collective Action Intentions

We expected both types of perceived rights violation to motivate collective action intentions and group identification. However, as previous research suggests that perceptions of situations may depend on the closeness to the source of the disaster, we also expected different perceived rights violations to matter more in more versus less affected areas. In other words, we expected the level of objective disadvantage to moderate the effects of perceived rights violation on collective action intentions and group identification.

In line with Hypothesis 2, both types of perceived rights violations correlated positively with disadvantaged group identification and collective action intentions in all areas (see Table 4). More interestingly, the strength of the correlations between our rights measures and collective action intentions differed in the more versus less affected areas, supporting our view that the motivational processes vary across the region. Importantly, and in line with Hypothesis 2a, personal/family rights violations correlated more strongly with collective action intentions in the most affected area, $r(94) = .37, p < .001$, in comparison with collective rights violations, $r(94) = .24, p = .02$. On the contrary, and supporting Hypothesis 2b, in the least affected area collective action intentions correlated with collective rights violations, $r(76) = .36, p < .001$, whereas the correlation with personal/family rights violations was weak and not significant, $r(76) = .18, p = .11$.

Table 4. Correlation Matrix Between Predictors and Dependent Variables Across Different Areas.

	1	2	3	4	5	6	7
Most affected area							
1. Personal/family rights violations	—						
2. Collective rights violations	.79***	—					
3. Disadvantaged group identification	.44***	.47***	—				
4. Collective action intentions	.37***	.24*	.35***	—			
5. Intention to fortify a house	.25*	.21*	.38***	.31**	—		
6. Intention to move away	.31***	.08	.09	.21*	.16	—	
7. Anger	.52***	.50***	.49***	.43***	.22*	.05	—
8. Group efficacy	.06	-.04	.11	.21*	.21*	.05	-.02
Moderately affected area							
2. Collective rights violations	.63***	—					
3. Disadvantaged group identification	.30***	.41***	—				
4. Collective action intentions	.35***	.35**	.32***	—			
5. Intention to fortify a house	.12	.05	.26**	.04	—		
6. Intention to move away	.28**	.06	-.05	.12	.12	—	
7. Anger	.44***	.44***	.40***	.50***	.50***	.02	—
8. Group efficacy	-.08	.10	.22**	.16*	.17*	-.07	.10
Least affected area							
2. Collective rights violations	.46***	—					
3. Disadvantaged group identification	.40***	.25*	—				
4. Collective action intentions	.18	.36**	.24*	—			
5. Intention to fortify a house	.25*	.08	.24*	-.06	—		
6. Intention to move away	.28*	.27*	.19	.02	.14	—	
7. Anger	.24*	.48***	.14	.15	.44***	.14	—
8. Group efficacy	.03	.02	.08	.28*	.26*	-.03	.06

* $p < .05$. ** $p < .01$. *** $p < .001$.

Moreover, the correlation between personal/family and collective rights violations was relatively high, $r(339) = .64, p < .001$. However, the size of the correlation differed considerably being the highest in the most affected area, $r(99) = .79, p < .001$, and decreasing in the less affected areas, $r(156) = .63, p < .001$ and $r(79) = .46, p < .001$, that is, moderately and least affected area, respectively.⁷ Thus, for the most affected individuals, violations stemming from personal and collective identities overlap largely, whereas this is less so the case in the least affected area. This again speaks to the fact that the processes in the least affected area differ from the more affected ones.

We then ran hierarchical regression analyses on disadvantaged group identification, and on collective actions intention. In the first step, we controlled for sociodemographic effects.⁸ Next, in Step 2 we included damages (coded 1 = *yes* and 0 = *no*) and two dummy variables for moderate and least affected area (i.e., participants living in the respective area were coded as 1, others were coded as 0), with the most affected area as a reference group. We opted

for using dummy codes rather than contrasts in our analyses as our focus was on the different motivational processes in each area (although we are aware that the approach has its disadvantages; Gertheiss & Tutz, 2009). We note that we also ran these analyses with contrasts, which yielded similar results.

Step 3 tested the predictive power of perceived personal/family and collective rights violations in motivating group identification and collective action intentions (Hypothesis 2). Step 4 examined the moderating effects of objective affectedness by including four interaction terms between the two dummy area variables and perceived personal/family and collective rights violations (Hypotheses 2a and 2b). In the analysis on collective action, in the last step we also tested for the effects of disadvantaged group identification, anger, and group efficacy as those are the key predictors according to the social identity model of collective action (Van Zomeren et al., 2008). All predictors were centered prior to the analysis.

Overall, the models predicting group identification (see Table 5) and collective action intentions (see Table 6) support our hypotheses. First, except for educational background, sociodemographic variables did not contribute to the model at all. Having damages on the household was also not a significant predictor. Second, in line with Hypothesis 2, identification with the disadvantaged group was predicted by perceived personal/family rights violations, $B = .19$, $SE = .09$, $t(257) = 2.08$, $p = .039$, Step 3, and by perceived collective rights violations, $B = .48$, $SE = .12$, $t(257) = 3.92$, $p < .001$, Step 3. However, there was no significant interaction between objective and subjective variables in the regression analysis predicting group identification.

Regression analysis on collective action intentions revealed that men were more likely to take part than were women; however, sociodemographic variables and objective disadvantage only explained 5% of the variance, whereas subjective experiences explained an additional 30%. First, collective action intentions were determined by perceived personal/family rights violations, $B = .37$, $SE = .10$, $t(245) = 3.88$, $p < .001$, Step 3, and collective rights violations, $B = .29$, $SE = .13$, $t(245) = 2.29$, $p = .023$, Step 3, supporting Hypothesis 2. More importantly, we found two significant interaction terms: dummy-coded Least Affected Area $\times$ Personal/Family Rights Violations, $B = -.71$, $SE = .28$, $t(245) = -2.55$, $p = .011$, Step 4, and dummy-coded Least Affected Area $\times$ Collective Rights Violations measure, $B = .94$, $SE = .34$, $t(245) = 2.75$, $p = .006$, Step 4. This implied that the motivational processes in the least affected area were different from those in the most affected area. By contrast, the moderately affected area did not differ significantly from the most affected one. In line with previous research, disadvantaged group identification, anger, and efficacy also significantly predicted collective action intentions (e.g., Van Zomeren et al., 2008).

Table 5. Regression Analysis Predicting Disadvantaged Group Identification.

	Step 1	Step 2	Step 3	Step 4
Intercept	3.56 (.32)***	3.57 (.34)***	3.73 (.32)***	3.68 (.33)***
Age	0.00 (.00)	0.00 (.00)	-0.01 (.00)	-0.01 (.00)
Gender	0.07 (.13)	0.07 (.13)	0.09 (.13)	0.11 (.13)
Housing	-0.05 (.16)	-0.03 (.17)	0.04 (.16)	0.05 (.16)
Education	-0.18 (.09)*	-0.18 (.09)*	-0.06 (.08)	-0.06 (.08)
Income	0.06 (.06)	0.06 (.06)	0.07 (.06)	0.07 (.06)
Damage	—	-0.04 (.14)	-0.16 (.13)	-0.12 (.14)
Affected area				
Moderate	—	-0.05 (.16)	-0.05 (.15)	-0.06 (.16)
Least	—	-0.04 (.19)	-0.04 (.18)	-0.00 (.18)
Personal/family rights violations			0.19 (.09)*	0.29 (.21)
Collective rights violations			0.48 (.12)***	0.43 (.25) [†]
Interaction terms				
Moderate × Personal/family rights violations			—	-0.25 (.24)
Least × Personal/family rights violations			—	0.10 (.27)
Moderate × Collective rights violations			—	0.23 (.31)
Least × Collective rights violations			—	-0.24 (.34)
<i>F</i>	1.21	0.79	5.29	4.05
<i>df</i>	5, 262	8, 259	10, 257	14, 253
<i>p</i>	.306	.61	<.001	<.001
<i>R</i> ² _{adjusted}	.004	.00	.14	.14
<i>R</i> ² _{change}		.00	.15***	.01

Note. Unstandardized regression coefficients and standard errors (in parentheses) are reported. Gender coded as 1 = men, 0 = women; Housing coded as 1 = own a house, 0 = rent a house; Education coded from 1 = primary school to 4 = university degree; Income coded from 1 = less than 1,000 euros per month to 6 = more than 5,000 euros per month.

[†]*p* < .1. **p* < .05. ***p* < .01. ****p* < .001.

To uncouple the interactions, we conducted simple slope analyses using Model 1 from the PROCESS computational tool (Hayes, 2012). We controlled for all other predictors in the model and we obtained the data for plotting (see Figures 2 and 3). In line with Hypothesis 2a, in the most affected area the intentions to participate in collective action were predicted by the perceived violations of personal/family rights, $B = .47$, $SE = .22$, $t(238) = 2.12$, $p = .035$, whereas this was not the case in the least affected area, $B = -.07$, $SE = .13$, $t(238) = -0.51$, $p = .61$. On the contrary, and supporting Hypothesis 2b, in the least affected area perceived collective rights violations were predictive of collective action intentions, $B = .49$, $SE = .18$, $t(238) = 2.74$, $p = .007$, whereas they did not matter for those living in the most affected area, $B = -.34$, $SE = .22$, $t(238) = -1.53$, $p = .13$.

Table 6. Regression Analysis Predicting Collective Action Intentions Controlling for Demographics.

	Step 1	Step 2	Step 3	Step 4	Step 5
Intercept	3.20 (.34)***	3.27 (.36)***	3.34 (.33)***	3.27 (.33)***	3.15 (.30)***
Age	.00 (.01)	.00 (.01)	-.01 (.01)	-.01 (.01)	-.01 (.01)
Gender	-.35 (.14)*	-.31 (.14)*	-.32 (.13)*	-.32 (.13)*	-.33 (.13)**
Housing	-.33 (.18) [†]	-.34 (.18) [†]	-.29 (.17) [†]	-.26 (.17)	-.18 (.15)
Education	-.16 (.09) [†]	-.15 (.09)	.00 (.09)	.02 (.09)	.01 (.08)
Income	.04 (.07)	.05 (.07)	.06 (.06)	.06 (.06)	.02 (.05)
Damage	—	.10 (.15)	-.07 (.14)	-.13 (.14)	-.06 (.13)
Affected area					
Moderate	—	-.03 (.17)	-.01 (.16)	.09 (.16)	.16 (.15)
Least	—	-.45 (.20)*	-.42 (.18)*	-.35 (.19) [†]	-.17 (.17)
Personal/family rights violations			.37 (.10)***	.73 (.22)***	.47 (.20)*
Collective rights violations			.29 (.13)*	-.16 (.25)	-.34 (.23)
Interaction terms					
Moderate × Personal/Family Rights Violations				-.26 (.25)	-.06 (.23)
Least × Personal/Family Rights Violations				-.71 (.28)*	-.54 (.25)*
Moderate × Collective Rights Violations				.38 (.31)	.20 (.28)
Least × Collective Rights Violations				.94 (.34)***	.83 (.31)**
Disadvantaged group identification					.10 (.06) [†]
Anger	—	—	—	—	.28 (.05)***
Group efficacy	—	—	—	—	.22 (.06)***
F	2.75	2.82	7.35	6.06	9.59
df	5, 250	8, 247	10, 245	14, 241	17, 238
p	.019	.005	<.001	<.001	<.001
R ² _{adjusted}	.03	.05	.20	.22	.36
R ² _{change}		.03*	.15***	.03*	.15***

Note. Unstandardized regression coefficients and standard errors (in parentheses) are reported. Gender coded as 1 = men, 0 = women; Housing coded as 1 = own a house, 0 = rent a house; Education coded from 1 = primary school to 4 = university degree; Income coded from 1 = less than 1,000 euros per month to 6 = more than 5,000 euros per month.

[†]p < .1. *p < .05. **p < .01. ***p < .001.

Testing Hypothesis 3: Individual Action Intentions

The correlational analyses suggested that perceived violations of personal/family rights were more strongly related to both individual actions intentions than collective rights violations (see Table 4). The two actions were unrelated, and interestingly, they were both (and specifically in the most affected area) positively related to collective action intentions, suggesting that these are not necessarily perceived as antagonistic strategies in this context. One notable difference is that the intention to fortify a house was significantly

Figure 2. The differences in impact of personal/family rights violations on collective action intentions between most and least affected area.

Figure 3. The differences in impact of collective rights violations on collective action intentions between most and least affected area.

positively correlated with disadvantaged group identification in all areas, whereas there was no relation between such identification and intention to move away. This supports previous findings that those who feel more attached to the community and their place are also more likely to seek options to stay in the area (e.g., Devine-Wright, 2011).

Table 7. Regression Analysis Predicting Intention to Fortify One's House.

	Step 1	Step 2	Step 3
Intercept	2.46 (.35)***	2.67 (.37)***	2.70 (.37)***
Age	.00 (.01)	.00 (.01)	-.00 (.01)
Gender	.04 (.15)	.06 (.14)	.03 (.14)
Housing	.27 (.18)	.24 (.19)	.25 (.18)
Education	-.18 (.10) [†]	-.16 (.09)	-.10 (.10)
Income	.06 (.07)	.06 (.07)	.07 (.07)
Damage	—	.14 (.15)	.05 (.15)
Affected area			
Moderate	—	-.39 (.17)*	-.34 (.17)*
Least	—	-.54 (.20)**	-.50 (.20)*
Personal/family rights violations			.23 (.11)*
Collective rights violations			.03 (.14)
<i>F</i>	1.61	2.37	2.71
<i>df</i>	5, 261	8, 258	10, 256
<i>p</i>	.16	.02	.004
<i>R</i> _{adjusted} ²	.01	.04	.06
<i>R</i> _{change} ²	—	.04*	.03*

Note. Unstandardized regression coefficients and standard errors (in parentheses) are reported. Gender coded as 1 = men, 0 = women; Housing coded as 1 = own a house, 0 = rent a house; Education coded from 1 = primary school to 4 = university degree; Income coded from 1 = less than 1,000 euros per month to 6 = more than 5,000 euros per month.

[†]*p* < .1. **p* < .05. ***p* < .01. ****p* < .001.

We ran the same regression model to examine the predictive power of perceived rights violations in determining the intention to fortify a house and move away (see Tables 7 and 8). We did not include the interaction terms in the regressions as we only expected the effect of perceived personal/family rights violations. As hypothesized, personal/family rights violations positively predicted the intention to fortify, $B = .23$, $SE = .19$, $t(256) = 2.10$, $p = .04$, and even more strongly the intention to move away, $B = .53$, $SE = .09$, $t(257) = 5.78$, $p < .001$. Perceived collective rights violations did not predict the intention to fortify a house, $B = .03$, $SE = .14$, $t(256) = 0.18$, $p = .86$, and were a marginally significant negative predictor of intention to move away, $B = -.22$, $SE = .12$, $t(257) = -1.99$, $p = .061$. This supports our assumption that personal/family rights violations can motivate collective action, but are at the same time conceptually and empirically closely linked to strategies aiming to improve one's own situation.

Table 8. Regression Analysis Predicting Intention to Move Away.

	Step 1	Step 2	Step 3
Intercept	1.64 (.31)***	1.80 (.33)***	1.76 (.31)***
Age	.00 (.00)	.00 (.00)	-.00 (.00)
Gender	-.06 (.13)	-.06 (.13)	-.14 (.12)
Housing	-.03 (.16)	-.05 (.17)	-.05 (.16)
Education	-.06 (.08)	-.05 (.08)	-.07 (.08)
Income	.07 (.06)	.08 (.06)	.08 (.06)
Damage	—	-.06 (.14)	-.10 (.13)
Affected area			
Moderate	—	-.27 (.15) [†]	-.14 (.15)
Least	—	-.36 (.18)*	-.25 (.18)
Personal/family rights violations			.53 (.09)***
Collective rights violations			-.22 (.12) [†]
F	0.34	0.91	4.57
df	5, 262	8, 259	10, 257
p	.89	.51	<.001
R ² _{adjusted}	.00	.00	.12
R ² _{change}		.02	.12***

Note. Unstandardized regression coefficients and standard errors (in parentheses) are reported. Gender coded as 1 = men, 0 = women; Housing coded as 1 = own a house, 0 = rent a house; Education coded from 1 = primary school to 4 = university degree; Income coded from 1 = less than 1,000 euros per month to 6 = more than 5,000 euros per month.

[†]p < .1. *p < .05. **p < .01. ***p < .001.

Discussion

The aim of the current study was to answer the general question of how people perceive potentially disastrous situations, as reflected by perceived rights violations, and whether the level of objective disadvantage (with respect to gas-extraction-induced earthquakes) shapes individuals' motivation for collective or individual action to change the situation they are in. The results broadly supported our hypotheses by answering this question as follows: In line with Hypothesis 1, stronger objective disadvantage was associated with stronger intentions to engage in collective action, as well as individual actions. Participants living in the least affected area were less motivated to act and they perceived the situation in a different manner, especially in contrast to those living in the most affected area. However, the differences between those living in moderately and most affected areas were less straightforward, as they expressed similar levels of intention to engage in collective action and they perceived their collective rights to be violated to the same

extent. This suggests that the relationship between objective and subjective disadvantage depends on how the subjective disadvantage is interpreted (i.e., as individual or collective).

Supporting Hypothesis 2, our measure of rights violations significantly predicted identification with the disadvantaged group and collective action intentions. In line with Hypotheses 2a and 2b, we more specifically found that the motivational processes in the least affected area differed from those in the most affected area. For those most strongly affected by the earthquake, perceptions of personal/family rights violations motivated collective action intentions. By contrast, the perceptions of collective rights violations motivated the participation of the participants living in the least affected regions.

Finally, supporting Hypothesis 3, only perceived violations of personal/family rights were predictive of both intentions to fortify a house and move away. This also implies that our personal/family and collective rights violations are related but conceptually different psychological constructs with distinct consequences. Together, these findings indicate that the potential for collective action in response to the specific context of collective stress we examined, depends not only on whether individuals live in more or less strongly objectively affected areas, but also on whether they perceive their situation as morally "crossing a line," be it for themselves personally and their family, or for their broader group.

Theoretical and Practical Implications

The current findings align well with work emphasizing the importance of objective disadvantage and its interaction with subjective disadvantage for individuals' motivation to engage in collective action (e.g., Blumer, 1939; Hovland & Sears, 1940). Our findings clearly show that individuals' experience of the situation appears very different, even though the towns in the most affected and least affected area are less than 20 km away. In our view, such objective disadvantage represents a blind spot (or at least a hidden factor) in much of social-psychological work on collective action, which focuses on subjective disadvantage. Social-psychological theories of collective action would therefore greatly benefit from integrating the insights on risk perception (Greenberg, 2009; Krause et al., 2014) and NIMBY phenomena, which show how closeness to a potential source of disaster affects people's attachment to place (Devine-Wright, 2009, 2011).

At the same time, our study approach based in social-psychological theories on collective action and coping with collective disadvantage (e.g., Van Zomeren, Leach, & Spears, 2012) offers important insights in understanding public responses to situations involving technological and environmental

disasters. First, perceived rights violations stemming from personal or group identity capture key threat perceptions, which can give rise to diverging interests people may have in such situations (Van Der Pligt & De Boer, 1991). Moreover, differences in perceptions of rights violations may explain the emergence of intragroup conflicts between opponents and supporters of technological developments (Roccato et al., 2017). It is likely that those who more strongly oppose technological developments perceive their personal and collective rights to be violated, whereas those who may be supportive do not see such violations. In addition, perceived rights violations can explain why in some communities the collective efforts to address the disadvantage situation may actually demotivate people (Van Der Pligt & De Boer, 1991). As violation of personal/family rights may motivate both collective and individual coping strategies, it is plausible that for those living in the most affected areas, mounting personal difficulties and interests may overpower the collective ones.

Moreover, our study contributes to a more nuanced understanding of which perceived rights violations play an important role in motivating social change. First, individuals' perceived rights violations can provide a normative and action-oriented meaning to unpoliticized and vague group identities (i.e., the province group identity). We of course do not imply that people had no previous connection with the other members of the community. However, in a context similar to ours involving a public dispute over the location of a high-speed railway (i.e., LULU mobilization) in Northern Italy, Mannarini et al. (2009) found that politicized group identities are better predictors of collective action than is place attachment. Our study contributes to these findings by showing how those identities emerge in the absence of clear social movements or other structural mobilization forces. Second, we show that in the least affected area, collective rights and their perceived violations seem more motivationally relevant, whereas personal/family rights and their perceived violations seem more relevant in the more affected areas. This is important because it points to two different pathways to mobilization in line with social identity theory (e.g., Tajfel & Turner, 1979): through conformity to the group norms and the collective rights within the least affected area, in contrast to the projection of personal/family rights within the most affected area.

We find the motivational profile of individuals in the moderately affected area particularly intriguing. On one hand, these individuals seem to perceive themselves as less personally "burdened" than those nearer to the "hot spots," but on the other hand they seem as motivated for collective action as the individuals in the most affected area. The motivational profile of this group speaks to views arguing against a straightforward relation between location

and opposition to technological developments (Devine-Wright, 2011; Greenberg, 2009; Jones & Eiser, 2009). According to a meta-analysis on relative deprivation (Smith et al., 2012), those in the objectively moderately affected areas have the benefit of being collectively disadvantaged without being personally victimized. Indeed, they may have more resources to act than those in the objectively most affected area, but also face greater risks compared with those in the least objectively affected area (as they are more likely to become victims themselves). This combination may be potent in terms of motivating them to step up and act for the benefit of the whole region—a hypothesis worthy of an empirical test in future research.

Limitations and Directions for Future Research

The study has several limitations. First, the correlational design we used prevents us from making causal claims and limits the generalizability of our findings. However, inducing strong, long-term objective disadvantages in laboratory settings is not possible. Furthermore, our sampling technique enabled us to circumvent much of the criticism that collective action research usually suffers from, such as investigating only those vocal about the injustices (i.e., people present at the protest), or those who have little experience with disadvantage (i.e., psychology students). Second, we did not directly ask the participants whether they hold the gas company in charge of extraction responsible for the earthquakes. However, the link between gas extraction and the earthquakes has been well-known prior to our data collection (Dost & Kraaijpoel, 2013). Thus, we can assume with high certainty that this is indeed the case. Furthermore, the likelihood of engaging in the two individual actions (i.e., fortifying a house and moving away) was probably affected by the possibility to sell one's property. We did not control for the negative effects of the earthquakes on the housing market (e.g., depreciation of the value of the houses) in our analyses as they were not yet known during the time of our data collection in 2013. A report published in 2016 unfortunately confirmed those suspicions (Boelhouwer et al., 2016). Finally, this study context may be seen as too unique to be meaningfully connected to other, more typical, collective action contexts. We believe our findings suggest that the psychological processes involved are similar to those found in those other collective action contexts (e.g., Van Zomeren, Postmes, & Spears, 2008; Van Zomeren, Leach, & Spears, 2012) and fit with the contexts studied in environmental psychology (Morgan, Hine, Bhullar, Dunstan, & Bartik, 2016). Importantly, however, our study speaks against simply equating contexts involving incidental disadvantage (as in the current case) with structural disadvantage (e.g., race, gender). It would therefore be interesting for future

research to replicate our findings in contexts of collective action against structural disadvantage (e.g., group discrimination) and/or environmental issues (e.g., climate change).

Conclusion

The current study revealed what motivates collective action in a real-life emerging context of gas-extraction-induced (and thus human-caused) earthquakes in the northern province of Groningen in the Netherlands. This unique context allowed us to assess the objective level of disadvantage and connect it to two core psychological predictors of collective action, namely, moral motivation and group identification. We hope that our approach and findings offer an intriguing pointer toward thinking more systematically about the relationship between objective and subjective disadvantage and environmental and psychological factors.

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Supplemental Material

Supplemental material for this article is available online.

Notes

1. We acknowledge of course that our operationalization based on one event cannot entirely capture the situation, which has been ongoing for many years. However, all the available public reports suggest that the epicenter of the earthquake falls in the area that has been objectively faced with the most severe consequences of gas extraction (Van der Voort & Vanclay, 2015).

2. The exact items are included in the Supplemental Material.
3. We checked whether the findings differed if we excluded the protection items as they arguably overlap more with action intentions. However, our original six-item scales and the shorter three-item versions correlated almost perfectly, $r(341) = .97$, $p < .001$, for perceived personal/family rights, and $r(339) = .88$, $p < .001$, for collective rights violations. The findings remained the same when we used the shorter or longer scale version.
4. We also asked participants to what extent they identify with their communities/towns. The two identification scales were highly correlated, $r(335) = .77$, $p < .001$. Moreover, their correlations with collective action intentions, $r(324) = .32$, $p < .001$, and $r(324) = .31$, $p < .001$, for identification with community and province, respectively, were almost identical. The same holds for fortifying a house, $r(322) = .32$, $p < .001$, and $r(322) = .26$, $p < .001$, and moving away, $r(326) = .03$, $p = .60$, and $r(326) = .06$, $p = .32$, for community and province identification, respectively. However, for conceptual clarity, and as our collective rights measures referred to the whole province, we decided to exclude those items.
5. If a minor opened the door, the research assistants were instructed to ask one of the parents to participate as the ethics committee of the University of Groningen does not allow individuals younger than 18 years to participate without parental consent.
6. On January 17, 2014, the minister ordered a decrease in gas extraction in Loppersum wells, though Van der Voort and Vanclay (2015) argued that this decision did not significantly change the situation. A year later, for example, the Loppersum area witnessed another stronger earthquake (3 points on Richter scale) in the village of Leermens.
7. In fact, pairwise correlation comparisons were significantly different: most versus moderate Fisher's $z = 2.55$, $p = .01$; most versus least Fisher's $z = 3.76$, $p < .001$; moderate versus least Fisher's $z = 1.74$, $p = .08$ (marginally significant).
8. We also ran the analyses without control variables as the sample used for regression analyses was reduced to 257 participants, due to the missing data on the demographics questions. Importantly, the key findings are the same (see Supplemental Material).

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