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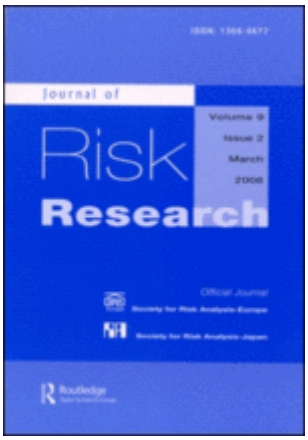

The emotional engagement of climate experts is related to their climate change perceptions and coping strategies

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The emotional engagement of climate experts is related to their climate change perceptions and coping strategies

The study aimed to reveal the role of emotions in Lithuanian climate experts' perceptions of climate change (i.e., their beliefs about the causes and risk perceptions of climate change) and fill the gap in scientific knowledge about the coping strategies that climate experts tend to employ in order to deal with climate-change-related emotions. To investigate climate experts' emotional reactions to climate change, we applied a four-factor model comprising morality-based other- and self-related as well as consequence-based retrospective and prospective emotions. The results indicated that the climate experts showed great variation in their emotional reactions; two clusters of experts emerged – those who were emotionally engaged and those who were disengaged with regard to climate change. Emotionally engaged experts were more likely than their disengaged counterparts to emphasize anthropogenic climate change, to believe that the consequences of climate change would appear both locally and globally, and to consider the consequences to be uncontrollable, dreadful, and morally unacceptable. Emotionally engaged and disengaged climate experts agreed on the extent to which they evaluated climate change as societally disputed. Additionally, experts working in the government were more emotionally engaged with climate change issues than academics. Finally, in order to deal with climate-change-related emotions, emotionally engaged experts were more likely to invoke problem- and emotion-focused coping strategies, whereas the two groups of experts did not differ in their tendencies to avoid climate change issues.

Keywords: Climate experts; Emotions; Risk perception; Coping

1. Introduction

Climate experts play a key role in climate change management. In their daily work, not only do they observe, evaluate, and communicate about changes in the environment, but they also have to deal with issues such as daily exposure to depressing facts about climate change (Clayton, 2018), climate change denial (Head, 2016; Head & Harada, 2017; Lewandowsky, Oreskes, Risbey, Newell & Smithson, 2015), and organizational politics, which might not be

in line with their environmental attitudes (Andrews, Walker & Fahy, 2016; Andrews, 2017). These conditions may elicit negative emotional experiences in climate experts, perhaps even leading to mental health risks (Clayton, 2018; Clayton, Manning, Krygsman & Speiser, 2017; Doherty & Clayton, 2011; Ogunbode et al., 2018; Swim et al., 2009). In general, emotions play an important role in decision-making processes (Pfister & Böhm, 2008) where they shape or may be shaped by the key components of climate change perceptions such as beliefs about the causes of climate change (Bostrom et al., 2012; Böhm & Pfister, 2000; Böhm & Pfister, 2017) or risk perceptions (Böhm & Pfister, 2017; Slovic, Fischhoff & Lichtenstein, 1980; Kraus, Malmfors & Slovic, 1992). Emotional reactions may appear to be rational if they are relevant to the particular situation or irrational if they are not appropriate (Pfister & Böhm, 2008, 2017). Potentially, emotional reactions may motivate people to take action to try to solve the problem (Wang, Leviston, Hurlstone, Lawrence & Walker, 2018), but they may also motivate people to avoid the issue (Norgaard, 2006). Just like other members of society, climate experts may experience emotions with respect to climate change (Head, 2016; Head & Harada, 2017; Wang et al., 2018). So far, research has tended to focus more on the public's emotional reactions to climate change and has neglected experts (e.g., academics or politicians). The current study contributes to existing knowledge about climate experts' emotional reactions to climate change and goes beyond existing research by exploring how the emotions that climate experts experience are related to their climate change perceptions as well as to potential coping strategies.

2. Climate experts' emotional responses to climate change

Few studies have looked at the emotional reactions of experts, including in the field of climate change. A study conducted by Head and Harada (2017) indicated that climate scientists simultaneously reported a wide range of optimistic and pessimistic thoughts regarding climate change, although most of them were more pessimistic than optimistic. Negative emotions such as anger and frustration were reported for several reasons, for example, because the

scientists felt that the government and policy makers had disregarded climate change as a science. The results of this study also suggested that scientists put great effort toward maintaining their identity as "dispassionate experts" in order to be professional. Despite negative thoughts, scientists also voiced optimism because of their love for their profession and their motivation to address the challenges of climate change.

Wang and colleagues also found that climate scientists experienced a wide range of negative emotions (e.g., guilt, worry, sadness, fear) and positive emotions (e.g., interest, satisfaction; Wang et al., 2018). Experienced emotions were related to perceptions of humanity – the more scientists believed in humanity, the more they were optimistic and felt hope. By contrast, scientists tended to be pessimistic and reported experiencing despair if they evaluated humanity negatively. Their emotional responses were also strongly related to caring about future generations - scientists felt sorry for the damage done to nature and the need for future generations to deal with it. Some scientists also expressed their closeness to the Earth and highlighted unfair human behavior concerning the planet. Additionally, they mentioned the importance of their identity as a scientist but also discussed their identities as humans, citizens, communicators, and so forth.

A study using a sample of sustainability professionals indicated that their decision-making strongly depended on the organizational context in which these sustainability professionals worked (Andrews, 2017). Professionals reported experiencing a conflict between their environmental values and organizational politics. They also stressed their pro-environmental identity, which they chose to suppress in order to fit in at their organization. Sustainability professionals reported various aversive emotions such as sadness, frustration, agony, and melancholy when they thought about the effects that human actions have had on the natural environment.

3. Emotional response and risk perception

Emotions are one of the key parts of a climate change risk evaluation (Böhm & Pfister, 2017; Brügger, Morton, & Dessai, 2016; Bradley, Reser, Glendon & Ellul, 2014; Klöckner, 2011). For example, a risk evaluation model proposed by Böhm and Pfister (2017) indicated that cognitive judgments (e.g., beliefs about the causes of climate change, risk perceptions) trigger specific emotions, whereas emotions, in turn, shape behavioral tendencies. Moreover, each emotion contains unique diagnostic information (Böhm, 2003) and belongs to one of two relevant psychological risk evaluation paths – either morality- or consequence-based. Greater focus on the roles of people and their actions in current environmental issues leads to morality-based emotions, which may be other-related (e.g., indignation, contempt) or self-related (e.g., guilt, shame). Focusing on the damage that has already been done or damage that may occur in the future triggers consequence-based retrospective (e.g., regret, sadness) or prospective (e.g., worry, fear) emotions, respectively. As mentioned before, different cognitive judgments trigger different specific emotions. For example, morality-based other-related emotions were predicted by moral judgments such as the blameworthiness of an action; consequence-based prospective emotions were related to risk perceptions (Böhm & Pfister, 2017).

Presumably, climate experts face the general expectation to follow the facts and draw objective conclusions when evaluating risks. However, plenty of studies have supported the idea that emotions and other psychological factors may have an impact on experts' decision-making (Lefsrud & Meyer, 2012; Lewandowsky et. al., 2015). For example, Lefsrud and Meyer (2012) showed that even when different experts use similar criteria when making a decision about the environment, they can still arrive at different conclusions. In this study, experts working in the field of environmental conservation varied in their emotionality, risk perception, and motivation to address climate change issues and were divided into several groups. For example, the largest group of experts emphasized human-caused climate change

and considered climate change to be a public risk and a controversial issue. These experts were not very emotional and had a medium-sized level of action mobilization. The smallest group recognized climate change as partly caused by humans and partly by natural processes and viewed climate change as a moderate public risk. Experts from this group were skeptical about the scientific consensus on climate change, but at the same time, they highlighted the responsibility of all humans to protect nature, expressed negative emotions about climate change, and had a high level of motivation to act. Another expert group was very emotional and expressed various negative emotions about the work of scientists. They were not sure about the causes of climate change and did not see climate change as a significant risk. Specialists from this group were skeptical about climate science in general but still had a high level of motivation to act.

4. Emotional responses and coping strategies

Coping is an inseparable part of emotional reactions, especially for negative emotions, which result from harm and threats (Lazarus, 1991). People may cope with stress in many ways, for example, problem solving, emotion regulation, avoidance, social withdrawal, or support seeking (Skinner, Edge, Altman & Sherwood, 2003). Coping strategies can be classified along various dimensions (Duhachek, 2005; Lazarus, 1991), for example, problem-focused versus emotion-focused (Lazarus & Folkman, 1984), approach versus avoidance (Krohne, 1993), active coping versus expressive support seeking versus avoidance (Duhachek, 2005). Problem-focused coping refers to direct efforts to alter the cause of the stress, whereas emotion-focused coping captures efforts to regulate emotional reactions to stress (Lazarus & Folkman, 1984). The difference between approach and avoidance coping strategies is the person's motivation to be exposed to a stressful situation or to try to keep it at a distance (Krohne, 1993). Avoidance is focused on keeping a psychological or physical distance from the stressor (Duhachek, 2005).

In the current literature, there is some evidence referring to potential coping strategies that climate experts may invoke to reduce negative emotions regarding climate change. For example, a qualitative study conducted by Head and Harada (2017) showed that, in order to deal with emotional reactions to climate change, climate scientists tend to keep their distance from their work, try not to engage in disputes in social media, try not to think about work all the time, and try not to talk with their kids about environmental issues. Another qualitative study conducted by Andrews (2017) showed that experts put effort toward regulating their emotional reactions by recognizing the emotions they tend to experience; they try to keep the balance between rationality and feelings, and at the same time, they tend to suppress or avoid negative emotional reactions.

In sum, experts who work in the field of environmental conservation are likely to experience emotions related to the issue of climate change. Furthermore, qualitative studies have suggested that experts tend to put effort toward dealing with such emotional reactions. With the current study, we aimed to provide a more systematic understanding of climate experts' emotional reactions to climate change. To this purpose, we applied a theory-driven four-factor model, which classifies emotional responses to environmental risks into morality-based and consequence-based emotions (Böhm, 2003). Further, we addressed the relations between climate experts' emotional responses to climate change and their beliefs about the causes of climate change. Human activities are recognized as the main reason for the changing environment (Allen et al., 2018). Perceived uncertainty regarding this fact in the community of climate experts could be a potential barrier against taking the necessary action to manage climate change issues (Lewandowsky et al., 2015). Moreover, in lay people, anthropogenic risks provoke stronger action tendencies than natural risks (Böhm & Pfister, 2005). In studying experts' perceptions of climate change, we can address perceptions of global risks (Brügger et al., 2016), local risks, and risk perceptions concerning qualitative risk

characteristics as maintained by the psychometric paradigm (Bassarak, Pfister & Böhm, 2017). Global and local risk perception refer to the perceived likelihood of the consequences of climate change. Risk perception based on the psychometric paradigm, by contrast, refers to a broader and more qualitative conception of risk than the mere likelihood of potential damage (Slovic, 2016). In other words, the psychometric paradigm looks at a richer set of risk attributes and enables one to identify the particular risk attributes that matter to specific groups of society (Slovic, 2016), in our case – climate experts. Finally, we investigated climate experts' capacities to cope with climate-change-related emotions. To our knowledge, the current study is among the first to address the question of how climate experts cope with climate-change-related emotions. For this purpose, we applied the theoretical framework of coping strategies (Duhachek, 2005; Reser, Bradley, Glendon, Ellul & Callaghan, 2012), which suggests a multidimensional structure of coping. The findings of the current study will contribute to a more systematic understanding of the relations between climate experts' experienced emotions, climate change perceptions, and evoked coping strategies.

5. Research method and measures

5.1. Participants

Two hundred fifteen Lithuanian climate experts from academic (33.48%; e.g., universities, science centers), governmental (63.25%, e.g., Ministry of Environment), NGOs (7.44%), and other institutions (2.79%) participated in the current study. The scope and activities of all institutions were related to climate change and other environmental issues. Experts' education was distributed across a wide range of scientific fields: biomedicine (27.90%), physical sciences (34.41%), social sciences and humanities (13.94%), arts (1.39%), technology sciences (14.88%), agricultural sciences (2.32%), and other (5.11%). Participants' ages ranged from 20 to 68 years (M = 41.74, SD = 12.60). Most respondents were women (62.32%). The average length of time that the experts had been working in the field of environmental conservation was 13.88 years (SD = 11.57), ranging from less than 1 year to 45

years. In their daily work, these climate experts conducted evaluations and assessments of the environment (58.60%), scientific research (30.23%), communicated about environmental issues in the media (18.60%), collaborated with other environmental organizations (35.81%), prepared environmental programs (educational, infrastructure related, etc.; 21.39%), developed policies (13.95%), and engaged in other activities (14.41%).

5.2. Procedure

We screened government institutions, academic institutions, and NGOs in Lithuania, all of which had environmental issues in the scope of their work. Further, we analyzed the structure of each institution as well as employees' position descriptions in order to recruit relevant participants for the study. We included experts whose work was directly related to climate change issues or other environmental problems. We excluded experts whose work was not directly related to environmental issues, for example, accountants and service staff. We obtained permission from all selected institutions to disseminate the questionnaire to their employees. The selected experts were contacted either personally via e-mail or the manager of the institution disseminated the questionnaire to the relevant colleagues. In the invitation to participate in the research, respondents were informed that they would be asked to express their opinions about climate change. To increase the response rate, participants received several reminders to fill out the anonymous online questionnaire. The data were collected from July to October 2017.

5.3. Measures and statistical analysis of the scales

We included six constructs in our survey. Most constructs were measured with a scale consisting of several ratings. Most measures were adopted from previous studies, which are listed in parentheses in the following: beliefs about the causes of climate change (Reser et al., 2012), perception of global risks (Brügger et al., 2016), perception of local risks, environmental risk perception based on the psychometric paradigm (Bassarak et al., 2017), emotional responses to climate change (Böhm, 2003), and coping strategies (Duhachek, 2005;

Reser et al., 2012). In order to maximize the unique predictive power of each measure, we reduced its dimensionality by conducting either a confirmatory factor analysis (CFA) or an exploratory principal component analysis (PCA), depending on whether we had a priori assumptions about the dimensional structure of the measure. We computed a CFA in Mplus for each measure except for the psychometric paradigm ratings (Bassarak et al., 2017), for which a PCA was conducted (in SPSS). Items with low factor loadings were excluded from further analyses, and necessary modifications to the models were made on the basis of modification indices and theoretical plausibility.

5.3.1. Beliefs about the causes of climate change

Beliefs about the causes of climate change (Reser et al., 2012; Steentjes et al., 2017) were measured with a single item. Climate experts were asked to choose one of five statements relevant to their opinion about the causes of climate change: climate change is entirely caused by natural processes; climate change is mainly caused by natural processes; climate change is partly caused by natural processes and partly caused by human activity; climate change is mainly caused by human activity; climate change is entirely caused by human activity.

5.3.2. Global risk perception

The perception of global risks refers to the likelihood that the consequences of climate changes will appear across the entire world (Brügger et al., 2016). Six items were used; their response formats, means, standard deviations, and confirmatory factor loadings are presented in Table 1. The CFA with six items showed an unsatisfactory model fit because of the RMSEA value, $\chi^2(9, 215) = 30.20$, $p = .00$, RMSEA = .10 [.06, .15], CFI = .97, TLI = .95, SRMR = .03. RMSEA values should be less than .08 (e.g., MacCallum, Browne & Sugawara, 1996). The model fit could be improved by adding the covariance between the decreased standard of living and deteriorated economic situation of the world, which appeared to be a

plausible relation, $\chi^2(8, 215) = 12.21$, $p = .14$, RMSEA = .05 [.00, .10], CFI = .99, TLI = .99, SRMR = .02.

5.3.3. Local risk perception

The scale for measuring the perception of local risks was designed to be analogous to the perception of global risks. The scale contained five environmental threats relevant to the Lithuanian context (based on the report by the Nature Heritage Fund, Lithuania; Bukantis et al., 2015). The experts were asked to evaluate the likelihood of each threat in the area of Lithuania. Table 2 shows the (English translations of the) item formulations, frequency distributions, and confirmatory factor loadings. Similar to the perception of global risks, five environmental threats relevant to the local area were expected to merge into a single factor. The results of a CFA indicated a good model fit, $\chi^2(5, 215) = 11.48$, $p = .04$, RMSEA = .08 [.01, .14], CFI = .99, TLI = .97, SRMR = .02, for the single-factor solution.

5.3.4. Climate change risk perception based on the psychometric paradigm

We employed an extended set of psychometric scales proposed by Bassarak et al. (2017), which covers four dimensions: dread, unknown risk, morality, and disputed risk. We excluded five items that showed extremely high correlations with other items, had high cross-loadings, or were single items that represented a whole factor. The Kaiser–Meyer–Olkin value was .84, indicating that the data were appropriate for a PCA (Mooi, Sarstedt & Mooi-Reci, 2018). Bartlett's test also confirmed the significant links between the variables, $p < .001$. Table 3 presents results of a PCA with a Varimax rotation and descriptive statistics for the items. Fifteen items yielded four dimensions: Dreadful Consequences, Morality, Controllability, and Societally Disputed Risk. These dimensions explained 22.81%, 19.50%, 10.41%, and 8.36% of the variance, respectively. The Cronbach's α values for the dreadful consequences and morality subscales were .85 and .71, respectively. We did not compute Cronbach's α for controllability and societally disputed risk because they contained only two items each. The

bivariate correlations between the two items representing controllability and societally disputed risk were $r = .40$, $p = .03$ and $r = .43$, $p < .001$, respectively.

5.3.5. Emotional responses to climate change

Table 4 shows the descriptive statistics and results of a CFA for a four-factor model of emotional responses to climate change based on the framework suggested by Böhm (2003). To obtain a better model fit, we excluded disgust, rage, and hope from the analysis. Eleven emotions aggregated into a four-factor model yielded an acceptable model fit (after including the covariance between contempt and indignation), $\chi^2(37, 215) = 88.84$, $p < .001$, RMSEA = .08 [.06, .10], CFI = .96, TLI = .94, SRMR = .05.

5.3.6. Strategies for coping with climate-change-related emotions

Table 5 presents the 11 items that were used to measure the potential tendency to cope with climate-change-related emotions (Duhachek, 2005; Reser et al., 2012). A CFA showed a good model fit for a three-factor structure of coping, $\chi^2(40, 215) = 99.25$, $p < .001$, RMSEA = .08 [.06, .10], CFI = .95, TLI = .93, SRMR = .06. The first factor summarizes direct efforts in solving climate change issues (e.g., thinking about climate change solutions) and is called Problem-Focused Coping. The second factor integrates emotional aspects of coping (e.g., delving into feelings, asking others how they control their climate-change-related emotions) and is named Emotion-Focused Coping. The third factor reflects denial and avoidance tendencies (e.g., trying not to think about climate change) and is called Avoidance. To improve the model fit, we also added the covariance between the fifth and seventh items (both items represent an emotion-focused coping strategy).

6. Results

6.1. Beliefs about the causes of climate change

The majority of climate experts (53.85%) reported the belief that climate change is partly caused by natural processes and partly by human activity. The ideas that climate change is

mainly or entirely caused by human activity were chosen by 35.80% of the participants; and 10.23% reported that climate change is mainly or entirely caused by natural processes.

6.2. Two clusters of climate experts

Based on the four extracted factors of climate experts' emotional reactions to climate change (morality-based other-related, morality-based self-related, consequence-based retrospective, and consequence-based prospective), we computed an aggregate score for each factor by averaging the items. Further, we used these aggregate scores to perform a two-step cluster analysis. In the first step, smaller clusters are formed on the basis of the distance between the cases, and in the second step, a standard hierarchical clustering algorithm is used to find the best solution for the clusters (Sarstedt & Mooi, 2014). The two-step cluster analysis yielded two groups of experts. The silhouette value was 0.6, indicating a good cluster solution. The first cluster contained 70.23% (n = 151) of the cases, and the second contained 29.77% (n = 64) of the cases. Clusters differed significantly with regard to all emotional dimensions: morality-based other-related, $t(213) = 15.09$, $p < .001$; morality-based self-related, $t(212.66) = 19.55$, $p < .001$; consequence-based retrospective, $t(213) = 15.38$, $p < .001$; consequence-based prospective, $t(213) = 16.35$, $p < .001$ (see Table 6). The first cluster was characterized by higher means on all four factors than the second cluster. These results suggest that the first cluster contained experts who were emotionally involved with climate change issues, and the second cluster contained experts with weaker emotional reactions to climate change. Thus, we named the first cluster Emotionally Engaged and the second cluster Emotionally Disengaged. In both clusters, experts were more likely to experience consequence-based emotions—emotionally engaged $t(150) = -9.05$, $p < .001$ and disengaged $t(63) = -4.211$, $p < .001$—rather than morality-based emotions.

The two groups of experts did not differ in age, $t(211) = -1.55$, $p = .12$, or length of work experience, $t(206) = -1.95$, $p = .05$. However, we found a significant relationship between gender and emotional engagement with climate change, $\chi^2(1, 215) = 7.48$, $p = .01$. In

the cluster of emotionally engaged climate experts, there were 103 women and 48 men; The cluster of emotionally disengaged experts contained 33 women and 31 men.

6.3. Climate change perceptions in emotionally engaged and disengaged climate experts

As mentioned before, we divided the sample of climate experts into two groups regarding their climate-change-related emotions, namely, emotionally engaged versus disengaged. Table 6 shows the differences between the two expert groups in their climate change perceptions (i.e., beliefs about the causes of climate change, local and global risk perceptions, and psychometric climate change risk perception). Climate experts who were emotionally engaged with climate change were more likely to believe that climate change was caused by humans. They also tended to believe that the consequences of climate change appear both locally and globally, to be less controllable, more dreadful, and less morally acceptable. Emotionally engaged and disengaged climate experts did not differ in the extent to which they considered climate change to be societally disputed.

6.4. Coping with climate-change-related emotions

Further, we explored how the three coping strategies we extracted (problem-focused, emotion-focused, and avoidance) manifested in the two clusters (also shown in Table 6). More emotional engagement was associated with higher scores on problem- and emotion-focused coping strategies. Emotionally engaged and disengaged experts did not differ in their tendencies to avoid climate change issues.

6.5. Emotionally engaged and disengaged climate experts and their work areas

Finally, we measured how the emotions the experts experienced varied with their work area. Based on self-reported information about their work areas, we divided the climate experts into two groups: those in academia and those in the government. Unfortunately, because of an insufficient number of respondents, we could not use the group of experts from NGOs. Thus, we excluded the NGO experts (n = 12) as well as experts who worked in both the academic and government sectors (n = 8). Table 7 presents the distributions of engaged versus

disengaged experts across the two work areas academia versus government. There was a significant association between emotional engagement and area of work (academia vs. government), $\chi^2(1) = 8.89$, $p = .00$. Additionally, based on the odds ratio, the odds of being emotionally engaged (vs. disengaged) regarding climate change were 3.80 times higher if climate experts worked in the government sector than if they worked in academia.

7. Discussion

Our study clearly indicated that climate experts experience emotions regarding climate change as part of their daily work. The experts in our study not only experienced various aversive emotions such as disappointment, sadness, or guilt about climate change, they also varied in the *degree* of emotional reactions—a large proportion of the experts were more emotionally engaged in climate change issues, whereas another smaller group (approximately one third of the sample) expressed weaker emotional reactions to climate change. In addition, both emotionally engaged and disengaged climate experts were likely to experience more consequence-based compared with morality-based emotions, suggesting that climate experts tend to focus more on the losses and damages that result from climate change than on ethical principles that may be violated in the context of climate change. The reason why climate experts experienced more consequence-based emotions could be that, in their daily work, many of these experts must focus on risk evaluations, which are consequentialist by nature (Savadori et al., 2004; Slovic, 2016). Such consequentialist evaluations are more likely to be associated with consequence-based emotions than with morality-based emotions (Böhm, 2003). Other studies have also found that a consequence-based evaluative mode is generally more dominant than a morality-based one (e.g., Böhm & Pfister, 2017). Furthermore, experts working in government institutions in general are more likely to experience climate-change-related emotions than experts working in academia. These findings are in line with the notion

that scientists tend to put a great deal of effort into maintaining a dispassionate professional attitude toward climate change (Head & Harada, 2017; Wang et al., 2018).

Our study also revealed that the vast majority (approximately 90% of the sample) of climate experts considered climate change to be entirely or partly caused by humans, and more than 10% of the experts were skeptical about anthropogenic climate change. Such variation in climate experts' beliefs about the causes of climate change should be taken into account because leading policy makers as well as climate scientists emphasize human activities as the main cause of climate change (Allen et al., 2018). Moreover, climate experts' beliefs about the causes of climate change may influence how they communicate the risks, and through this, how they affect the climate-change risk perceptions of the public (Bostrom, Böhm & O'Connor, 2018). Furthermore, we found that emotionally engaged (compared with emotionally disengaged) climate experts were more likely to emphasize anthropogenic climate change or vice versa. These findings are consistent with previous studies in which lay people tended to express more emotional reactions to human-caused (vs. natural) environmental issues (Böhm & Pfister, 2005).

Our study also contributes to a more comprehensive understanding of how climate experts perceive climate change risk. The results of our study showed four psychometric dimensions in experts' climate change risk evaluation: dreadful consequences, morality, societally disputed risk, and controllability. Studies among laypeople have traditionally reported only two dimensions: dread and unknown risk (Slovic, 1987). But there seems to be some variation across risk domains. For ecological risks, McDaniels et al. (1995) identified five factors: impact on species, impact on humans, human benefits, avoidability, and knowledge. For societal risks, Bassarak et al. (2017) found three psychometric dimensions, namely, unknown risk, disputed risk, and dread/morality (these two dimensions merged into a common factor). To our knowledge, only a few psychometric studies have investigated

experts (Lazo, Kinnell & Fisher, 2000; Stedman, 2004). Lazo and colleagues replicated McDaniel's procedure and also found the same structure as McDaniels except that the impact on species and those on humans merged into one factor. Another study on climate experts focused more on the extent or controllability of specific climate change threats (i.e., extreme weather; Stedman, 2004). Thus, our study is the only one in which morality emerged as a distinct dimension. It is possible that morality, as a distinct and orthogonal dimension of risk perception, is a unique feature of climate experts' perceptions of climate change risks. If a moral component plays a role in climate experts' decision-making, future studies may further explore how dual-evaluation processes such as deontological (focused on moral aspects) and consequentialist (focused on consequences) processing (Böhm & Pfister, 2015) are relevant to climate experts, for example, by studying the underlying mechanisms in the two modes, the potential action tendencies triggered in each mode, and the differences between laypeople and experts.

A further focus of our analysis was on the links between climate experts' emotional response to climate change and their risk perceptions. In general, experts are expected to be more familiar with quantitative and numerical risk information such as probabilities and less familiar with qualitative aspects of risk such as dread or morality (Slovic, 2016). However, the results of our study show that emotions may be a potential factor that is involved in the extent to which climate experts recognize the qualitative characteristics of climate change risks. Our study indicates that climate experts who are more emotionally engaged with climate change are more likely to evaluate climate change as less controllable, as having more dreadful consequences, and as being morally reprehensible, in comparison with emotionally disengaged experts. The results of our study also suggest that more emotionally engaged climate experts not only tend to emphasize the qualitative aspects of climate change risks but are also more likely to believe that the consequences of climate change appear both locally

and globally. These results are in line with previous studies that have suggested that emotional responses are related to climate change risk perceptions (Böhm & Pfister, 2017; Bradley et al., 2014; Klöckner, 2011). Because our study was cross-sectional, our results cannot establish the causal role of emotions in the risk evaluation process. Different roles of emotions are discussed in the current literature, and emotions are seen as an integral component of climate change risk perceptions by some authors (Bassarak et al., 2017) and as an antecedent (e.g., Bradley et al., 2014; Klöckner, 2011) or a consequence (e.g., Böhm & Pfister, 2005; Böhm & Pfister, 2017) of perceived risk by others. Future experiments or longitudinal studies are needed to address the causal links between climate experts' emotional reactions and their perceived risks.

As mentioned before, emotional reactions to climate change may shape action tendencies in two broad directions: toward motivating people to take the actions that are necessary for addressing climate change (Wang et al., 2018) or to avoid being exposed to the climate change situation (Norgaard, 2006). In a sense, people can get *too* emotionally close to climate change if their emotions trigger avoidance (McDonald, Chai & Newell, 2015). A crucial factor in the question of whether emotional involvement triggers avoidance is a person's capacity to cope with the experience of negative emotions. The results of the current study revealed that avoidance is one of three coping strategies that climate experts employed to deal with climate change. The other two coping strategies, problem-focused and emotion-focused coping, refer to active responses to climate change. These active coping strategies require experts, among other things, to expend direct efforts to solve climate change issues, to observe their emotional reactions to the idea of climate change, and to seek support from their colleagues in order to deal with climate-change-related emotions. Emotionally engaged climate experts were more likely to use problem-focused and emotion-focused coping strategies compared with emotionally disengaged experts. Avoidance was the weakest

tendency of both engaged and disengaged experts. One of the possible reasons for why climate experts tend to show active coping strategies more than avoidance involves the resources that are available to them as members of the community of experts. For example, climate experts may build their resilience by using resources such as information or social support (Clayton, 2018). The resources that are available to climate experts may be a reason why avoidance is the least invoked coping strategy.

In their decisions regarding climate change, climate change experts are exposed to climate-change-related emotions. The present study adds to the growing knowledge about climate experts' emotional engagement with respect to climate change (Clayton, 2018; Head & Harada, 2017; Wang et al., 2018), suggesting that emotions are related to experts' climate change perceptions. Furthermore, climate experts' emotional engagement with climate change may shape their coping strategies or vice versa. Future studies should identify causal structures of climate experts' emotional engagement, their perceptions of climate change, and their coping strategies.

References

Allen, M. R., Dube, O. P., Solecki, W., Aragón–Durand, F., Cramer, W., Humphreys, S., ... & Zickfeld, K. (2018). Framing and Context. In: Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. Retrieved from https://www.ipcc.ch/site/assets/uploads/sites/2/2018/11/SR15_Chapter1_Low_Res.pdf

Andrews, N. (2017). Psychosocial factors influencing the experience of sustainability professionals. *Sustainability Accounting, Management and Policy Journal*, *8*(4), 445-469. https://doi.org/10.1108/SAMPJ-09-2015-0080

Andrews, N., Walker, S., & Fahy, K. (2016). Between intention and action: psychosocial factors influencing action on climate change in organisations. In *Innovation in climate change adaptation* (pp. 275-287). Springer, Cham. https://doi.org/10.1007/978-3-319-25814-0_19

Bassarak, C., Pfister, H. R., & Böhm, G. (2017). Dispute and morality in the perception of societal risks: extending the psychometric model. *Journal of Risk Research*, *20*(3), 299-325. https://doi.org/10.1080/13669877.2015.1043571

Bostrom, A., Böhm, G., & O'Connor, R. E. (2018). Communicating Risks: Principles and Challenges. In *Psychological Perspectives on Risk and Risk Analysis* (pp. 251-277). Springer, Cham. https://doi.org/10.1007/978-3-319-92478-6_11

Bostrom, A., O'Connor, R. E., Böhm, G., Hanss, D., Bodi, O., Ekström, F., ... & Rosentrater, L. (2012). Causal thinking and support for climate change policies: International survey findings. *Global Environmental Change*, *22*(1), 210-222. https://doi.org/10.1016/j.gloenvcha.2011.09.012

Böhm, G. (2003). Emotional reactions to environmental risks: Consequentialist versus ethical evaluation. *Journal of environmental psychology, 23*(2), 199-212. https://doi.org/10.1016/S0272-4944(02)00114-7

Böhm, G., & Pfister, H. R. (2000). Action tendencies and characteristics of environmental risks. *Acta Psychologica*, *104*(3), 317-337. https://doi.org/10.1016/S0001-6918(00)00035-4

Böhm, G., & Pfister, H. R. (2005). Consequences, morality, and time in environmental risk evaluation. *Journal of Risk Research*, *8*(6), 461-479. https://doi.org/10.1080/13669870500064143

Böhm, G., & Pfister, H. R. (2017). The perceiver's social role and a risk's causal structure as determinants of environmental risk evaluation. *Journal of Risk Research*, *20*(6), 732-759. https://doi.org/10.1080/13669877.2015.1118148

Bradley, G. L., Reser, J. P., Glendon, A. I., & Ellul, M. C. (2014). Distress and coping response to climate change. *Stress and anxiety: Applications to social and environmental threats, psychological well-being, occupational challenges, and developmental psychology climate change*, 33-42.

Bukantis, A., Rimkus, E., Gulbinas, Z., Kažys, J., Pupienis, D., Stankūnavičius, G., ... & Valskys, V. (2015). Studijos, nustatančios, atskirų sektorių jautrumą klimato kaitos poveikiui, rizikos vertinimą ir galimybes prisitaikyti prie klimato kaitos, veiksmingiausias prisitaikymo prie klimato kaitos priemones ir vertinimo kriterijus, parengimas. Retrieved from: http://www.am.lt/VI/files/File/Klimato%20kaita/Klimato%20kaita_galutine%20ataskaita_2015_08_31.pdf

Brügger, A., Morton, T. A., & Dessai, S. (2016). "Proximising" climate change reconsidered: A construal level theory perspective. *Journal of Environmental Psychology*, *46*, 125-142. https://doi.org/10.1016/j.jenvp.2016.04.004

Clayton, S. (2018). Mental health risk and resilience among climate scientists. *Nature Climate Change*, *8*(4), 260. https://doi.org/10.1038/s41558-018-0123-z

Clayton, S., Manning, C., Krygsman, K., & Speiser, M. (2017). Mental health and our changing climate: impacts, implications, and guidance. *Washington, DC: American Psychological Association and ecoAmerica*.

Doherty, T. J., & Clayton, S. (2011). The psychological impacts of global climate change. *American Psychologist*, *66*(4), 265. https://doi. org/10.1037/a0023141

Duhachek, A. (2005). Coping: A multidimensional, hierarchical framework of responses to stressful consumption episodes. *Journal of Consumer Research*, *32*(1), 41-53. https://doi.org/10.1086/426612

Head, L. (2016). *Hope and grief in the Anthropocene: Re-conceptualising human–nature relations*. Routledge.

Head, L., & Harada, T. (2017). Keeping the heart a long way from the brain: The emotional labour of climate scientists. *Emotion, Space and Society*, *24*, 34-41. https://doi.org/10.1016/j.emospa.2017.07.005

Klöckner, C. A. (2011). Towards a psychology of climate change. In *The economic, social and political elements of climate change* (pp. 153-173). Springer, Berlin, Heidelberg.

Kraus, N., Malmfors, T., & Slovic, P. (1992). Intuitive toxicology: Expert and lay judgments of chemical risks. *Risk analysis*, *12*(2), 215-232. https://doi.org/10.1111/j.1539-6924.1992.tb00669.x

Krohne, H. W. (1993). *Attention and Avoidance: Strategies in Coping with Aversiveness*, Kirkland, WA: Hogrefe & Huber.

Lewandowsky, S., Oreskes, N., Risbey, J. S., Newell, B. R., & Smithson, M. (2015). Seepage: Climate change denial and its effect on the scientific community. *Global Environmental Change*, *33*, 1-13. https://doi.org/10.1016/j.gloenvcha.2015.02.013

Lazarus, R. S. (1991). Progress on a cognitive-motivational-relational theory of emotion. American psychologist, 46(8), 819. http://dx.doi.org/10.1037/0003-066X.46.8.819

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.

Lazo, J. K., Kinnell, J. C., & Fisher, A. (2000). Expert and layperson perceptions of ecosystem risk. *Risk analysis*, *20*(2), 179-194. https://doi.org/10.1111/0272-4332.202019

Lefsrud, L. M., & Meyer, R. E. (2012). Science or science fiction? Professionals' discursive construction of climate change. *Organization Studies*, *33*(11), 1477-1506. https://doi.org/10.1177/0170840612463317

MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological methods*, *1*(2), 130.

McDaniels, T., Axelrod, L. J., & Slovic, P. (1995). Characterizing perception of ecological risk. *Risk Analysis*, *15*(5), 575-588. https://doi.org/10.1111/j.1539-6924.1995.tb00754.x

McDonald, R. I., Chai, H. Y., & Newell, B. R. (2015). Personal experience and the 'psychological distance' of climate change: An integrative review. *Journal of Environmental Psychology*, *44*, 109-118. https://doi.org/10.1016/j.jenvp.2015.10.003

Mooi, E., Sarstedt, M., & Mooi-Reci, I. (2018). Principal component and factor analysis. In *Market Research* (pp. 265-311). Springer, Singapore. https://doi.org/10.1007/978-981-10-5218-7_8

Norgaard, K. M. (2006). "People want to protect themselves a little bit": Emotions, denial, and social movement nonparticipation. *Sociological inquiry*, *76*(3), 372-396. https://doi.org/10.1111/j.1475-682X.2006.00160.x

Ogunbode, C. A., Böhm, G., Capstick, S. B., Demski, C., Spence, A., & Tausch, N. (2018). The resilience paradox: flooding experience, coping and climate change mitigation intentions. *Climate Policy*, 1-13. https://doi.org/10.1080/14693062.2018.1560242

Pfister, H. R., & Böhm, G. (2008). The multiplicity of emotions: A framework of emotional functions in decision making. *Judgment and decision making*, *3*(1), 5.

Pfister, H.-R., & Böhm, G. (2017). Emotional appropriateness and decision making. In: T. L. Kienlin & L. C. Koch (Eds.), Emotionen – Perspektiven auf Innen und Außen (pp.

105-121). *Universitätsforschungen zur prähistorischen Archäologie - Kölner Beiträge zur Archäologie und Kulturwissenschaft* (Band 305). Bonn: Dr. Rudolf Habelt GmbH.

Reser, J. P., Bradley, G. L., Glendon, A. I., Ellul, M. C., & Callaghan, R. (2012). Public risk perceptions, understandings and responses to climate change and natural disasters in Australia, 2010 and 2011 (p. 246). Gold Coast, QLD, Australia: National Climate Change Adaptation Research Facility.

Sarstedt, M., & Mooi, E. (2014). Cluster analysis. In *A concise guide to market research* (pp. 273-324). Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-642-53965-7_9

Savadori, L., Savio, S., Nicotra, E., Rumiati, R., Finucane, M., & Slovic, P. (2004). Expert and public perception of risk from biotechnology. *Risk Analysis: An International Journal*, *24*(5), 1289-1299. https://doi.org/10.1111/j.0272-4332.2004.00526.x

Skinner, E. A., Edge, K., Altman, J., & Sherwood, H. (2003). Searching for the structure of coping: a review and critique of category systems for classifying ways of coping. *Psychological bulletin*, *129*(2), 216. http://dx.doi.org/10.1037/0033-2909.129.2.216

Slovic, P. (2016). Understanding perceived risk: 1978–2015. *Environment: Science and Policy for Sustainable Development*, *58*(1), 25-29. https://doi.org/10.1080/00139157.2016.1112169

Slovic, P. (1987). Perception of risk. *Science*, *236*(4799), 280-285. https://doi.org/10.1126/science.3563507

Slovic, P., Fischhoff, B., & Lichtenstein, S. (1980). Facts and fears: Understanding perceived risk. In *Societal risk assessment* (pp. 181-216). Springer, Boston, MA. https://doi.org/10.1007/978-1-4899-0445-4_9

Stedman, R. C. (2004). Risk and climate change: perceptions of key policy actors in Canada. *Risk Analysis: An International Journal, 24*(5), 1395-1406. https://doi.org/10.1111/j.0272-4332.2004.00534.x

Steentjes, K., Pidgeon, N., Poortinga, W., Corner, A., Arnold, A., Böhm, G., Mays, C., Poumadère, M., Ruddat, M., Scheer, D., Sonnberger, M., Tvinnereim, E. (2017). *European Perceptions of Climate Change: Topline findings of a survey conducted in four European countries in 2016*. Cardiff: Cardiff University. Available at: https://orca.cf.ac.uk/98660/7/EPCC.pdf.

Swim, J., Clayton, S., Doherty, T., Gifford, R., Howard, G., Reser, J., ... & Weber, E. (2009). Psychology and global climate change: Addressing a multi-faceted phenomenon and set of challenges. A report by the American Psychological Association's task force on the interface between psychology and global climate change. *American Psychological Association, Washington*.

Wang, S., Leviston, Z., Hurlstone, M., Lawrence, C., & Walker, I. (2018). Emotions predict policy support: Why it matters how people feel about climate change. *Global Environmental Change*, *50*, 25-40. https://doi.org/10.1016/j.gloenvcha.2018.03.002

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Table 1
Climate experts' global risk perception [a]

	% responding:					Mean (*SD*)	CFA factor loading
	Very unlikely	More unlikely than likely	Not likely or unlikely	More likely than unlikely	Very likely		
Worldwide water shortages will occur	0.46	11.21	13.55	32.24	42.52	3.95 (0.97)	**.68**
The standard of living of many people in the world will decrease	0.46	0.93	6.54	37.85	54.20	4.44 (0.70)	**.61**
Health problems in the world will increase	0.93	5.58	19.06	29.30	45.1	3.96 (0.89)	**.87**
The number of species lost in the world will increase	0.93	4.65	14.41	34.88	45.11	4.08 (0.87)	**.81**
The world's economic situation will deteriorate	1.40	4.67	26.16	30.84	36.91	3.91 (0.94)	**.81**
More flooding will occur worldwide	1.86	4.65	24.18	29.76	39.53	3.91 (0.94)	**.77**

[a] The items with bold loadings were included in the analysis.

Table 2
Climate experts' local risk perception [a]

	% responding:					Mean (*SD*)	CFA factor loading
	Very unlikely	More unlikely than likely	Not likely or unlikely	More likely than unlikely	Very likely		
The number of extremely hot and cold days will increase in Lithuania	0.40	4.20	11.68	48.68	35.04	4.11 (.87)	**.84**
The number of climate-change-related health problems will increase in Lithuania	2.32	6.04	19.06	51.62	20.93	3.83 (.91)	**.75**
The number of droughts will increase in Lithuania	1.40	7.00	17.75	48.13	26.70	3.90 (.91)	**.80**
The number of intensive and long-lasting weather events will increase in Lithuania	0.93	2.32	9.30	39.06	48.37	4.32 (.81)	**.80**
The level of the Baltic sea will increase in Lithuania	1.86	4.18	13.95	56.74	23.25	3.95 (.84)	**.61**

[a] The items with bold loadings were included in the analysis.

Table 3
Climate experts' climate change risk perception based on the psychometric paradigm [a]

	Mean (*SD*)	PCA factor loading			
		Dreadful consequences	Morality	Societally disputed risk	Controllability
To what extent are the harmful consequences of climate change controllable? [R]	3.93 (1.26)	-.01	-.30	.07	**.70**
To what extent is exposure to the risks of climate change voluntary?	5.27 (1.43)	-.01	.24	-.12	**.70**
To what extent is the thought of climate change dreadful?	4.46 (1.65)	**.64**	.47	.14	-.07
In the worst case of maximum damage: How catastrophic would the consequences of climate change be?	5.63 (1.27)	**.55**	.55	.11	-.01
When I think of climate change, I feel concerned.	4.87 (1.63)	**.64**	.52	.16	-.08
To what extent is climate change a threat to future generations?	5.79 (1.26)	.59	**.60**	.11	-.02
To what extent do you regard climate change as generally acceptable?	4.52 (1.73)	.07	**.69**	-.12	-.05
To what extent do you regard climate change as morally reprehensible?	4.77 (1.53)	.34	**.39**	-.06	.29
Give an intuitive judgment: Is climate change good or evil?	5.47 (1.45)	.22	**.69**	-.18	-.11
To what extent are the foundations of our society threatened by climate change?	4.69 (1.44)	**.82**	.27	-.06	-.08
To what extent is the personal freedom of each individual threatened by climate change?	4.27 (1.56)	**.79**	.11	,01	-.01
To what extent do you have the impression that scientific consensus exists concerning climate change?	4.25 (1.54)	**.67**	-.04	-.14	.20
How much diversity do you think there is in opinions about climate change in the media?	4.88 (1.36)	-.00	-.14	**.80**	-.00
To what extent do you think that climate change is controversially discussed in society?	5.13 (1.23)	.00	.08	**.85**	-.05
To what extent is climate change a complex issue?	6.14 (1.21)	.16	**.63**	.18	.31

[a] The items with bold loadings were included in the respective scale.

[R] Reversed item.

Table 4
Climate experts' emotional responses to climate change [a]

	% responding:							Mean (*SD*)	Confirmatory factor loading of emotions			
									Morality-based		Consequence- based	
	Strongly disagree	Disagree	Partly disagree	Neither agree nor disagree	Partly agree	Agree	Strongly agree		Other-related	Self-related	Retrospective	Prospective
Indignation	13.48	10.23	5.11	25.58	2148	19.53	4.18	4.07 (1.75)	**.64**			
Contempt	30.84	21.96	2.33	31.77	8.87	3.27	.93	2.79 (1.59)	**.50**			
Disappointment	14.95	8.41	3.73	16.35	23.83	24.29	8.41	4.32 (1.90)	**.91**			
Guilt	19.95	19.53	9.30	22.79	21.80	5.11	2.32	3.33 (1.67)		**.89**		
Shame	26.97	21.86	5.58	29.30	9.76	3.72	2.79	2.95 (1.66)		**.75**		
Regret	10.23	5.11	5.11	13.48	26.04	29.30	10.69	4.70 (1.76)			**.76**	
Sadness	16.35	8.87	5.60	19.15	21.96	19.15	8.87	4.14 (1.91)			**.85**	
Sympathy	18.13	15.34	7.90	31.16	16.27	6.97	4.18	3.50 (1.70)			**.63**	
Hopelessness	19.15	12.61	7.00	21.02	21.49	11.68	7.00	3.76 (1.89)				**.61**
Worry	11.62	7.41	3.25	15.81	21.86	25.58	14.41	4.63 (1.88)				**.80**
Fear	19.53	13.95	4.18	24.65	19.06	13.48	5.11	3.70 (1.86)				**.76**
M (SD)									3.73 (1.45)	2.93 (1.52)	4.11 (1.50)	4.03 (1.54)

[a] The items listed for each factor were included in the respective scale.

Table 5
Climate experts' coping strategies [a]

	% responding:						Mean (*SD*)	Confirmatory factor loading of coping items		
	Strongly disagree	Disagree	Partly disagree	Partly agree	Agree	Strongly agree		Problem-focused	Emotion-focused	Avoidance
Concentrate on the ways in which climate change can be solved	5.11	12.55	12.55	36.74	23.72	9.30	3.89 (1.30)	**.82**		
Seek out others to talk about climate change	12.55	26.51	16.27	27.90	10.69	6.04	3.16 (1.41)	**.66**		
Think about the best way to handle climate change	8.37	7.90	12.55	29.76	30.69	10.69	3.99 (1.39)	**.78**		
Delve into my climate-change-related feelings to understand them	29.76	30.22	19.53	13.02	6.04	1.39	2.39 (1.28)		**.81**	
Ask colleagues how they control their climate-change-related emotions	35.34	28.37	12.55	13.02	9.30	1.39	2.37 (1.39)		**.79**	
Tell others how I feel	24.18	22.32	17.67	21.86	12.09	1.80	2.81 (1.43)		**.76**	
Try to get advice from someone about what to do with climate-change-related emotions	34.88	24.65	14.88	17.67	5.58	2.32	2.41 (1.38)		**.82**	
Distract myself to avoid thinking about it	27.90	32.55	19.06	15.34	4.19	0.93	2.38 (1.21)			**.58**
I refuse to believe climate change is happening	53.27	30.84	7.94	6.54	0	1.40	1.73 (1.01)			**.86**
Pretend that climate change is not happening	56.74	30.23	6.97	5.11	0	0.93	1.64 (0.93)			**.79**
Avoid thinking about climate change	29.30	27.76	17.20	14.88	5.11	3.72	2.48 (1.38)			**.59**

[a] The items listed for each factor are included in the respective scale.

Table 6

Climate change causal beliefs, risk perceptions, emotions, and coping strategies in emotionally engaged versus disengaged climate experts [a]

		Emotionally engaged (n = 151)	Emotionally disengaged (n = 64)	
		M(SD)	*M(SD)*	P value
Beliefs about climate change causes		3.41 (0.59)	2.94 (0.81)	**.00**
Emotions	Morality-based other-related	4.41 (1.00)	2.12 (1.04)	**.00**
	Morality-based self-related	3.85 (1.29)	1.48 (0.54)	**.00**
	Consequence-based retrospective	4.82 (1.00)	2.45 (1.11)	**.00**
	Consequence-based prospective	4.78 (0.98)	2.27 (1.13)	**.00**
Risks perception	Global	4.20 (0.62)	3.67 (0.79)	**.00**
	Local	4.15 (0.58)	3.72 (0.88)	**.00**
Risk perception based on the psychometric paradigm	Controllability	4.49 (1.05)	4.86 (0.90)	**.02**
	Dreadful consequences	5.08 (.89)	3.78 (1.21)	**.00**
	Morality	5.67 (0.77)	4.56 (1.03)	**.00**
	Societally disputed risk	5.06 (1.06)	4.87 (1.19)	.27
Coping strategies	Problem-focused	3.92 (1.02)	3.09 (1.23)	**.00**
	Emotion-focused	2.74 (1.18)	1.90 (0.94)	**.00**
	Avoidance	2.08 (0.89)	1.99 (0.88)	.49

[a] Bolded p-values refer to statistically significant differences ($p < .05$)

Table 7
Distribution of emotionally engaged and disengaged climate experts across work areas

	Emotionally engaged	Emotionally disengaged	Total
Academia	36	28	64
Government	98	29	127
Total	134	57	191