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On Conspiracy Thought Models in Thinking Climate Change

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ABSTRACT:
People make mistakes in their thinking. Errors in human thinking and incorrect information contents in people's mental representations can be found in everyday context such as in arguments about the current climate crisis. Erroneous thinking can cause false thought models such as climate change denialism and conspiracy thinking. Therefore, it is important to analyze the information contents of incorrect schemas or thought models. This can be done with an approach called content-based psychology.
In this research we analyzed 2980 public opinions posted in Finnish Social Media Platform Suomi24 to study how people think about and what kinds of illusory contents they use in constructing their representations on climate issues. We wanted to ask whether one can find illusory thinking in social media posts and to outline a typical construction of a false thought model in conspiracy thinking related to climate change. As a result, we found that conspiracy thinking can be found in online media discussions, and it is strongly associated with climate change denialism. Also, different fallacious or biased thought models have combined effects in constructing active mental representations in conspiracy thought models. Analyzing mental contents makes it possible to understand denialist and illusory thinking, but it requires further work.

Keywords: Climate change thinking, Erroneous thinking, Content-based psychology, Denialism, Conspiracy thinking

1. Introduction

People err and make mistakes in their thinking (Köhler, 1956; Pohl, 2017; Saariluoma, 1995). Human capacity to concentrate on their action-relevant features makes it possible for them to act in environments such as managing big companies or doing political decisions (Argyris, 1999; Schön, 1983; Simon, 1956). However, the selective concentration has its costs. People often set a side essential piece of knowledge and make consequently mistakes (Duncker, 1945; Wertheimer, 1945; Saariluoma, 1995).

Human thinking is organized around thought models. They are schemas or mental models around which people organize their mental representations (Chase & Simon, 1973; Johnson-Laird, 1983; Myllylä & Saariluoma, 2022; Neisser, 1976; Saariluoma, 1995). In mental representations it is common to have elements which are not correct. Such elements lead to cognitive illusions (Pohl, 2017), cognitive biases (Kahneman, 2011) or fallacies (Van Eemeren & Grootendorst, 2004). When studying human thinking in everyday context the analysis of the information contents of incorrect schemas or thought models is important.

The focus in working with false information contents in human thinking is to explain why people make mistakes. In our work, we claim that mental contents or the information contents of social media discussants in their minds explains why they make

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errors. As the explanatory ground is in the properties of information contents in mind, we have termed this approach as content-based psychology or content-based analysis of mind (Myllylä and Saariluoma 2022; Saariluoma 1995, 2001). The analysis of actual thinking in everyday life is a natural problem for content-based analysis of human actions. When people think about something, whether it was an artwork, chess moves, or climate change, they become conscious about the relevant information contents in their mental representations. By analyzing what people become conscious of and express, for example, in their speech or behavior, it is possible to tell what kind of learned knowledge and other information people base their thinking on and their subsequent actions.

In this paper, we focus on how people think about the current climate crisis. This is one of the most important threats for mankind (IPCC, 2022; World Economic Forum, 2022). It is also political issue and concerns everybody. As a political issue every citizen in an open society has to implicitly or explicitly take their positions with climate change. For these reasons we decided to use the analysis of related public opinions and mental contents to study how people think about the phenomenon and what kinds of illusory contents they use in constructing their representations on climate issues.

As the Intergovernmental Panel for Climate Change (IPCC) Working Group I report climate change state: "It is unequivocal that human activities have heated our climate." (IPCC, 2021, p. v). Climate change and its impacts can result into several, increasingly severe and life-threatening observable and predicted risks, losses and damages on natural and human systems (IPCC, 2022).

Intuitively, climate change caused by industrialism has its ultimate origin in human action and thinking. People have tried to solve practical issues of human life and developed industrial society, but consequently, the sustainability of nature has become threatened (United Nations, 2019; IPCC, 2022; World Economic Forum, 2022). It is evident that something essential must be done to avoid more extensive problems, but this is difficult for many people accept. A factor in inability to accept the facts about nature is formed by illusory thought models.

The problem of our research is to investigate how illusory thinking effects on human thoughts and acts on climate. Especially, important problem is denialism, which means that people do not believe in the results of well-argued and extensively supported scientific work. Consequently, they develop argumentation to support their positions. Often the denialist arguments are not based on science but rather different types of illusory thought models.

According to Cook (2017, 2020), climate change science denialists commonly use different argumentation techniques, such as relying on fake experts, using logically fallacious arguments to persuade people with irrelevant or false premises, imposing impossible expectations for the scientific proof or certainty, cherry picking evidence to support desirable conclusions and existing beliefs, and by presenting conspiracy theories. Conspiracy thinking is related to various psychological factors, such as the desire to understand the world, events, and their causes; feeling of security and control; and to maintain a positive self-image of oneself and one's ingroup (Douglas et al., 2020). Also, negatively oriented personality, worldviews, or cognitive styles how information is processed can affect conspiracy thinking on individual level (Lantian et al., 2020).

A source where people explicate their thoughts and arguments is social media and for this reason, we decided to study the contents and correctness of the thought models people use when they discuss on climate change. As the first step in our work, our main goal in this study was to ask whether one can find illusory thinking at all in social media posts and opinions and to outline a typical construction of a false thought model. As an example, our main focus was here on conspiracy thinking, though numerous other false models could be seen in the materials. They shall be discussed separately later.

Climate change in the industrial era is the result of human activity. Therefore, in this study we are interested in analyzing the erroneous and risk-averse thought models of people about climate. If we can show that there are misguided mindsets in the information flow of modern social media, we can also show that the study of this information space is an essential part of the analysis and fight against climate change.

2. Study outlines

2.1 Platform

We collected data form Suomi24.fi (Finland 24), a Finnish Social Media Platform, as it is different from international competitors allows researchers to use its contents. The platform is currently owned by City Digital Group. The forum has over 11 million threads (City Digital Group, 2022) and in year 2019 the forum had over 2 million users monthly (Yrittäjät, 2019).

Until the recent years, the Suomi24 discussion forum has been one of the most popular browser-based public discussion forums for Finns, where users can participate in the discussion anonymously (Vaahensalo, 2018). Writers form their own communities within the wider Suomi24 community (Harju, 2018; Lagus, et al., 2016).

According to Harju (2018), a typical Suomi24 user can be defined as "a middle-aged man living in the city who lives together with his married or common-law partner", who have "no children or they have already moved out of the house", where one third of the users live alone, and one third are retired (Harju, 2018, p. 54). However, it is important to note that this description represents the active users of the forum rather than the entire user base (Harju, 2018).

2.2 Methods

Data were analyzed with a method that can be called content-based analysis (Myllylä & Saariluoma, 2022), which as a qualitative method has similarities with other methods such as protocol analysis (Duncker, 1945; de Groot, 1965; Ericsson & Simon, 1993; Newell & Simon, 1972), heterophenomenology (Dennett, 2003), and applied thematic analysis which is a combination of thematic analysis, content analysis and grounded theory (Denzin & Lincoln, 1994; Glaser & Strauss, 1967; Guest, MacQueen & Namey, 2012). The main difference between these different methods and techniques is in interpretation. In content-based analysis the content is based on the actual content of the protocols (in this case, in written format) as such. Data were analyzed in Atlas.ti version 9 software and IBM SPSS Statistics version 28.0.1.1.

2.3 Materials and procedure

To carry out the analysis we used The Suomi24 Sentences Corpus 2018-2020, Korp version, which was accessed from the Kielipankki (Language bank) open data repository (City Digital Group, 2021). We searched posts that were written in Suomi24.fi discussion forum during year 2020 with a keyword "ilmastonmuutos" (climate change). The results were saved into a MS Word-document.

This time we were interested specifically in analyzing conspiracy thinking and common associative structures of mental representational content in conspiracy thinking related to climate change. By conspiracy thinking we refer to a thought model in which a thinking person explains what happens on the ground of a group of people spreading false information about an event or state in order to gain some advantages for themselves. Conspirators can be e.g., politicians or businesspeople, who think that their fake information can make other people to err for the conspirators' benefit.

I this study, an argument or claim was categorized as conspiracy thinking if it explicitly or implicitly suggested that various negative events occur because some group of powerful and "nefarious agents" (Zwaan, 2022, p. 1) work in collusion, which is a typical definition of conspiracy thinking (Lantian, Wood & Gjoneska, 2020; Uscinski & Douglas, 2017; Wood, Douglas, & Sutton, 2012). Alternatively, conspirators can also pursuit to implant misconceptions of the minds of people.

Critical thinking framework can be used to analyze arguments in different discourses (van Eemeren & Grootendorst, 2004). However, rather than only focusing on different types of argumentation strategies or fallacies, we also wanted to pay attention to all kinds of possible types of contents that may emerge from the material, for instance, from clearly stated opinions to content that was about different themes, people, emotions or knowledge.

3. Results

In order to give readers a good understanding of the climate change thinking and conspiracy thinking, we present the quantitative results of associations with conspiracy thinking within participants and then investigate the qualitative aspects of the results.

The document contained 3816 individual posts (quotations). Quotations were first coded in to 177 different categories / types of content according to a theme or a keyword. One quotation could include one or more codes. Also, a same quotation could be coded under several categories (cases) because even a same word can include different types of semantic content. For instance, a quotation "climate change is real, but humans are not causing it" was coded under both categories "climate change denialism" and "other denialistic causes of the climate change", because they connotate to denialism in general, and to causes that denialists use in their arguments. 867 quotations were excluded from the analyzed variables, because they were questions or quotes, ambiguous, nonsense, duplicate posting or a title of another post. 2980 cases were analyzed further.

We wanted to find whether there were significant associations between a category "conspiracy thinking" and other category variables. Associations between new category variables were analyzed with Pearson's chi-square statistics using a Fisher's exact test to compute the exact probability of the chi-square statistics also in small samples. Expected frequencies for the initial category variables were checked from the contingency table in

SPSS Statistics. However, several expected counts were below 5, which causes reduction in test power (Field, 2018). To improve test power, some variable data were combined with variables that seemed semantically similar. This resulted in total of 63 categories. A contingency table of the categories can be found in Attachment 1.

In addition, we wanted to analyze qualitative aspects of conspiracy thinking and types and schemes of information contents in conspiracy thinking thought models.

3.1 Quantitative analysis of associations with conspiracy thinking

First, we selected a category "conspiracy thinking" (N = 413) to analyze if it was statistically associated with the other 62 categories. For all cases (N = 2980) the analysis resulted in 25 statistically significant associations between conspiracy thinking category (N = 494 cases) and the other 62 categories. Then, associations were analyzed between conspiracy thinking cases and other categories by first using category "climate change denialism" (N = 765) as a filter variable and then using climate change acceptance (N = 323) as a filter variable. Results for statistically significant associations between conspiracy thinking, conspiracy thinking within climate change denialism, and other categories are presented in table 1.

Note, that only those quotations where it was clear that the statement was either supporting human caused climate change denialism or its acceptance were coded with the former codes. If it was not clear whether the arguments were human caused climate change denialistic or not, in case neither of the former codes were used. As Prooijen and Imhoff (2022) note, it is important to consider that there can be also respondents who differ in their levels or degrees of conspiracy beliefs or denialism and thus researchers should avoid a dichotomous division of people into "conspiracy believers" or "non-believers", for instance. However, in this study, because we wanted to study human caused climate change denialist and conspiracy thinking in general, we deliberately used a dichotomous division and coded the quotations under category "climate change denialism" or "conspiracy thinking" even if the argument was representing a weaker degree of denialism or conspiracy. For example, if it was stated that "climate change is real, but humans are not causing it" (weak denialism), "climate change is real and humans cannot mitigate it" (weak denialism), or that "climate change is not real, but it is just alarmists' fuss" (strong denialism), all of these arguments were coded under category "climate change denialism". Similarly, a quotation was coded under "conspiracy thinking" no matter how widespread or for what reason the conspiracy was described in the argument.

Table 1. Statistically significant associations between conspiracy thinking, conspiracy thinking within climate change denialism, and other categories.

	Conspiracy thinking cases within all cases (N = 413, representing 13,9% of all 2980 cases)	**Conspiracy thinking cases within climate change denialism cases (N = 397, representing 51,9 % of the 765 denialism cases). If there is no association, the cell is left empty.**

Associations based on their effect size (category is coded by a theme or a keyword)	Chi-square test (Exact Sig. (2-sided)).	Effect size (odds ratio). The odds of having an association with conspiracy thinking than having no association.	Chi-square test (Exact Sig. (2-sided)).	Effect size (odds ratio). The odds of having an association with conspiracy thinking than having no association.
1. *Climate change denialism*	$\chi^2(1) = 1247.265$, $p < 0.001$.	148.27 times higher		
2. *Economics and finance*	$\chi^2(1) = 343.638$, $p < 0.001$.	9.79 times higher	$\chi^2(1) = 110.003$, $p < 0.001$.	0.06 times higher
3. *Media*	$\chi^2(1) = 196.627$, $p < 0.001$.	8.42 times higher	$\chi^2(1) = 50.899$, $p < 0.001$.	0.10 times higher
4. *Berating left wing politics*	$\chi^2(1) = 67.531$, $p < 0.001$.	5.14 times higher	$\chi^2(1) = 10.731$, $p < 0.001$.	0.36 times higher
5. *Russia or Soviet Union*	$\chi^2(1) = 17.133$, $p < 0.001$.	3.41 times higher		
6. *Politics*	$\chi^2(1) = 108.331$, $p < 0.001$.	3.19 times higher	$\chi^2(1) = 64.062$, $p < 0.001$.	4.25 times higher
7. *Berating green politics*	$\chi^2(1) = 35.254$, $p < 0.001$.	3.01 times higher		
8. *Taxes and taxation*	$\chi^2(1) = 26.168$, $p < 0.001$.	2.89 times higher	$\chi^2(1) = 23.936$, $p < 0.001$.	0.09 times higher
9. *Climate change mitigation, adaptation and related actions*	$\chi^2(1) = 21.559$, $p < 0.001$.	2.87 times higher	$\chi^2(1) = 8.295$, $p = 0.004$.	2.23 times higher
10. *Misjudged or false information*	$\chi^2(1) = 31.597$, $p = 0.005$.	2.61 times higher		
11. *Dismissive thinking*	$\chi^2(1) = 38.717$, $p < 0.001$.	2.58 times higher		
12. *Climate religion*	$\chi^2(1) = 15.912$, $p < 0.001$.	2.46 times higher	$\chi^2(1) = 19.588$, $p < 0.001$.	2.83 times higher
13. *Other's erroneous thinking*	$\chi^2(1) = 19.747$, $p = 0.004$.	2.23 times higher		

14. *Ad hominem*	$\chi^2(1) = 25.666$, $p < 0.001$.	1.94 times higher	$\chi^2(1) = 16.298$, $p < 0.001$.	2.24 times higher
15. *Climate change is a natural phenomenon*	$\chi^2(1) = 9.130$, $p = 0.004$.	1.86 times higher	$\chi^2(1) = 51.074$, $p < 0.001$.	4.37 times higher
16. *Science related to climate change*	$\chi^2(1) = 18.788$, $p < 0.001$.	1.83 times higher		
17. *Emotions (e.g., fear, anxiety, safety, interest)*	$\chi^2(1) = 8.545$, $p < 0.001$.	1.75 times higher		
18. *Weather and natural phenomena*	$\chi^2(1) = 7.327$, $p < 0.005$.	0.53 times higher	$\chi^2(1) = 9.206$, $p = 0.003$.	2.36 times higher
19. *Making a statement without reasoning it*	$\chi^2(1) = 31.002$, $p < 0.001$.	0.31 times higher		
20. *Climate change is mentioned as part of another argument*	$\chi^2(1) = 81.146$, $p < 0.001$.	0.25 times higher		
21. *Future impacts or events*	$\chi^2(1) = 56.407$, $p < 0.001$.	0.14 times higher	$\chi^2(1) = 8.802$, $p = 0.003$.	2.94 times higher
22. *Berating right wing politics*	$\chi^2(1) = 11.189$, $p < 0.001$.	0.13 times higher		
23. *Other denialist causes of climate change*	$\chi^2(1) = 11.620$, $p < 0.001$.	0.07 times higher		
24. *Accepting climate change*	$\chi^2(1) = 48.334$, $p < 0.001$.	0.07 times higher		
25. *Climate change is caused by human actions*	$\chi^2(1) = 14.332$, $p < 0.001$.	0.06 times higher		

Associations with the filtered category human caused climate change acceptance resulted in only one statistically significant association with category economics, $\chi 2(1) = 43.706$, $p = 0.002$. However, expected frequencies assumption were not met. The Bayes factor strongly supported the alternative hypothesis, $BF01 = 54{,}413$. The odds of the variable economics within human caused climate change acceptance having an association with conspiracy thinking was 0.02 times higher than having no association.

A loglinear analysis was done to investigate the internal dependencies between category variables (cases) conspiracy thinking, human caused climate change denialism and human caused climate change acceptance. There was a significant association between conspiracy thinking and denialism, $\chi 2(1) = 1247.265$, $p < 0.001$; and between denialism and acceptance, $\chi 2(1) = 125.117$, $p < 0.001$. Odds ratios indicated that the odds of

denialism having an association with conspiracy thinking was 148.27 times higher than having no association. The odds of climate change acceptance having an association with denialism was zero. Here it should be noted that quotations were coded either in variable human caused climate change denialism or human caused climate change acceptance, so it is impossible that they have statistically significant interactions (which explains the zero odds for association between climate change acceptance and denialism).

In overall the results seems to indicate a clear difference in Suomi24.fi arguers' thought models; conspiracy thinking, and human caused climate change denialism are more likely to co-occur in people's thought models, whereas accepting human caused climate change is not associated with conspiracy thinking.

3.2 Qualitative analysis of conspiracy thinking and common thought models

Conspiracy thinking was found to have several (8) subtypes which explain what are the reasons for conspirators. These subtypes are the following: 1) political entities conspire (N = 120, 24.3% of all conspiracy thinking case), 2) business or economic reasons (N = 119, 24.1%), 3) media drives conspiracies (N = 62, 12.6%), 4) climate change scientists conspire (N = 41, 8.3%), 5) apprehensive climate change discussions are propaganda (N = 23, 4.7%), 6) elite conspires (N = 22, 4.5%), 7) to limit freedom (N = 13, 2.6%) , and 8) hidden or implicit reasons, where no motivation or agent has been defined explicitly (N = 94, 19.0%).

Our data shows that conspiracy thought models are real, but their types vary among their supporters. Models, their associated contents and subtypes can be found and described by using content-based psychological approach. Climate change conspiracy thought models have a typical core construction, but they are parts of differently associated, wider knowledge structures. Information content in these knowledge structures can be true but also more or less false (misinformation), and different types of contents can be (incorrectly) associated in reasoning for the underlying conspiracy thought model and to deny information that opposes it. Climate change conspiracy thinking is particularly strongly associated with climate change denialism, e.g., rejecting reliable evidence and trusting illusions.

4. Discussion

Our results suggest that illusory climate change conspiracy thinking can be found in online media discussions such as Suomi24-posts. It also follows very similar argumentation techniques and contents than what is typical within this kind of discourses investigated in previous studies (Cook, 2020; Uscinski & Douglas, 2017). This suggests that people's thinking about climate change conspiracies, and conspiracies in more general, is fundamentally based on very similar reasoning and thought models, at least within people who live in Western culture. Illusions, delusions and reasoning errors, emotions and motivational biases, lack of information and misinformation appear in people's arguments and illustrate how different mental contents and cognitive processes are intertwined in the underlying thought models. Some contents and processes are accentuated while others are downplayed or neglected.

Illusory and fallacious thinking is often presented in separate types. Empirical research has documented numerous illusions such as anchoring, ad hominem, base rate fallacy and intentional fallacy (Kahneman, 2011; Pohl, 2017; van Eemeren & Grootendorst, 2004). However, when applied to analyze such actual life phenomenon as conspiracy thinking it appears that different fallacious or biased thought models do not operate separately but they have combined effects in constructing active mental representations.

Our analysis of Suomi24 posts suggests that one way to understand climate denialism, i.e. the refutation to accept scientific facts on climate change is motivated and justified by illusory thinking such as conspiracy thought models. Today we know very little of roots of these phenomena, but content-based analysis of thinking appears to be applicable in investigating the problem of denialism.

Contents of thought direct human actions and thus analysis of mental contents makes it possible for us to get information about the phenomenon of denialism. However, the path to understand the origins and mechanisms of denialist thinking requires further work. Nevertheless, it is evident that every time people are unable to see reality as it is, this is a risk for further actions. This is why intentional or unintentional false representations easily make people to err in their acts with unfortunate consequences.

5. Conclusions

In this paper, we investigated how people think about the current climate crisis in online social media discussions such as in Suomi24.fi forum. We analyzed how errors and biases in thinking and false information content are displayed, intertwined and jointly effect in climate change denialism and conspiracy thought models.

Climate change has been extensively studied from a natural science point of view. The study of thinking, however, brings its own additional dimension to the interdisciplinary research problems. Ultimately, the study of misconceptions takes us to the root cause of climate change. It is human thinking that drives human action. Therefore, our results illustrate that analysis of thinking should be taken seriously. Thought errors, on their part, delay human actions in preventing climate change and its consequences.

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Attachment 1

Table 2. A contingency table of the combined 63 categories (including the initial 177 categories), their frequencies (N) and percentage of all cases.

	Category	**Explanation, key words, themes**	**N of cases**	**% of total**
1	*Climate change is mentioned as part of another argument*	Climate change is not the actual topic of the comment	876	29,4 %
2	*Climate change denialism*	Climate change denialism (including weak and strong degrees)	765	25,7 %
3	*Politics*	Left wing politics, Green politics, Right wing politics, Politics in general; Conspiracy thinking related to politics; Annika Saarikko, Jenni Haukio, Li Anderson, Oras Tynkkynen, Teuvo Hakkarainen, Turtiainen, Haavisto, Ohisalo, Räsänen, Sanna Marin, Sauli Niinistö, Obama, Reagan, Putin, Biden, Linkola, Taalas, Jussi Halla-aho, Trump	548	18,4 %
4	*Future impacts or events*	Impacts of climate change, Future scenarios	443	14,9 %
5	*Making a statement without reasoning it*		433	14,5 %
6	*Ad hominem*	Ad hominem, Ad hominem abusive, Ad hominem expert, Ad hominem populus, Ad hominem referring to previous behavior; Women, Homosexuals, Misogynia, Racism; Annika Saarikko, Biden, Greta Thurnberg, Haavisto, Jenni Haukio, Jussi Halla-aho, Li Anderson, Maria Ohisalo, Obama, Oras Tynkkynen, Pentti Linkola, Petteri Taalas, Putin, Päivi Räsänen, Ronald Reagan, Sanna Marin, Sauli Niinistö, Teuvo Hakkarainen, Trump, Turtiainen	429	14,4 %
7	*Conspiracy thinking*	Conspiracy thinking, Climate change conspiracy related to business, Climate change conspiracy related to elite, Climate change conspiracy related to limit freedom, Climate change conspiracy related to media, Climate change conspiracy related to scientists, Conspiracy thinking politics, Climate change conspiracy theories, Propaganda	413	13,9 %
8	*Finland related*	Moving in Finland, Finland, Lapland, Finland seen as example or lead, Finland is not causing climate change or does not mitigate climate change	363	12,2 %
9	*Science related*	Conspiracy related to scientists, NASA, Climate change science, Climate change modelling and predicting, Climate change scientific consensus, Misunderstanding scientific research, Undermining climate change scientists	351	11,8 %
10	*Climate change mitigation and adaptation*	Climate change mitigation, adaptation, and related actions	347	11,6 %
11	*Accepting climate change*	Human caused climate change acceptance, Climate change is real because it is observable	323	10,8 %
12	*Covid, vaccination*		284	9,5 %
13	*Weather and natural phenomena*	Weather and natural phenomena, Draught, Heat, Rain, Floods, Snow, Frost and permafrost, Ice melting, Ozone, Water	246	8,3 %

14	*Economics and finance*	Financial and economic issues, Conspiracy related to business	245	8,2 %
15	*Dismissive thinking*	Climate change is hysteria, Climate change belief is alarmist fuss	234	7,9 %
16	*Ironical or sarcastic argument*		216	7,2 %
17	*Misjudged, unreliable or false information*	Confusion of opinions and facts, Misinformation about scientific facts, Terminological shift as explaining a term's meaning as something other	179	6,0 %
18	*Erroneous reasoning*	False analogy, Fallacious reasoning, Misunderstanding of causes and effects	170	5,7 %
19	*Emotions (e.g., fear, anxiety, safety, interest)*	Emotions, Guilt, Anxiety, Safety, Fear, Climate change is not interesting	168	5,6 %
20	*Other's erroneous thinking*	A claim that other people's thinking is erroneous	147	4,9 %
21	*Media*	Media, Media conspiracy	145	4,9 %
22	*Climate change is a natural phenomenon*		143	4,8 %
23	*Immigration*		142	4,8 %
24	*Emissions and polluting*		140	4,7 %
25	*Berating green politics*		135	4,5 %
26	*Other denialist causes of climate change*	Climate change is act of God, Climate change is not caused by humans, Climate change is not real because observable actions are not made, Climate change is only little caused by humans, Ice-age is coming, Finland is not causing or does not need to mitigate climate change, Humans cannot mitigate climate change, Other denialist causes of climate change	130	4,4 %
27	*Energy forms related*	Electricity, Gasoline, Nuclear power, Climate change and energy, Renewable energy	119	4,0 %
28	*Analogies or associations to other events or activities*	Analogies, Conflicting behaviour related to climate change, Demonstrations, Education, Skiing	115	3,9 %
29	*Taxes and taxation*		108	3,6 %
30	*Fossil fuels related*	Fossil fuels, Oil, Methane, Peat	102	3,4 %
31	*Agriculture, vegetarism, veganism*	Agriculture and food (including vegetarism, veganism)	100	3,4 %
32	*Climate change is caused by human actions*		100	3,4 %
33	*Nature related*	Nature, Nature preservation, Species extinction	99	3,3 %
34	*Climate religion*	Belief in climate change is like religion	98	3,3 %
35	*Seasons (winter and summer)*	Winter, Summer	95	3,2 %
36	*Berating right wing politics*		94	3,2 %
37	*Cars and electric cars*		93	3,1 %
38	*Berating left wing politics*		90	3,0 %
39	*Countries, other*	Australia, Brazil, India, Canada, USA, Middle-east	76	2,6 %
40	*Climate change has positive effects*	Climate change has positive effects, Finland is seen as example or lead so no mitigation actions are needed	73	2,4 %

41	*Transportation and traffic*		71	2,4 %
42	*War, weapons*	War, Nuclear weapons, Terrorism	70	2,3 %
43	*Europe and EU*		69	2,3 %
44	*Human population*		69	2,3 %
45	*Carbon dioxide*		68	2,3 %
46	*Technology*	Technology and industry, AI, 5G	65	2,2 %
47	*Forests*		62	2,1 %
48	*Consumerism, travelling*	Consumerism, Tourism and travelling	57	1,9 %
49	*Religions or religious people*	Religious people, Islam, or Muslims	56	1,9 %
50	*Global warming, greenhouse effect, greenhouse gases*		55	1,8 %
51	*Religious thinking*	Religious thinking (referring to God's will, etc.)	55	1,8 %
52	*Temperature and its measuring*		52	1,7 %
53	*Health related*	Health and diseases, Smoking tobacco	51	1,7 %
54	*China*		50	1,7 %
55	*Climate change is caused by overpopulation*		47	1,6 %
56	*Russia or Soviet Union*	Soviet Union, Russia	45	1,5 %
57	*Seas*	Seas, Baltic Sea	45	1,5 %
58	*Flying*	Flying (air traffic)	45	1,5 %
59	*Weather is not same as climate*		44	1,5 %
60	*Sun and space related*		43	1,4 %
61	*Working life and unemployment*		42	1,4 %
62	*Countries, Scandic*	Sweden, Norway, Greenland	41	1,4 %
63	*Africa*		41	1,4 %
TOTAL			2980	100 %