

The Mental Construal of the Climate Crisis: an Exploratory Study

Jenny Nguyen

Department of Behavioural, Management and Social Sciences, University of Twente

BSc Psychology, M12: BSc Thesis PSY

First Supervisor: Dr. Anne van Dongen

Second Supervisor: Keenan A. Ramsay PhD

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Abstract: The perception of climate change as a phenomenon primarily affecting distant locations, future generations, and other individuals rather than oneself and the present moment has drawn attention to construal level theory (CLT). This theoretical framework offers insights into how the public perceives climate change and how the subjective psychological distance at which individuals mentally conceptualize environmental issues influences their decision-making and behaviours. Due to the gap in literature on the use of CLT, especially in the context of climate change, this study embarks to find out more about the construal of the climate crisis. Through qualitative analysis it was found that individual terms related to climate change cannot be attributed a construal level that is representative of a certain psychological distance an individual has towards climate change. Scoring construal in the context of climate change through terminology has proven to be a complicated task, with many difficulties that suggest CLT needs to first be further developed into a sound framework before it can be employed in behavioural interventions. It is suggested that other psychological theories, such as dual process theory are more suitable to employ in the battle against climate change.

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Introduction

Decades ago, scientists had already rung the alarm bell regarding the disastrous consequences of climate change on nature and society (IPCC, 2023). Consequences described as severe as compromised food quality, challenging weather conditions which can affect vulnerable parts of the globe, and emerging difficulties for many sectors including tourism, biodiversity, forestry to name a few (Abbass et al., 2022).

In order to avoid or limit the negative impact these consequences will have on society, wildlife, and the Earth's ecosystems, climate mitigation becomes necessary. This term encapsulates interventions aimed at reducing the emissions responsible for global warming and, consequently, climate change. Notably, the effectiveness of many of these interventions rely on behavioural changes, necessitating adaptations in lifestyle and policy reforms. Unfortunately, current reports from the scientific community indicate that climate-mitigating behaviours and adaptations fall short of meeting the goals outlined in the Paris Agreement, leaving us susceptible to future climate risks (United Nations Environment Programme, 2022).

This is where psychology's importance within the topic of climate change is undeniable. Theoretical psychological models can form the foundation of behavioural research and the design of behavioural interventions. Construal Level Theory (CLT) which was developed by Trope and Liberman (2010) is one of the many theoretical models within the field of psychology. CLT explores a concept named psychological distance, which suggests that individuals can interpret events, objects and information in different ways, depending on the individual's psychological distance towards it. Variations in people's interpretations of events can in turn result in different behavioural responses.

Given that a significant portion of the climate change challenge lies within human behaviour, particularly climate inaction, it becomes valuable to examine the potential insights offered by CLT. Exploring people's interpretation, or the so-called construal of the climate crisis through CLT may provide an understanding of why individuals either engage or refrain from climate mitigation and adapting behaviours, shedding light on the factors contributing to insufficient action in this critical domain.

Construal Level Theory

The construal level theory was introduced by Trobe and Liberman (2010). CLT is a psychological framework that explores how individuals mentally represent and interpret events, objects, and information based on their perceived psychological distance. The key idea is that the way individuals construe or interpret information depends on how psychologically "near" or "far" they perceive it to be. When events or objects are psychologically near, people tend to construe them in a more concrete and detailed manner. In contrast, when events or objects are psychologically distant, individuals are more likely to construe them in a more abstract and generalized way. Additionally, CLT suggests that our cognitive representations of things can be categorized along a continuum of psychological distance, which includes temporal distance (time), spatial distance (physical space), social distance (relationship with others), and hypothetical distance (imaginary or unlikely scenarios).

CLT has garnered empirical support and demonstrated its utility across a diverse array of scholarly investigations spanning multiple disciplines. Several of these studies include tourism management (Fuchs et al., 2024), agricultural risk-perception (Yazdanpanah et al., 2023) and climate change (Rana et al. (2023); Schill and Shaw (2016)). In these studies, it was discovered that reducing psychological distance can prompt the activation of certain behaviours. Specifically, in the context of the climate crisis, CLT has the potential to offer valuable insights on how to encourage climate-mitigation and adaptation behaviours.

Psychological Distance, Construal Level and Climate Change

CLT posits that when events are psychologically distant, one tends to think of it in more abstract higher-level terms (Trope & Liberman, 2010). Conversely, when events are psychologically near, people tend to think about them in more concrete and low-level terms. For example, person A who has a more psychologically distant construal of climate change risks will consider global impacts over the next several years or decades. Person A will likely be more concerned with advocating for international climate agreements, supporting large-scale renewable energy projects, and envisioning global policies to address climate change. However, person B who has a more psychologically near construal of the climate crisis, will notice the more extreme winters of the past years, poor air quality

affecting their health or disappearing wildlife from the forest. For person B the climate crisis is a concrete and immediate issue.

The extent of psychological distance towards climate change has been proposed as a determining factor influencing individuals' engagement in climate-mitigating behaviours. According to conducted studies (Rabinovich et al., (2009), Schuldt et al., (2018), Yazdanpanah et al. (2023)), people with psychologically distant views like person A in the example above, will view the climate crisis in a relatively unpersonal manner. Additionally, these views on climate change and its risks are considered not directly relevant. This results in the barrier to take climate action being higher when an individual maintains a greater psychological distance from the climate crisis.

Although research shows a correlation between psychological distance and climate mitigation and adaptation behaviour, it must be noted that many studies have a different approach of measuring psychological distance. A majority of the studies focus on only one or two of the dimensions of psychological distance (proximal, temporal, social and hypothetical), for measurements (Schuldt et al., 2018). Maiella et al. (2020) also note that between studies the measurement tools for measuring the dimensions of psychological distance vary. Additionally, given the complexity of measuring overall psychological distance across its various dimensions, many studies often resort to employing simplistic measurements with a high level of variable control. This in turn contributes little or incomplete knowledge towards an understanding of overall construal levels in relation to climate change.

While theoretically, applying the concept of psychological distance and construal level to research may seem straightforward, challenges persist in its implementation. Literature exist showing correlations between construal level and mitigation and adaption behaviours (Rabinovich et al., 2009). However, it must also be noted that there is literature which resulted in no correlation between these factors (Valkengoed et. al (2023), Wang et al. (2019)). Maiella et al. (2020) suggest that these conflicting results may be attributed to the limited use of construal level in the context of climate change. Due to its limited use also no definitive way of measuring construal level has been established. Consequently, there is not yet a clear relationship established between construal level and

climate mitigation and adaptation behaviours. Brügger (2020) and Maiella et al. (2020) suggests more research is needed to first further develop CLT and explore ways to measure mental representations of climate change and stable psychological distance perspectives.

Purpose of this research

This paper aims to explore how people conceptualize the climate crisis, and provide more insight into differences in construal levels concerned with climate change. The gap in literature on construal level related to climate change is partly to blame on the complexity of measuring construal levels. Due to these established challenges in measurement of construal this research opted for a qualitative design. By gathering data on people's perception of the climate crisis and letting them speak freely on this topic, we aspire to find out whether varying degrees of concrete- or abstractness can be identified between persons and topics related to climate change. Subsequently this would then lead to whether a scale to score different levels of construal for climate change related topics can be established and validated. With a better understanding of the construal of the climate crisis, this can in turn contribute to the understanding of measuring psychological distance and the use of CLT. Should CLT gain widespread acceptance as a framework for interventions, it holds the potential to make substantial contributions to the fight against climate change.

Methods

Design

This research was motivated by a dataset collected as part of a larger, unpublished study. The preliminary study, administered through an online questionnaire, involved approximately 2000 participants who were prompted to provide words associated with climate change. From their responses, a dataset was generated, consisting of three distinct words per participant.

The present study seeks to investigate whether specific words/terms can be categorized into certain construal levels. To accomplish this, interviews were conducted in which participants were asked to name three words associated with climate change, similar to the initial dataset collection process. However, participants were then engaged in in-depth discussions about each of the three terms to explore their construal of the words further.

The primary objective is to determine whether individual words can be classified as 'abstract' or 'concrete' in the context of climate change. The interviews were semi-structured, aiming to elicit authentic and immediate thoughts from participants about the three words associated with climate change. Thus, participants were encouraged to freely express their thoughts and feelings, allowing them to guide the conversation as they saw fit (Harrison & Rentzelas, 2021).

It is worth noting that the deliberate decision was made to use the term 'climate change' instead of 'climate crisis' to avoid potentially biasing or influencing participants' responses to the interview questions.

Participants

Thirteen participants (6 women, 7 men; Mean age = 41.5, SD = 21.73) were recruited through convenience sampling. These participants were either within the researcher's direct social network or referred by individuals who had already participated, and subsequently recommended their family and friends to join the research. During sample selection, efforts were made to ensure variation in the highest attained educational level, age, and gender, aiming to facilitate diversity in perspectives and challenge biases and stereotypes. The sample included individuals with a range of educational backgrounds, including high school (23%), secondary vocational education (MBO; 23%), higher professional education (HBO; 38%), and university education (15%). The sole participation criterion was fluency in Dutch, as the interviews were conducted in this language.

Materials

Before the interviews were conducted an interview guide and schedule were assembled. The interview guide was used for the purpose of standardization through giving every participant the exact same introduction to the subject matter of the interview. This to ensure consistency in answering of the open-ended questions by ruling out any bias or direction given in the introduction.

The interviews were conducted with only the participants and a maximum of two members of the research team present. Beforehand all participants were presented with an information sheet, detailing the goal, subject and privacy regulations of the study. During the interview itself a recording device was present to make audio recordings.

Procedure

The study was approved by the Ethics Committee of the faculty Behavioural, Management and Social Sciences (BMS) of the University of Twente under request number 231216. Potential participants were first approached either in person or through text message with a short explanation of the research and the question whether they wanted to participate. If an individual decided to take part in the study, they were first digitally sent an information sheet (appendix A), detailing the procedure, research topic and their rights as a participant. Before the start of the interview participants were given the chance to read through the information sheet again, before giving consent to participate in the interview. Each participant voluntarily took part in this study and has provided written consent by signing the consent form (appendix B). The interviews were conducted either in-person at a location of the participant's choosing or through an online video conference. In both instances only audio recordings were made.

Interview guide

The interview guide (appendix C) was used in each conducted interview. The interview guide has two main parts. Part one builds around the leading question "What are the first three words/terms that come to mind when you think about the topic of climate change?". This first question was designed to gather the most authentic and initial associations people have with the topic climate change, and make for qualitative data representing conceptualization and construal of climate change. Participants are then asked to further explore why these particular words came to mind and encouraged to talk freely with probing questions.

Part two of the interview contains a set of questions constructed to explore more about each dimension of psychological distance. This comprises four questions, each uniquely emphasizing social, geographical, temporal, or hypothetical distance, along with two questions addressing both construal and sentiment.

Data analyses

All the audio recordings of the interviews were turned into orthographic transcriptions. This decision was made due to the importance of context related to the research questions. Transcription of the audio recordings was achieved with the use of Microsoft 365 transcription software, which afterwards was manually double checked and edited for accuracy.

It was decided to follow a data analyses method which is in line with the already existing dataset of terminology. The question ‘Can you name three words you associate with the concept climate change?’ used to construct the initial dataset, was used as the opening question in the interviews of this research as well. Additionally, the initial dataset proposed a scoring system with a numeric rating, using a scale 0-5 in order to illustrate concreteness and abstractness of a specific word. 0 = very abstract and 5 = very concrete. This same method was used to score the words mentioned in the conducted interviews. Data extracts from the interviews in which participants expressed more in depth why they associate a particular word with climate change, or why it occurred to them so suddenly were handpicked from the transcriptions and individually assigned a score. This can mean that one word, mentioned by one individual participant can have more than one data extract. As a guideline, features of abstractness and concreteness taken from Trobe and Liberman (2010) in Table 1 were used to determine the score of each data extract.

Table 1

Table name

Concrete (<i>low-level construal</i>)	Abstract (<i>high-level construal</i>)
How	Why
Complex	Simple
Specific	General
Contextualized	Decontextualized
Peripheral	Central
Subordinate goals	Superordinate goals
Incidental features	Essential features
Secondary	Primary
Surface	Core
Inductive	Deductive
Subject to change	Stable, invariant
Focus on means (how)	Focus on the ends (result, goal)
Can be experienced directly through senses	Cannot be experienced directly through senses
Experienced-based meaning acquisition	Language-based meaning acquisition
Goal irrelevant	Goal relevant
Unstructured	Structured

The interview guide has been constructed with open questions that prone people to think about different dimensions of psychological distance towards climate change. Where possible, these dimensions are assigned a score or category, in order to more easily compare scores to other dimensions and identify potentially existing patterns.

Construal was rated with the very same method that was used to rate the mentioned words.

Temporal distance was scored with the same 0-5 scale. Therefore, a 0-point score illustrates climate change as a phenomena removed far in time. A 5-point score would mean an individual thinks of the effects of climate change much closer in time, for instance happening right now or having already happened in the past.

- 0 = there will not be any noticeable effects of climate change in the future
- 1 = will be noticeable in the future, but I will not experience them myself anymore
- 2 = effects of climate change will be noticeable in the distant future
- 3 = effects of climate change will be noticeable in the near future
- 4 = effects of climate change noticeable right now
- 5 = effects of climate change have already been experienced in the past

To score the psychological geographical distance towards climate change four different categories were used to rate data extracts of participants.

- 1 = countries specifically outside Europe
- 2 = countries not including the Netherlands
- 3 = countries including the Netherlands
- 4 = Specifically Europe including Netherlands

With this rating 1 can be considered the most psychologically distant, and 4 the less psychologically distant rating, considering geographic distance towards climate change

Results

Table 2

Overview demographics and terms per participant

Participant ID	Age	Gender	Education ^a	Terms (construal score)
01	22	Female	VMBO	<ul style="list-style-type: none"> • Global Warming (0) • Meat consumption (4) • Stress (2)
02	50	Female	MBO	<ul style="list-style-type: none"> • Ice (2) • Water (4) • Drought (4)
03	21	Male	HAVO	<ul style="list-style-type: none"> • Save the turtles(5,2) • Gasoline prices (3) • Electricity costs (5)
04	63	Female	HBO	<ul style="list-style-type: none"> • Heat (3,2) • Nitrogen Policy (4) • Nature (4)
05	24	Male	HBO	<ul style="list-style-type: none"> • Concerning (2,1) • Global issue (2,4) • Government (3)
06	47	Male	HBO	<ul style="list-style-type: none"> • CO2 (2) • Warmth (1,2) • Panic(2)
07	22	Male	HBO P	<ul style="list-style-type: none"> • Biodiversity (5,5) • Extreme weather (5) • CO2 (1,5)
08	21	Female	VWO	<ul style="list-style-type: none"> • Global Warming (2,2) • Nitrogen (4) • Politics (3)
09	24	Male	BSc	<ul style="list-style-type: none"> • Sustainability (3) • Climate change (5) • Global warming (5)
10	30	Male	BSc	<ul style="list-style-type: none"> • Industry (2,4) • North Pole (2) • China (5,3)

11	55	Female	MBO	<ul style="list-style-type: none"> • Climate Change(2,4) • Challenges (2) • -
12	82	Male	MBO ^b	<ul style="list-style-type: none"> • Weather (4,4) • Nature (4) • Humanity (3)
13	79	Female	HBO ^b	<ul style="list-style-type: none"> • Cold (4) • Warmth (4) • Moisture (4)

a: Highest educational level with an obtained diploma

b: The equivalent of an educational level existing no more

In table 2 an overview of the mentioned words and their assigned construal scores are given, together with the demographics per participant. The data extracts of each word and the details on the construal rating can be found in appendix D1-13. The construal scores in table 1 give an overview from which a few things can be noted.

Firstly, between the three words each individual participant has listed the construal score can vary. This construal score was attributed to a data extract describing a specific word. An example is participant 01, who mentioned the word ‘global warming’ provided an abstract description of the term, resulting in a 0 point construal score. However their second term ‘meat consumption’ was described relatively more concrete, scoring 4 points. The contrary is seen in the results for participant 013, whom has a 4 point score on all three mentioned words. These results vary per participant and there seems to be no correlation in construal score between the three mentioned words.

Secondly, the assigned construal levels vary for the exact same word between persons. An illustrating example is the word ‘global warming’ (orig.: opwarming), which was mentioned by three participants (*P01, P08 & P09*) in their respective interviews as shown in table 2. When asked why they associated this word with climate change the answers of two people can be viewed as abstract depictions of the term ‘global warming’:

"Yes, due to global warming, actually. And yes, that's it. I don't know how to further explain that." (P01, age 22, female).

"Yeah, I have a bit of the idea that you always hear the same and that it has been going on for a few years. But actually, not much is happening." (P8, age 21, female)

Whereas another person provided a very concrete construal for the term 'global warming' in relation to climate change:

"It cools down for a while. It gets warmer again. Only the last time it got warmer for a while, we as humans weren't there yet. I also see it for nature itself as not necessarily something negative." (P09, age 24, male).

The same applies for the term 'CO₂' which was mentioned by two participants. Whereas one participant had a very general and emotionally loaded answer, which can be regarded as more abstract:

"Well, the feeling I have about it is that I actually think, collectively, we are not doing very well. We are actually ruining things here." (P06, age 46, male)

Another participant provided an explanation which was very specific for their field of work and described a relatively more complex construal for the term CO₂:

"When I look at agriculture, CO₂ is crucial. As in, you store CO₂ in the soil. That is so important. Only that doesn't happen now because of plowing and fertilizers and such. And then it just goes into the air, and then you are even less resilient to extreme weather conditions." (P07, age 23, male)

These results show that each person has a very different construal for the exact same term. In several instances a certain term is described within a very specific context containing much personal significance to the participant. While describing the reasoning behind this term in relation to climate change, participants tend to wander away from the topic climate change, per example in the quotation above. This makes for a very concrete description of the term 'CO' itself. However, the relationship to climate change fades to the background, thus making the assigned construal score significantly less useful to measure psychological distance towards climate change with.

Table 3*Construal ratings per word*

English Word	Original Dutch Word	Construal Score (Participant ID)
Biodiversity	Biodiversiteit	5 (P07) 5 (P07)
China	China	5 (P10) 3 (P10)
Challenges	Uitdagingen	X (P11)
Climate change	Weersverandering	5 (P09) 2 (P11) 4 (P11)
CO2	CO2	2 (P06) 1 (P07) 5 (P07)
Cold	Kou	4 (P13)
Concerning	Zorgelijk	2 (P05) 1 (P01)
Drought	Droogte	4 (P02)
Electricity Costs	Elektriciteitskosten	5 (P03)
Extreme Weather	Weersextremen	5 (P07)
Gasoline Prices	Benzineprijzen	3 (P03)
Global issue	Wereldthema	2 (P05) 4 (P05)
Global Warming	Opwarming	0 (P01) 2 (P08) 2 (P08) 5 (P09)
Government	Regering	3 (P05)
Heat	Hitte	3 (P04) 2 (P04)
Humanity	Mensheid	3 (P12)
Ice	Ijs	2 (P02)
Industry	Industrie	2 (P10) 4(P10)
Meat Consumption	Vleeseten	4 (P01)
Moisture	Vocht	4 (P13)

Nature	Natuur	4 (P04)
		4 (P12)
Nitrogen Policy	stikstofbeleid	4 (P04)
Nitrogen	Stikstof	4 (P08)
North Pole	Noordpool	2 (P10)
Panic	Paniek	2 (P06)
Politics	Politiek	3 (P08)
Save the Turtles	Save the turtles	5 (P03)
		2 (P03)
Stress	Stess	2 (P01)
Sustainability	Verduurzaming	3 (P09)
Warmth	Warmte	1 (P06)
		2 (P06)
		4 (P13)
Water	Water	4 (P02)
Weather	Weer	4 (P12)
		4 (P12)

Lastly, the task to name three words which you associate with climate change has proven to be a hard question to answer, since many people experience difficulty naming words which are directly linked to climate change. From the results it is noticeable that many participant link their two or all three words with each other. This, at times, does result in three words associated with climate change. However, there are also instances in which participants draw a greater association with their previously mentioned term. An example is one case where the participant was asked to elaborate on their third mentioned term ‘electricity costs’ and why they associate it with climate change. Their response showed that while thinking of a third term, the train of thought had become further removed from the initial topic of climate change. Instead, their second term ‘gas prizes’ had prompted their choice of word:

"Yeah, I couldn't think of anything else, and I had to think of expensive things because I think gasoline, at the same time, went up with heating and electricity costs." (P03, age 21, male)

In addition, there have been several cases in which participants named two terms which were each other's opposites. For example, 'cold' and 'warmth', or 'water' and 'drought'. In these instances it is noticeable that

Dimensions of psychological distance

Construal, temporal and geographical distance

The very last question of the interview, which was designed to explore people's mental construal of the concept 'climate change' ended up providing the most suitable fundament for assigning initial construal scores, in order to measure psychological distance (appendix E1). The question was formulated: 'in your own words, can you describe the concept 'climate change'? Participants were not given any more direction other than the formulation of this very question, and were encouraged to interpret and answer this question whichever way they preferred. The nature of the question contains simple enough instructions and it is clear the main topic concerns 'climate change'. Nevertheless, it gives the participant complete freedom to either take their answer in an abstract, or concrete direction. This was a basis that was lacking when attempting to fit a construal score to terminology on climate change.

The answers to the question to measure temporal distance were also fit to assign a scoring scale to. Participants either answered with an estimated amount of years, or their answer describes either the near or distant future. The specific data extracts that were used to attain the scores in table 3 can be found in appendix E2.

Geographical distance was also answered in ways to fit a certain scoring system. The answers given by participants were scored in one of four categories, varying in levels of psychological distance. The used data extracts used to assign these categories can be found in appendix E3

Table 3*Summary of psychological distance scores for construal, temporal- and geographical distance*

Participant ID	Construal score (0-5)	Temporal distance score (0-5)	Geographical distance score (1-4)
01	0	3	2
02	5	1	1
03	4	-	3
04	3	5	4
05	3	2	1
06	4	4	4
07	4	4	3
08	2	2	-
09	5	5,2	1
10	4	5	2
11	2	5	3
12	-	-	-
13	3	1	-

Table 3 shows a summary of the scores each participant was assigned on construal, temporal- and geographical distance. We see some consistencies in scorings of P06, P07 and P08 between construal and temporal distance. However, overall there is not a significant amount of participants scoring consistently in psychological distance level on all three dimensions. Thus, scoring very abstract on construal does not necessarily mean an individual also feels more psychologically distant on a temporal or geographical level.

Sentiment

The results show that a large amount of participants associate a feeling of despondency (orig.: ‘moedeloosheid’) and powerlessness (orig.: ‘machteloosheid’) with the concept climate change. When asked why participants felt this particular way, many answered that they do not think their individual

efforts of climate action could actually contribute to making a significant difference in the battle against climate change. This group consists mainly of participants between 20-50 years old.

For many people, including myself, it's quite challenging because you don't see immediate change. It gives a strong feeling that all these things, like the gasoline prices and such, don't really have an impact, making it seem like you're doing it all for nothing". (P03, age 20, male)

"That when you look around, and you see that all the other people just don't care and do whatever they want. And that, you know, they do the same in other countries... then the little bit I do here, it just doesn't make any difference at all. So sometimes I think, well, I don't think we can solve this." (P10, age 28, male)

Participants of relative older ages (P04, P12, P13) report the most feelings of sadness (orig.: 'triest') when describing how the changes in nature due to climate change. The, according to them, noticeable changes that nature is suffering are being labelled as unfortunate (orig.: 'jammer').

The participants (P02, P07, P09) reporting little to no sentiment towards climate change all have relatively high construal scores according to the results of table 3, indicating a concrete construal of the concept 'climate change'.

"I find it difficult because, on the one hand, to a certain extent, it's a natural thing, right? Over millions of years, it goes up and down." (P09, age 24, male)

"The word says climate change. I don't necessarily think... Well, I do think that it's not necessarily that temperature is a problem. [...] So, the change in climate? Yes, that is not necessarily bad or good, I think. Yes, but perhaps it requires more adaptability." (P07, age 22, male)

Participants P07 and P09 both demonstrate extensive knowledge on the topic climate change. P07 shares that they have studied geography and climate change was a large part of his studies as a full-time student. P09 works as a farmer full-time and mentions that in his daily routine he is confronted with climate change and business choices they have to make regarding this subject. Thus,

this indicates a relationship between extensive knowledge on climate change and concrete construal of this topic, involving little sentiment.

Discussion

As we embark on the discussion, it is essential to revisit the overarching goal of this study, which aimed to unravel the intricacies of how individuals conceptualize the climate crisis and to provide more insights into variations in construal levels associated with climate change. By gathering qualitative data through in-depth interviews we sought to discern varying degrees of concreteness or abstractness in individual words/terms and the different dimensions of psychological distance as described by CLT.

Firstly, it has become evident that assigning a numerical score to individual words does not accurately reflect the psychological distance a person may have towards climate change. The observation that a single word can elicit varying degrees of concreteness or abstractness underscores that mental construal is not solely influenced by the choice of words. Hence, it appears that the selection of words serves as building blocks to facilitate the formation of a mental construal, rather than providing an indication of the construal level itself. The notion that certain words attributed to a construal score can be a predictor and influencer of behaviour has been found in a study by Aerts et al. (2017). However, this involved a scenario in which the object of focus was a tangible product. However well-known the concept climate change is to the participants, the majority have stated to lack in-depth knowledge on the topic. Many participants were reluctant to assert claims or opinions, consistently emphasizing their perceived lack of expertise in climate change. Even when assured that there were no wrong answers and the focus was on personal views, respondents remained hesitant to provide responses. Another factor of difficulty is that, according to Brugger (2020), construal is often wrongly assumed as a stable individual belief. As an individual's beliefs evolve over time, the construal level is also subject to change. This introduces another layer of complexity to the scoring of individual words and their construal scores.

Secondly, the findings also revealed a tendency among participants to interconnect the three mentioned words. Whether through closely related terms like 'ice' and 'water,' or through opposites like 'cold' and 'warmth,' participants consistently intertwined these words. Even after being informed that the words would be addressed individually, most participants naturally incorporated two or all three words into their detailed explanations regarding their association with climate change. A noteworthy observation taken from this result is that individuals tend to avoid compartmentalizing distinct topics within climate change. Departing from the central theme of a question and incorporating new or previously discussed topics indicates an interconnected mental construal. It suggests a preference for discussing the overarching narrative rather than focusing on isolated elements. The concept aligns with Fisher's Narrative Paradigm Theory (1984), which posits that humans are natural storytellers. Fisher argues that storytelling enhances the coherence and persuasiveness of narratives, as it aids in structuring interrelated topics into a coherent whole. This perspective is further supported by Connelly and Clandinin (1990), who contend that storytelling is inherent to human communication, regardless of the medium employed. They suggest that individuals continuously construct narratives based on personal experiences and beliefs, even still when they are not speaking or writing. The tendency to interlink topics into a coherent narrative may significantly influence the mental construal of concepts such as climate change. This introduces an additional layer of complexity in assigning distinct construal scores to individual words or even topics. Alternatively, it may indicate that an alternative approach is more appropriate for assessing construal in the selection of words.

Lastly, the data from two participants, specifically P07 and P09, yielded particularly noteworthy results compared to the rest of the dataset. What distinguishes these two participants is their extensive pre-existing knowledge of climate change and its associated complexities. Notably, their construal scores on the terms and general construal of the climate crisis were consistently 4 or 5, the highest among all participants, indicating that their analysed data extracts predominantly comprised detailed and concrete descriptions. Another noteworthy result was the fact that these two participants expressed little to no sentiment towards the topic climate change, unlike the other participants in the dataset, of which the majority expressed feelings of power- and hopelessness when thinking about climate change. These contrasting results between participant P07 and P09 compared to

the rest of the dataset seem to be in perfect accordance with the Dual-Process Theory. The Dual-Process Theory, which describes that human cognition and decision-making involve two distinct systems. System 1 is characterized by automatically and intuitively, relying on heuristics and associative thinking. System 2 involves conscious, deliberate, and analytical thinking (Ližardo et al., 2016). In this case participants P07 and P09 possess the features of system 1 which include: readily available knowledge together with concrete and contextualized descriptions of the topic (Frankish, 2010). System 1 is also characterized by rationality, which can form an explanation for the lack of sentiment shown by participant 07 and 09.

Strength and limitations

While acknowledging its strengths, this research also recognizes its limitations. The formulation of questions could have been refined to ensure that responses remained closely aligned with the initial topic. Initially, questions were intentionally crafted to allow participants the freedom to express their genuine and spontaneous thoughts, minimizing potential bias or undue influence towards overly specific topics. However, this approach posed challenges during data analysis, particularly when attempting to assign a scale to vastly different responses that fell outside the scope of conventional rating scales. Nevertheless, due to the huge amount of data available it was possible to show that construal is too complex of a concept to be attributed to individual words.

Furthermore, the absence of a second researcher to independently score the construal level of the data extracts is worth noting. Typically, involving a second researcher would enhance the validity and reliability of construal scores per word, thereby strengthening the overall analysis. Regrettably, due to constraints in time and resources, this task was carried out by a single individual.

Recommendation For Future research

Upon examining the results, it becomes evident that the dual process theory aligns with our findings. Further exploration of this theory may offer valuable insights into how to encourage more proactive climate action among individuals. This observation was prompted by the divergent results and responses from two participants who possess in-depth knowledge of climate change. Additionally, investigating the potential overlap between dual-process theory and CLT could yield interesting

insights. Since dual-process theory also distinguishes between concrete and abstract thinking, exploring whether this aligns with CLT would be intriguing.

Furthermore, exploring generational differences in attitudes toward climate change could be insightful, given the differing sentiments between younger and older individuals. Among younger participants, there was a notable sense of helplessness when considering the climate crisis.

Given that the dataset captures a wealth of data on people's initial associations with climate change without significant bias or steering of topics through interview questions, it serves as an excellent resource for conducting thematic analysis. This may lead to further insights into the construal of the climate crisis.

Conclusion

The in-depth interviews on the mental construal of the climate crisis have led to the conclusion that construal level theory (CLT) is not directly applicable to individual words. The mental construal of a concept like climate change is more complex, involving sub-concepts that can be perceived as either concrete or abstract. This suggests that CLT needs further research to solidify it as a sound framework suitable for potential interventions, such as instigating climate mitigation and adaptation behaviours. Nevertheless, the data has yielded valuable insights into the actual mental construal of concepts, with indications that alternative psychological theories and frameworks, such as dual-process theory, may be more appropriate for implementing behavioural climate interventions.

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Appendix A

INFORMATIE FORMULIER

De conceptualizatie van klimaatverandering: een kwalitatief onderzoek

DOEL VAN HET ONDERZOEK

Het doel van dit onderzoek is meer inzicht creëren in hoe mensen over klimaatverandering denken en het conceptualiseren. Hierbij hebben we u hulp nodig. Wij horen graag over uw visie en mening met betrekking tot klimaatverandering.

Dit onderzoek wordt uitgevoerd door Jenny Nguyen ter voldoening aan de eisen van het bachelor programma Psychologie aan de Universiteit Twente onder begeleiding van Dr. Anne van Dongen.

HOE GAAT HET TE WERK?

Voor dit onderzoek zullen wij een interview afnemen wat 10-20 minuten zal duren. Gedurende het hele interview zullen er audio/video opnamen gemaakt worden die vervolgens worden uitgeschreven. We vinden het belangrijk dat u weet dat u in dit onderzoek niets fout kunt doen of zeggen. Het gaat ons er juist om dat we uw ideeën en mening horen. Hiervoor heeft u geen enkele voorkennis nodig.

Bij deelname bevestigt u dat u onderstaande informatie heeft gelezen en begrijpt. Zorgt u alstublieft dat u onderstaande informatie heeft gelezen en begrepen voordat u verder gaat.

POTENTIELE RISICO'S EN ONGEMAKKEN

Iedereen die 18 jaar of ouder is, de Nederlandse taal beheerst en in Nederland woont kan deelnemen. Er zijn geen fysieke, juridische of economische risico's verbonden aan uw deelname aan deze studie. U hoeft geen vragen te beantwoorden die u niet wilt beantwoorden. Uw deelname is vrijwillig en u kunt uw deelname op elk gewenst moment stoppen.

VERTROUWELIJKHEID VAN GEGEVENS

Wij doen er alles aan uw privacy zo goed mogelijk te beschermen. Er wordt op geen enkele wijze vertrouwelijke informatie of persoonsgegevens naar buiten gebracht, waardoor iemand u zal kunnen herkennen. Voordat onze onderzoeksgegevens naar buiten gebracht worden, worden uw gegevens zoveel mogelijk geanonimiseerd.

In een publicatie zullen anonieme gegevens worden gebruikt. De informatie die in het kader van deze studie wordt verzameld, wordt opgeslagen op een beveiligde locatie bij de Universiteit Twente. De onderzoeksgegevens worden bewaard voor een periode van 10 jaar. Na het verstrijken van deze termijn worden de gegevens verwijderd. De onderzoeksgegevens worden indien nodig (bijvoorbeeld voor een controle op wetenschappelijke integriteit) en alleen in anonieme vorm ter beschikking gesteld aan personen buiten de onderzoeksgroep.

Dit onderzoek is goedgekeurd door het ethische commissie van de faculteit Behavioural, Management and Social studies (BMS) aan de Universiteit Twente en geregistreerd onder nummer 231216.

VRIJWILLIGE DEELNAME

Deelname aan dit onderzoek is geheel vrijwillig. U kunt als deelnemer uw medewerking aan het onderzoek te allen tijde stoppen, zonder opgaaf van redenen. Omdat u anonieme gegevens aanlevert

worden de gegevens die u hebt verstrekt tot het moment van intrekking van de toestemming in het onderzoek gebruikt.

In het geval dat u vragen of zorgen heeft met betrekking tot dit onderzoek en de manier waarop gegevens worden behandeld, kunt u contact opnemen met

Jenny Nguyen: t.t.n.nguyen@student.utwente.nl

Dr. Anne van Dongen: a.vandongen@utwente.nl

Voor bezwaren met betrekking tot de opzet en of uitvoering van het onderzoek kunt u zich ook wenden tot de Secretaris van de Ethische Commissie / domein Humanities & Social Sciences van de faculteit Behavioural, Management and Social Sciences op de Universiteit Twente via ethicscommittee-hss@utwente.nl. Dit onderzoek wordt uitgevoerd vanuit de Universiteit Twente, faculteit Behavioural, Management and Social Sciences. Indien u specifieke vragen hebt over de omgang met persoonsgegevens kun u deze ook richten aan de Functionaris Gegevensbescherming van de UT door een mail te sturen naar dpo@utwente.nl.

Tot slot heeft u het recht een verzoek tot inzage, wijziging, verwijdering of aanpassing van uw gegevens te doen bij de Onderzoeksleider.

Appendix B

Toestemmingsformulier

De Conceptualisatie van de Klimaatverandering: een Kwalitatief Onderzoek

Gelieve de juiste vakjes aan te vinken

Ja Nee

Deelname aan het onderzoek

Ik ben voldoende geïnformeerd over het onderzoek door middel van het informatieblad. Ik heb het informatieblad gelezen en heb daarna de mogelijkheid gehad vragen te kunnen stellen. Deze vragen zijn voldoende beantwoord.

Ik neem vrijwillig deel aan dit onderzoek. Er is geen expliciete of impliciete dwang voor mij om aan dit onderzoek deel te nemen. Het is mij duidelijk dat ik deelname aan het onderzoek op elk moment, zonder opgaaf van reden, kan beëindigen. Ik hoef een vraag niet te beantwoorden als ik dat niet wil.

Gebruik & vertrouwelijkheid van onderzoeksdata

Ik begrijp dat de informatie die ik verstrek gebruikt zal worden voor dit onderzoek en andere relevante onderzoeken in geanonimiseerde vorm.

Ik begrijp dat persoonlijke informatie die over mij verzameld wordt en mij kan identificeren, (bijvoorbeeld mijn naam of waar ik woon), niet gedeeld zal worden buiten het onderzoeksteam.

Ik geef toestemming om mijn antwoorden in anonieme vorm te gebruiken voor quotes in de onderzoekspublicaties.

Toestemming met audio/video opname

Ik geef toestemming om tijdens het interview opnames (geluid / beeld) te maken en mijn antwoorden uit te werken in een transcript.

Toekomstig gebruik onderzoeksdata door derden

Ik geef toestemming om de bij mij verzamelde onderzoeksdata te bewaren en te gebruiken voor toekomstig onderzoek en voor onderwijsdoeleinden in anonieme vorm.

Handtekeningen

Naam Deelnemer

Handtekening

Datum

Naam Onderzoeker

Handtekening

Datum

Contactgegevens onderzoeksteam:

Jenny Nguyen: t.t.n.nguyen@student.utwente.nl

Anne van Dongen: a.vandongen@utwente.nl

Contactinformatie voor vragen over uw rechten als onderzoeksdeelnemer

Voor bezwaren met betrekking tot de opzet en of uitvoering van het onderzoek kunt u zich ook wenden tot de Secretaris van de Ethische Commissie / domein Humanities & Social Sciences van de faculteit Behavioural, Management and Social Sciences op de Universiteit Twente via ethicscommittee-hss@utwente.nl. Dit onderzoek wordt uitgevoerd vanuit de Universiteit Twente, faculteit Behavioural, Management and Social Sciences. Indien u specifieke vragen hebt over de omgang met persoonsgegevens kun u deze ook richten aan de Functionaris Gegevensbescherming van de UT door een mail te sturen naar dpo@utwente.nl.

Appendix C

INTERVIEW PLAN

CONCEPTUALISATIE VAN DE KLIMAATCRISIS: EEN KWALITATIEF ONDERZOEK

1. *Toestemmingsformulieren*

- a. Geef de deelnemer het toestemmingsformulier en geef hem/haar genoeg tijd om het geheel door te lezen
- b. Vraag de deelnemer of hij/zij vragen heeft, beantwoord deze
- c. Laat de deelnemer het toestemmingsformulier tekenen

2. *Start interview*

- a. *Ik start nu de audio/video opname. Vanaf dit moment zal het interview starten en wordt alles wat gezegd wordt als onderzoeksdata beschouwd.*
- b. *Ik zal nogmaals een korte samenvatting van het onderzoek geven. Wij gaan het hebben over het onderwerp klimaatverandering. Klimaatverandering definiëren we als de lange-termijn veranderingen in temperatuur en weerpatronen. Ik ga je zo dadelijk een paar vragen stellen. We vinden het belangrijk dat je antwoord met wat het eerst in je opkomt. Dit betekent dus ook dat er geen foute antwoorden mogelijk zijn.*
 - i. *Hierbij de eerste vraag. Wat zijn de eerste drie woorden/termen die in je opkomen als je denkt aan het onderwerp klimaatverandering?*
 - Term X
 - Term Y
 - Term Z

**Schrijf genoemde termen op*
 - ii. *Laten we verder gaan op Term X. Kan je mij meer vertellen over waarom je dit woord associeert met klimaatverandering?* *Laat deelnemer zo vrij mogelijk praten zonder het onderwerp in een bepaalde richting te sturen*
 - iii. *Probing vragen:*
 - *Hoe voel jij je als je over dit onderwerp praat/nadenkt?*
 - *Weet je nog wanneer je voor het eerst van deze term/dit concept hoorde?*
 - *Heeft deze term/dit concept invloed op jouw keuzes om dingen te doen die helpen de klimaatcrisis tegen te gaan?*
 - iv. *Herhaal deze opzet voor de andere twee genoemde woorden/termen*
 - v. *Algemene vragen over klimaatverandering:*

- *Wie zal getroffen worden door de effecten van klimaatverandering volgens jou? (social distance)*
- *Waar vinden de effecten van klimaatverandering plaats volgens jou? (geographical distance)*
- *Wanneer denk je dat we de effecten van klimaatverandering zullen ervaren? (temporal distance)*
- *In hoeverre denk je dat de effecten van klimaatverandering werkelijk ervaren gaan worden?*
- *Hoe voel je je bij het onderwerp klimaatverandering? (sentiment)*
- *Kunt u klimaatverandering in uw eigen woorden beschrijven, in een paar woorden? (construal)*

3. Demographics

- a. Dan wil ik je nog een paar afsluitende vragen stellen.
 - i. Ten eerste, wat is je leeftijd?
 - ii. Wat is jouw gender?
 - iii. Wat is de hoogste opleiding die je hebt gevolgd met een behaald diploma?

4. Sluit interview af

Dat waren voor nu al mijn vragen. Heb je zelf nog iets toe te voegen over een gestelde vraag, of iets wat nog binnenschiet?

Geef deelnemer de tijd om te antwoorden

Bedankt voor je deelname aan ons onderzoek. Het wordt heel erg gewaardeerd. Heb je op dit moment nog vragen of opmerkingen over dit onderzoek?

Beantwoord eventuele vragen

Dan stop ik bij deze de opname en is het interview afgesloten

Appendix D

Table 1

Participant 01 Construal Score of Terms

Term	Construal Score	Data Extract
Opwarming	0 Simple Decontextualized General	"Yes, due to global warming, actually. And yes, that's it. I don't know how to further explain that."
Vleeseten	4 How Subordinate goals Focused on means	"A few years ago, I was really engaged in it. I didn't eat meat, and I bought a lot of zero-waste products and such, those kinds of things. But lately, I've been doing too little because I... It's actually quite foolish because it causes me a lot of stress, yet I still don't do enough about it."
Stress	2 Simple General	"It gives me quite a bit of stress, especially lately when you see that there are so many storms. Floods? Yes, I don't know. It makes me quite nauseous, and I also notice that I worry a lot about it daily because it seems to be getting worse and worse."
Stress	2 General Core	"I just find it sad that we are actually destroying this earth; it's just really disheartening. We have something beautiful, and we've actually damaged it so much. That makes me sad as well, for example."
Stress	2 Decontextualised Simple	"Imagine, if you want to have children? Then you're bringing them into a world that is essentially beyond repair. And I also think, yes, I don't believe it's advisable to bring children into this world anymore."

Table 2

Participant 02 Construal Score of Terms

Term	Construal Score	Data Extract
Ijs	2 General Simple	"Because the temperature is causing the ice to melt on the North Pole? You hear that a lot in the news these days."
Water/Droogte	4 Specific Secondary	"Yes, everything is changing, and due to certain droughts, people don't get vegetables that don't grow well, or because of too much rain, things like rice can't be harvested. Because there is no water. So, it has an impact on the entire world, I think."
Water/Droogte	4 Experienced based meaning acquisition Secondary Contextualised	"The prices of my goods are going up, so with all the weather changes, for example, in Asia, if there's too much drought or too much water, there are a lot of crop failures, and that affects prices. I notice it in my prices too, when I purchase them. That's why it came to my mind."

Table 3

Participant 03 Construal Score of Terms

Term	Construal Score	Data Extract
Save The Turtles	5 Specific Contextualized	"Yes, paper straws. It's annoying, but now that they're here, you just have to accept it. However, every time you drink, for example, a milkshake or something like Caprisun with a paper straw, you can't puncture through that Caprisun thing. Yes, that's irritating, but other than that, not much."
Save The Turtles	2 Why Superordinate goals	"Because it's not something big, I think, climate change. It's not really in your immediate surroundings. Then it doesn't feel like you're making an impact, but you are hindered yourself, yes."

Benzineprijzen	3 decontextualized	"I think it's mainly just all irritation because it hinders your daily life."
BenzinePrijzen	3 Why General Superordinate goals	But, I think it's particularly challenging for many people, including myself, because you don't see any immediate change. And then, it gives a strong feeling as if all those things like gasoline prices, it feels like it doesn't really have an effect, and you're doing it a bit for nothing. I think that's the biggest irritation."
Energiekosten	5 Goal irrelevant	"Yeah, I couldn't think of anything else, and I had to think of expensive things because I think gasoline, at the same time, went up with heating and electricity costs."

Table 4

Participant 04 Construal Score of Terms

Term	Construal Score	Data Extract
Hitte	3 Can be experienced directly through senses	"Yes, because you experience that. It's just hotter in the Netherlands with extreme summers now."
Hitte	2 Language-based meaning acquisition Core	"From the early 1900s until now, when you see the graphs and how high it has become, you think, yeah, just look at that. It's already well underway. It has also changed significantly with industry and everything. If you look a century ago at what it was then and what it is now."
Stikstofbeleid	4 peripheral	"And about the farmers. I don't know if the farmers are the solution because it's also the industry, it's also flying. It's not just the farmers, but you do hear that a lot as well."
Stikstofbeleid	4 Secondary	

	Complex Specific	"But yeah, due to climate change, because it's getting warmer, you always see different birds coming or staying. Or they don't leave anymore. Other plants start blooming, shifting. The nettles proliferate because you know they thrive on nitrogen."
Natuur	4 Experience based language acquisition	"If you saw them back when we were there in the 80s. That booklet was from the 60s. How much ice, back then, how much ice was there. And then in the 80s, and now there's almost no snow. It has changed tremendously."

Table 5

Participant 05 Construal Score of Terms

Term	Construal Score	Data Extract
Zorgelijk	2 Deductive General	"Everyone is bombarded with it in the media and all other communication channels people have access to. And that makes it somewhat easy to worry about it when you constantly hear about it. You think a lot about it, considering its implications for me, and perhaps for the people after me?"
Zorgelijk	1 Superordinate goals Goal relevant	"When I see that, it gives me a bit of a helpless feeling. It's such a big problem, and it's difficult to see how we can solve it and especially how you can contribute to solving it."
Wereldthema	4 Specific Can be experienced directly through senses	"But sometimes you see, for example, in some places, that the rising sea level is actually visible in another place. Areas in Asia, for instance, like I think Vietnam or other places, where entire areas become dry. Where people used to have to live on stilts. That is very real, so to speak, that is very tangible, and then you can see."

Wereldthema	2 Core	"But I don't think we should shame people, in parentheses, for things they do while it's more of a global problem and not a one-on-one personal problem for individuals."
Regering	3 Simple General	"Large powerful countries need to come together to solve it. And not necessarily that I should drive less, I think."

Table 6

Participant 06 Construal Score of Terms

Term	Construal Score	Data Extract
CO2	3 General	"Yes, the CO2 emissions are getting worse, increasingly worse worldwide. Due to, you know, vehicle exhaust fumes, factories, it's actually getting worse."
CO2	2 Simple General	"Well, the feeling I have about it is that I actually think, collectively, we are not doing very well. We are actually ruining things here."
Warmte	1 General Simple	"That also comes from the news and is more about global warming."
Warmte	2 Deductive	"The warmth and CO2 are, of course, somewhat linked. [...] The warming is, among other things, a consequence of that CO2 emission."
Paniek	2 Why Decontextualized	"It's not that I'm in a panic, that it makes me panicky. But the whole world seems to be really panicking about it."
Paniek	2 Deductive Cannot be experienced directly through senses	"Yeah, and now we're at a point where it seems like we can't really do much about it anymore."

Table 7

Participant 07 Construal Score of Terms

Term	Construal Score	Data Extract
Weersextremen	5 Experienced based meaning acquisition Contextualised	"I remember that well. It's, well, good in any case that... but since 2018, every year, you encounter something new and truly bizarre with just enormous long periods of rain or, on the contrary, drought. [...] Yeah, that has so much influence on how you farm and the choices and decisions you make."
Biodiversiteit	5 Specific Experienced based meaning acquisition Contextualised	"Because biodiversity is very important for maintaining a good crop, I think, at least as a farmer. The better the biodiversity or the more biodiversity, the better the crop is protected against extreme weather conditions."
Biodiversiteit	5 Specific Complex Subordinate goals	"Yeah, everything becomes a bit monotonous, and you also see in the grasslands, for example, on many farms. Then you actually always see just one type of grass, English ryegrass."
CO2	1 Simple General Why	"Because with climate change, I just automatically think of CO2. Somehow. I'm not saying that's the cause or the... of the whole situation. I think it's, you know, quite simple. As in, CO2 is the problem, I don't think that."
CO2	5 Complex Specific	"When I look at agriculture, CO2 is crucial. As in, you store CO2 in the soil. That is so important. Only that doesn't happen now because of plowing and fertilizers and such. And then it just goes into the air, and then you are even less resilient to extreme weather conditions."

Table 8

Participant 08 Construal Score of Terms

Term	Construal Score	Data Extract
Opwarming	2 General	"Yeah, I have a bit of the idea that you always hear the same and that it has been going on for a few years. But actually, not much is happening."
Opwarming	2 Superordinate goals Core	"I always take the environment into account a bit. But it's not like I now think, oh, I can take the big step to counteract global warming. Yeah, I don't have that. No."
Stikstof	4 Specific Contextualized	"It's always quite a discussion because on one side, there are those who are very much in favor of reducing all that livestock and everything, and then you have all the farmers with us who are very much involved in those protests and say, no, it's our job, our livelihood. And I think I've kind of stood in the middle of all those, yes, all those people, discussions, and everything. And yes, nitrogen is, of course, a big part of climate change and the environment."
Politiek	3 Contextualized	"Because the elections are coming up soon, and climate change is quite a significant part of the political discussions and such. And yeah, it just came to me because I thought, well, I've seen that a lot now as I was going through all the plans of the parties. And actually, in every plan, there is something about climate change."
Politiek	3 Secondary Inductive	"Yeah, sometimes a bit endless, and then sometimes I think people use the climate change point purely to attract people to them, while it's not actually true or something they say. Because everyone says, oh, we have to do something about it, but no one has a concrete plan of what will actually happen."

Table 9*Participant 09 Construal Score of Terms*

Term	Construal Score	Data Extract
Verduurzaming	3 Focus on means	"...what can we do about it? Because yes, the general consensus is that it's bad, so we want to limit it as much as possible."
Verduurzaming	3 Focus on means	"How can we ensure that we become energy-neutral, that we don't emit additional greenhouse gases? Not more than we do now, actually bringing it back to zero?"
Verduurzaming	1 Superordinate goals	"In an ideal world, of course, we would be completely sustainable. I do have doubts about how realistic that is."
Weersverandering	5 Experienced directly through senses	"Because those are actually the most visible consequences that you see first."
Weersverandering	5 Specific Complex Peripheral	"For example, if it warms up or the weather becomes more extreme, you will likely get climate refugees. Because it's just too dry and too hot in certain areas of the world. The closer you get to the Sahara. So then, yes, you can no longer grow food there, and it becomes impossible to live there."
Opwarming	5 Peripheral	"It cools down for a while. It gets warmer again. Only the last time it got warmer for a while, we as humans weren't there yet. I also see it for nature itself as not necessarily something negative."

Table 10*Participant 10 Construal Score of Terms*

Term	Construal Score	Data Extract
Industrie	2 Central	

	Core	"Initially, they say, of course, that the whole drama started with the industrial revolution, but yeah, we're still at it just as strongly?"
Industrie	4 Can be experienced directly through senses Surface	"And a very large part of the emissions, yeah, I think it comes from there. I think that's the image when you drive past those factories, that you see all that stuff going into the air?"
Noordpool	2 General Essential features	"I think it's already ingrained in me from seeing it on the news. Seeing breaking ice floes. And global warming, and the Netherlands is vulnerable because it's below sea level, and it's just the standard that is presented to you and how you might first come into contact with the phenomenon of warming and change, and that's really ingrained from the start."
China	5 Specific	"In my mind, I don't know if it's correct, but always the biggest emitter, more or less, and a lot of junk is produced in the world, all that plastic stuff you can order on AliExpress. And no one benefits from it, and it breaks after two uses."
China	3 Focus on the means	"China is one of the countries that says, we won't participate in climate agreements. You messed things up 100 years ago. We still have some catching up to do before we are at the same level as you now, which I understand to some extent, but a lot of knowledge and developments are already available precisely because we've been through that. So why don't they just apply it? Because they know damn well."

Table 11

Participant 11 Construal Score of Terms

Term	Construal Score	Data Extract
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Weersveranderingen	2 Decontextualized Language-based meaning acquisition	"Well, you get bombarded with that on the media; coincidentally, just last night, we were confronted with it in a very ordinary program, 'Boer Zoekt Vrouw' (Farmer Wants a Wife)."
weersveranderingen	4 Specific Goal irrelevant	"For example, you have fewer butterflies and fewer of certain animals. Especially butterflies, I think."
Uitdagingen	0	"Perhaps it's dawning on you that addressing climate change ultimately falls on your shoulders. You may have initially looked to the world or politics for solutions, but as their inaction becomes clear, it's becoming increasingly evident that action begins with you."

Table 12

Participant 12 Construal Score of Terms

Term	Construal Score	Data Extract
Weer	4 Experienced based meaning acquisition	"Yes, extreme drought now. Lots of rain now. A winter with snow and such, as a little boy, we used to go sledding on the road, that's not possible anymore, also not with the traffic, of course, but also not. There's no snow anymore."
Weer	4 Unstructured Experience based meaning acquisition	"In the past, you had more winters and more beautiful winters than nowadays. There was snow, and then a snowplow would come to clear the road, and then [inaudible] put a bit of sand on it. But now it's salt and paved roads because people don't have time anymore."
Natuur	4 Experienced based meaning acquisition	"Less water is drained off. In the past, meadows were also flooded, and then we would skate in the

	Specific	winter. Yeah, and yeah, you still see that. Well, now yes. But I mean, that's also increasing."
Mensheid	3 Subject to change Unstructured	"And I find humanity changing too, more hostile towards each other than before. You get hit or stabbed right away, or shot dead, or whatever. Then I think humanity itself is also changing, in nature, I find."

Table 13

Participant 13 Construal Score of Terms

Term	Construal Score	Data Extract
Kou/Warmte	4 Goal irrelevant Experience-based meaning acquisition	"That's the thick blood. Too thick blood in my body. And then in the winter months, I actually prefer not to go outside much. You have to, right? Because you have to do groceries, you have to visit people, right?"
Kou/Warmte	4 Secondary Specific	"People come here, you invite people, and then I have dead fingers and dead toes, and then you think, oh, darn, I don't want that, so I stay because I have enough hobbies at home. Yeah, not too warm. The body still has to do something, but just at home."
Vocht	4 Experience-based meaning acquisition Specific	"In spring and summer, I have to constantly walk around with a watering can because there is no rain, and that does affect. Not only me with my vegetable garden, but also the farmers who have to work and spray. But can they always spray, so to speak?"

Appendix E

Table 1

Conceptualization of Climate Change's Construal Scores Per Participant

Participant ID	Construal Score	Data Extract
P01	0 Simple Decontextualized	"People who have made very wrong choices. And, we're actually destroying the Earth because of that."
P02	5 Specific Contextulized Goal-irrelevant Experienced-based meaning aqcuisition	"Yeah, what comes to mind for me is what I actually see first in front of my eyes, that everything is changing in terms of temperature and therefore certain things. Yes, because in my work with things like squid. Normally, we always have a certain time when the squids are caught. Lately, more and more we hear, no, we can't deliver yet because the temperature of the water is warm, and those squids have all moved to other waters. So you notice that in your work, that such things, that products for us are a bit harder to get because of all those changes and crop failures, or for example, in India, the basmati rice. That is not exported because there are many disasters there, so you notice that personally in my work. But yeah, I hear that then, yes, through the media, partly, and I notice it when my goods don't arrive, yes."
P03	4 Specific Complex	"Is the increase in CO2 in the atmosphere? I think the heat from the sun is less emitted, so to speak, less or yes, more absorbed into the earth. Therefore, the overall temperature on earth is slowly warming up."
P04	3	"The consequences of that heat and nature and nitrogen. And now all those floods too. That's nature, of course. And to summarize further, yes,

			the temperature is rising. Yes, that's it. Seawater is rising, causing a lot of marine life to go extinct or suffer badly."
P05	3		"Climate change is the main thing. The change in temperature and the sea level due to the emissions that people have been causing for a very long time. And now we need to try to slow down this upward trend as much as possible by encouraging world citizens to do something about it and take it seriously."
P06	4	Complex	"Well, I think to put it very briefly, we've undergone significant technological development in the Netherlands since around 1900, leading to increased production and the emission of toxic gases from all our sophisticated devices. This is essentially harming the Earth."
P07	4	Unstructured Goal irrelevant	"The changing weather extremes, becoming more extreme, and the rising temperature? That's essentially what I just said, but yes, along with that, there's also the loss of biodiversity. But I wonder if that's due to the changing climate or simply because we have mismanagement as farmers with fertilizers and pesticides. I'm purely looking at agriculture, so I'm not an expert in other things."
P8	2	Goal relevant General	"I think through human actions, that's why, as I mentioned, global warming is happening too quickly, nitrogen levels are too high. But it's because of what people are doing to the world. So, we are also the ones who need to stop and prevent it."
P09	5	Complex Focus on the means	"Yeah, climate change, I would say that we emit more greenhouse gases. So, yes. Essentially, we extracted fossil energy from the ground and burned it, causing CO2, among other things, to

return to the atmosphere. This traps sunlight better, leading to warming. Yes, it actually triggers a kind of chain reaction, causing permafrost to melt, releasing a lot of methane gas, which further accelerates the process. Now we've realized it might not be such a good idea and are trying incredibly hard to reduce emissions. Yes, climate change, that warming, leads to all sorts of negative weather effects and further negative consequences. Yes, yes."

P10	4	Contextualized Complex	"I think I would focus on emissions, greenhouse gases, and warming. Because there are too many people on Earth. We need things that are made and transported, and everything we do emits. And due to our own emissions, we are making the Earth warmer, and the warming of the Earth has numerous other consequences. Yes, we are making a mess of it."
P11	2	Decontextualized	"Imagine explaining to someone that nature is deteriorating when they don't know how it used to be. I know how winters were x number of years ago, 30 years ago. But I can hardly tell my children that. They don't understand. Just like explaining what a fax is. That's very challenging. No, I can't do that."
P12	4		"There is a lot of luxury regulation here, primarily related to cars, as it's not just about someone's work; many people have multiple cars or children who already own cars. Perhaps, huh? Yes, I think we should go back more to the past, use bicycles again, and all those mopeds and scooters. That's already the beginning of the youth heading in that direction. Yes, I see those boys at around 18, like Ronald has. But in the past, we did everything on our bikes. It didn't cause pollution; there was only

P13

3

Simple

Goal irrelevant

the noise of the bike, but that was it. And I think that direction has always been better, at least somewhere."

"What do you say then? Hey, take off a sweater or put on a lighter shirt. Wear something thinner or take off your undershirt, and then you can walk around in your undershirt. One child is temperature-sensitive, and the other is not. Sometimes I see boys cycling, for example, last Monday. It's Wednesday now. They come from gymnastics, just wearing a shirt with short sleeves. While I'm in the kitchen, I think: oh, don't they feel that with short sleeves?"

[...]

"From an early age, enjoy yourself, take them outside, go through the forest, and when there are a few dry days, how do you walk through all those thick leaves? You kick them in front of you, and that rustling sound, ah. And in the spring, look at those bare trees, see all those small leaves, right? You can explain things like that, but climate change. I wouldn't know, no."

Table 2*Psychological distance score of temporal distance*

Participant ID	Psychological distance score	Data extract
01	3	"Maybe two years or so, I think it's here, well, maybe that's very fast. I think it's gradually over a year, but maybe in five years, for example, we will notice it very well here."
02	1	"No, in the future. I think, I think, yes, in the future, with the generation after us, I think they will notice it more than we do now."
03		-
04	5	"Now already. That's just clear. It has been going on for a number of years already."
05	2	"Do you mean effects like in that my life is noticeably different, that I can no longer do things? It won't be longer than 20 years, I think."
06	4	"Those are already there. We already experience them now."
07	4	"Yeah, yeah, you really notice it already."
08	2	"I think it can still take a while, and that's also the problem because we don't notice it directly now." "Yeah, so I think in the short term, we won't be affected yet."
09	5,2	"Well, now already. I, you already see that those wildfires are getting more intense. You also saw very extreme weather in Italy this summer. That's not normal." "And when we will really see the consequences here in the Netherlands, I actually dare not say; it may take a while? Yes, I think at least 30, 40, 50 years, okay."
10	5	"Yesterday. Two years ago, I think. Just, how the weather is and such."."
11	5	"That's already happening, that's already happening, and it's getting worse. Yes."

12 - "That could be tomorrow. I don't know. It could be next week. It could take 10 years, but I don't know."

13 1 "I don't know, right? I think definitely, how long will that take? Well, at least, well, say 30 years. We won't live to see that."

Table 3*Psychological distance score of geographical distance*

Participant ID	Psychological distance score	Data extract
01	NN	"In any case, in other parts of the world, it is certainly much more intense. You can see that as well, including wildfires and such, you know, yes, I don't exactly know where, but in other parts of the world, it is much more severe than here."
02	OE	"Poor countries, I think. We, as wealthy countries, yeah, we... I think for poor countries, I don't know why. It's just worse for them? That's what comes to mind, especially in Asia. That's my initial thought."
03	IN	"Location-wise, geographically, I think everywhere globally, and I believe it's a bit everywhere."
04	SE	"Then you think about Limburg? Those floods are affecting them. Not us here in Barneveld yet."
05	OE	"Indonesia is somewhat central in Asia, approximately. I think there a lot. And then those that are naturally very dry, so in the middle to South Africa, I think. Those kinds of places? Yes, especially below the equator."
06	SE	"The first thing that comes to mind is Europe. Well, that's purely based on just the enormous industrial areas and huge factories and the high population density of Europe, actually."
07	IN	"Yes, everywhere you notice it, at least everywhere it's getting warmer, so there, the whole different processes come into play."
08	-	"Oh, I really wouldn't know."
09	OE	"Yes, the Gulf of Mexico with those hurricanes there, those island groups there. It's also becoming more extreme, so I think they will probably be the first to experience the consequences. Around everything

		around the equator. I think that's the first to be affected."
10	NN	"Poor countries, especially. Not so much the poor people in the Netherlands, for example, but the poorer countries. Which are usually the warmer countries."
11	IN	"Everywhere, in all the veins of society. Yes, yes, because we notice it here already, so you can say Africa or the warmer countries. But I don't think that completely holds true. No."
12	-	"Yes, those are really the people. In those poor countries who will feel it first, yes."
13	-	"Oh, I don't know. Would it be temperature, I dare not say. Temperature differences? No, I don't really concern myself with it."
