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Experiencing Climate Change: Phraseological Patterns of Perception Verbs in GenZ Climate Activism Online

Abstract

Climate change has impacted profoundly today's younger generations, primarily GenZ, shaping their worldview through first-hand experiences of environmental challenges. In response, younger people have recently mobilized, sparking a resurgence in environmentalism and an increased engagement in climate discourse on the web. Perception verbs, by indicating the sensory mode of information acquisition, are used by speakers to express what they perceive, grounding statements in personal experience and observation. Consequently, the study presents an analysis of phraseological patterns of perception verbs in a corpus of web texts from three GenZ environmental organizations to understand their perception of climate change and climate-related issues. Initially, the occurrence of perception verbs in the dataset is explored quantitatively. Subsequently, 4- and 5-grams are analysed to investigate their phraseology. Results reveal a key presence of perception verbs used predominantly to understand and communicate the complexities of climate issues, reflecting the peculiar engagement of young activists with climate change.

1. *GenZ and Climate Change*

Climate change has profoundly shaped the life experiences of the younger generation, with extreme weather events and annual record-breaking temperatures becoming a regular occurrence in their lives. Teenagers and young adults, currently grouped under the generational label of GenerationZ (GenZ) (Dimock 2023),[1] have grown up in a world where climate change has always been a part of their reality, making environmental issues a formative and pervasive experience

1 Defined by birth years ranging from 1997 to 2012 (Dimock 2019).

shared by this cohort (Benckendorff et al. 2012; Swim et al. 2022). Consequently, this generation reports a heightened sense of environmental awareness, with environmentalism being a culturally established norm, impacting their perspectives, actions and beliefs (Seemiller and Grace 2016).

The influence of environmental issues in younger people is further signified by their overexposure to, often negative, climate-information – a consequence of growing up in the digital age. This constant access to information contributes also to their deteriorating mental health (Seemiller and Grace 2019), leading in the most extreme cases to eco-anxiety, i.e., anxiety associated with the perception of climate change, even in cases in which its direct effects have not been experienced (Clayton 2020; Clayton and Karazsia 2020; Swim et al. 2022). While this plays a central role in how GenZ perceives and experiences climate change, early research has revealed that engaging online in the climate cause can have a positive influence in adapting to this challenging yet pervasive situation (Clayton 2020). As a result, young GenZ activists are emerging as powerful climate advocates who have strategically harnessed the online environment's affordances for mobilizing peers and spreading climate-related information, creating a fertile ground for engaging in climate issues (Wahlström et al. 2019; Belotti et al. 2022).

The centrality of GenZ in online climate activism represents a promising area of research that has received limited attention from a communicative standpoint thus far. Specifically, GenZ activists have employed distinct communicative strategies and have adapted their lexical choices accordingly, being influenced both by their exposure to climate change and their use of the internet as a primary communication platform. Consequently, this study looks at the use of perception verbs by GenZ activists, considering them as key to possibly revealing a peculiar understanding of climate change and its related phenomena.

2. *Perception Verbs*

Perception verbs, as described by Biber et al. (1999), are a subset of verbs denoting sensory experiences rather than mental states or attitudes. This category, including verbs such as *feel, hear, see* and *watch*, indicate various sensory modalities and describe states and activities related to perceptual experiences, with the subject typically assuming the role of the recipient of the

sensory input. For example, *see* and *hear* depict perceptual states passively experienced by the subject and are more stative, rarely appearing in progressive forms. Conversely, verbs like *look, watch, stare* and *listen* indicate active control of the sensory perception and are commonly used with the progressive aspect to signify ongoing action, reflecting an active engagement with the sensory input.

The grammatical behaviour of this group of verbs typically involves occurring with bare infinitive clauses (e.g., *I heard him sing*) or as passives controlling a clause (only for *feel*, *hear* and *see* as in *The changes were seen to have improved the performance*). The verb *see* can also be followed by a *to*-clause with a direct object noun phrase, but always with a metaphorical meaning (e.g., *She saw the project to completion*). Furthermore, perception verbs can be often followed by an object plus an *-ing*-clause, indicating the sensory experiences involved in recognizing the ongoing activity described in the *-ing*-clause. For instance, in the sentence *She heard the children playing in the yard*, the perception verb directly indicates the sensory experience of hearing, while the *-ing* clause describes the ongoing activity being recognized. Some perception verbs can be used in passive constructions, where the subject is the one being perceived, as in *He was seen to leave the house*, in which the action of leaving is being observed by someone unspecified. Similarly, they can occur in constructions with non-agentive grammatical subjects (e.g., *It seems he is unhappy*). In this case, the perception verb serves to indicate a general observation without specifying the observer (Biber et al. 1999).

Moreover, perception verbs are key in conveying evidentiality, i.e., in substantiating statements based on (perceived) evidence, through lexical means rather than grammatical ones.[2] In this case, the speaker not only describes what is happening but also indicates the source of the information, or how the information is acquired (Whitt 2010). Evidential utterances typically point to particular sources, or away from potential sources, with varying degrees of directness, as the speaker adopts a specific point of view in describing an action (Joseph 2003). This means that the speaker identifies the source of information lexically and always deictically (Whitt 2010).

The five sensory modalities indicated by perception verbs are not equal in their role of substantiating evidence. As some verbs exhibit greater polysemy,

2 For a more comprehensive elaboration on evidentiality see Jakobson (1971).

they can convey meanings related to the other sensory experiences as well (vision being the most prominent) (Ibid.).[3] Consequently, verbs associated with sight are considered to be more primary and are often relied upon as the most trustworthy means of perceiving the world. Based on this distinction, visual and auditory perception verbs are more prominent, whereas touch, taste and smell are used less frequently as source of evidence (Palmer 2001).

From a semantic perspective, perception verbs can be recognized as verbs describing the experience of perceiving stimuli through the senses, denoting the process of receiving and recognizing sensory information in the external environment or within oneself (Usoniene 1999). These verbs distinctively convey how humans navigate and engage with the world around them, through various sensory modalities and processes, with each perception corresponding to a different interaction with the external reality (Lakoff and Johnson 1999).

In light of this capacity, they can be suitable candidates to explore the perception of climate change in the discourse of young climate activists of GenZ. More specifically, the study aims to explore how perception verbs within their phraseological patterns reflect young climate activists' experiential understanding of climate change with the aim of addressing the following research questions:

1. What are the most prevalent perception verbs used by GenZ climate activists online and what phraseological patterns do they exhibit?
2. What kind of experiential understanding do they reveal when looked at in their phraseological patterns?

3. *Materials and Methods*

This study aims to investigate the discourse of young climate activists, with a specific focus on their awareness and experiential understanding of climate change as a pervasive and multifaceted phenomenon through an analysis of the phraseological patterns of perception verbs.

The analysis was conducted on the GenerationZ Climate Website Corpus (GCWebC), which is a corpus of web texts from the websites of three youth

3 A full account of the hierarchy of sense modalities is provided in Viberg (1983).

environmental organizations: Generation Climate Europe (GCE), Youth and Environment Europe (YEE) and E&U for the Climate (EUC). The texts, published between 2018 and 2022, were partially collected automatically using the #Lancsbox software (Brezina, Weill-Tessier and McEnery 2020). Meanwhile, the remaining texts were manually downloaded due to the diverse structures and layouts of the organizations' websites. Eventually, the GCWebC amounted to a total of 215,987 tokens (Table 1).

GENERATIONZ CLIMATE WEBSITE CORPUS (GCWEBC)	
NAME	TOKENS
Generation Climate Europe (GCE)	63,829
Youth and Environment Europe (YEE)	123,371
E&U for the Climate (EUC)	28,787
TOTAL	215,987

Table 1. Composition of the GenerationZ Climate Website Corpus GCWebC.

Initially, a quantitative analysis of the dataset was performed, which involved generating wordlists using Sketch Engine (Kilgarriff et al. 2014). This process aimed to examine the distribution of perception verbs within the corpus. The first step in this analysis was to extract perception verbs from the corpus by creating a verb-only wordlist. This enabled an examination of the frequencies of perception verbs in comparison to other types of verb forms. Following this, a general wordlist sorted by lemma was compiled. This comprehensive wordlist provided insights into the distribution of perception verbs across the entire dataset. By comparing these wordlists, the analysis sought to uncover specific frequencies of perception verbs, before a more detailed investigation into their phraseological patterns.

For the purpose of this study, phraseology has been intended as "the tendency of words or groups of words to occur more frequently in some environments than others" (Hunston 2011, 5). As recurring complex units or patterns constitute a discourse's phraseology (Bondi and Scott 2010), it encompasses a diverse range of phenomena that can be challenging to identify consistently and systematically (Gries 2008). The study, therefore, considered a set of parameters outlined by Gries (Ibid.) when examining potential phraseological patterns, including determining the frequency of occurrence and evaluating the degree of lexical and syntactic flexibility exhibited by the elements.

Based on the wordlists, an analysis of 4-grams and 5-grams using the N-gram tool on Sketch Engine was conducted to unveil the phraseological patterns of perception verbs in the corpus. In order to do so, regular expressions were applied to the N-gram tool, allowing to define specific criteria to generate N-grams for each perception verb from the initial list.[4] When regular expressions are applied, the entire N-gram is treated as a continuous sequence of tokens, including spaces. Since the N-gram tool only identifies individual strings of tokens (Kilgarriff et al. 2014), there were instances where these did not fully match to phraseological units. The units initially identified automatically through computational analysis did not always correspond to meaningful expressions. Therefore, patterns or phraseological units presented in the analysis, i.e., fixed or semi-fixed combinations of words with specific meanings, were identified through a combination of automated results and manual analysis. Furthermore, these may differ from the resulting 4- and 5-grams, selected as the most suitable for of multi-word expression for a phraseological analysis, or they may have been identified from smaller units.

As highlighted by previous studies (e.g., Stubbs 2007; Hyland 2008; Bondi 2010), 4- or 5-word units are considered well-suited for investigating phraseological units in specialized corpora. Specifically, these sequences of words play a significant role in shaping meanings within a text, offering a wider variety of structures (Hyland 2008). Given that some frequencies were relatively low due to the corpus size, a manual analysis of concordance lines was also performed. This was done not only to examine possible patterns within their immediate co-text but also to supplement the analysis of 4- and 5-grams by uncovering potentially significant but less frequent patterns that might have been overlooked. In this instance, 3-grams were found to be frequent for some perception verbs (e.g., *look, hear*) and, therefore, have been used as starting points for looking into phraseological patterns in the concordance lines. Therefore, though they typically represent extended forms of collocational association (Biber et al. 1999), 3-grams have complemented the analysis of 4- and 5-grams, which may have been otherwise affected by the size of the corpus.

4 In Sketch Engine, regular expressions are sets of symbols that can be used to search for patterns in text like words that start with, include or end with a word or lemma (Kilgarriff et al. 2014).

In addition, to address the issue of low-frequency items, adjustments to the minimum frequency threshold were made for each item analysed. The frequency thresholds ranged from a maximum of 5 occurrences to a minimum of 2 occurrences. This adjustment was necessary because low-frequency N-grams are automatically excluded by the tool (Kilgarriff et al. 2014). Thus, the combination of manual analysis and adjusted frequency thresholds ensured a comprehensive examination of the data.

4. *Results and Discussion*

The results obtained from the verb-only wordlist indicated that perception verbs hold a considerable presence within the GCWebC. Specifically, perception verbs were found to rank within the first 300 verbal forms overall. Table 2 presents perception verbs in the GCWebC with their corresponding absolute and normalized frequencies.

ITEM	FREQUENCY	FREQ/MILL[5]
see	136	629.66753
look	74	342.61321
feel[6]	57	263.90477
seem	43	199.08606
hear	31	143.52716
appear	22	101.85798

Table 2. Wordlist sorted by verbs-only for the GCWebC.

Although not the most significant, perception verbs can be considered quite relevant in the corpus. In particular, as shown in the table above, *see* is the most prevalent perception verb, appearing with a relative frequency of 629.67. *Look* follows with a relative frequency of 342.61, while *appear* is the least frequent (101.86 per million). This data seems to confirm the above-mentioned

5 Frequencies are automatically normalized per million on Sketch Engine.

6 The verb *fe*el was preliminarily excluded from the analysis due to its predominant usage in the corpus as indicating cognition rather than sensory perception.

hierarchy of sensory modality, exhibiting a prominence of visual and auditory perception verbs.

Additionally, the results obtained from the general wordlist for the GCWebC indicate that the first two most frequent perception verbs rank below the first 500 words in the entire corpus. In particular, *see* is ranked 218th, while *look* is ranked 337th, underlying a quantitative prominence of perception verbs overall. Indeed, this initial quantitative exploration reveals the peculiar role that these verbs might play in expressing sensory experiences and observations compared to other types of states or actions implied by the verbal forms, as well as possible relevance of these verbs in relation to the subject matter in the corpus.

Based on the initial wordlist analysis, a further investigation into the phraseological patterns of perception verbs began with a focus on 4- and 5-grams of the most frequent perception verb, i.e., *see*. Table 3 shows the resulting list of 4- and 5-grams in the corpus.

ITEM
allow them to see
GCE see those proposals as
allow them to see innovations
come and see the
come and see the initiatives
see innovations and advances
see region profiles below
see the initiatives on
see those proposals as part
the GCE see those
them to see innovations
to come and see
to see if the
to see innovations and advances
to see whether the
will allow them to see
see the initiatives on a
and see the initiatives on

Table 3. 4- and 5-grams for *see*.

The resulting 4- and 5-grams for *see* seem to highlight a use of this verb related to evaluating or assessing, as in the units *GCE see those proposals as*, *does the GCE see those* and *see those proposals as part*. This prevalence of the use of *see*, and the perception it entails, appear noteworthy in light of the combining nominal elements. Indeed, nominal elements appear to share a focus on future developments, advancements or proposals, as indicated by *proposals, innovation*, *advancement* or *initiatives*. Therefore, it appears that these units pertain to using sight to evidence evaluations or judgments on entities with potential future implications of sustainability issues. This can be further confirmed by looking at some of these units in their co-text, as shown in example (1).

(1) GCE will continue to follow the process and keep you up to date on initiatives and projects to do exactly that: Raise our voice for a fair transition to a European Union fit for 1.5! How *does the GCE see those proposals* as part of the younger generation? Generation Climate Europe has already taken a clear stance in saying that Fit for 55 does not mean the European Union is fit for 1.5. (GCE)

Here, *see* is used to indicate GCE's perspective or assessment of the *Fit for 55* proposals, specifically how these proposals are perceived to affect the younger generation. Consequently, sight emphasizes the source for a possible evaluation of this policy measure, highlighting GCE's role in interpreting them. A similar use of *see* followed by a *that*-nominalization could also by noted by looking at the concordance lines. As shown in example (2), the perception verb implies looking at the situation from a particular perspective presenting the stance on an issue and its potential future implications.

(2) An optimistic account *could see that* the estimated total of 4164 TWh of hydro-power currently produced globally per year demonstrates that there is the capability to sustain the system wholly on renewable energy and that further adoption of cryptocurrencies may turn remote hydro-power stations, along with other renewable sources, into more viable investments. (EUC)

In this example, *see* refers to an interpretation depending on the observer's perspective, i.e. an optimistic viewpoint would interpret the data on hydro-power in a positive light, therefore, supporting the conclusion about the sustainability of cryptocurrencies. In addition, as epistemic modality plays a key role in evidential statements conveyed by perception verbs (Whitt 2010),

the presence of the modal *could* indicates that this is somewhat of a subjective interpretation of the evidence provided.

In another set of 4- and 5-grams, a more explicit future orientation can be noticed, as exemplified by phrases such as *will allow them to see*. This temporal orientation towards future events suggests a forward-looking perspective linked to this perception verb, by projecting anticipatory actions or outcomes of potential developments (i.e., *innovation* and *advances*), as shown in example (3):

(3) *This will allow them to see innovations and advances*. – These organisations will relay industry knowledge in the Far East. (YEE)

Turning to *look*, the second most frequent perception verb in the corpus, Table 4 displays the corresponding 4- and 5-grams for this verb.[7]

ITEM
look back at what
look at how you can
look at the chapter ecotourism
look at the commission repository
look at the current reality
look forward to discussing these
look at and to
look at how you

Table 4. 4- and 5-grams for *look*.

A group of these phraseological units appear to share a focus on allowing or inviting the reader into some kind of further examination by way of visual perception. This is exemplified by the patterns involving *look at* followed by a noun or noun phrase, which function to provide guidance to the readers to view or examine more specific climate matters, as in example (4).

7 The table shows only the 4- and 5-grams where *look* is used specifically in relation to visual perception. Cases that did not pertain to this context, despite their presence in the corpus, have been excluded.

(4) Despite promises from the former Environment Minister Michael Gove of a "Green Brexit", there is little that points to their guarantee. While the above briefly delineates what could lie ahead, it is also vital to *look at the current reality*. There is no doubt that the COVID19 crisis has not only exacerbated environmental issues, but also exposed [socio-environmental] injustices to the forefront. (EUC)

Here, the use of *look* highlights the centrality of visual perception as a way to gain evidence or proof for examining the present conditions, meaning the unfulfilled promises of a *Green Brexit*. *Look at the current reality* directs the reader to consider the actual, observable effects of this, i.e., impacts of COVID-19 worsening environmental problems and bringing socio-environmental injustices into sharper focus.

A similar case can be observed in the following concordance lines of *look* (example 5), in which the unit *looking at the national level* resorts to visual perception as a guiding mechanism for the readers, who are engaged into visualizing the specificities of the issue presented (*the ecological crisis*):

(5) A report of the World Bank estimates that the ecological crisis might drive up to 135 million people into poverty by 2030. *Looking at the national level*, climate change further deepens within-country inequalities by hitting the poorest communities, including Black, Indigenous and People of Colour communities (BIPOC), as well as women and children, hardest. (GCE)

By shifting the perspective from the global to the national level, attention is directed toward real-world impacts, portraying the consequences of climate change from abstract ideas into concrete and observable evidence.

Results have also shown that *look* occurs with *forward*, though only in a few cases. For this combination, which appeared as a 5-gram and as a 3-gram once, two different meanings were noted. In the case of the 5-gram *and look forward to discussing*, *look forward to* is used idiomatically, referring not to literal visual perception or physical direction, but to anticipation and futurity, unrelated to the senses (example 6).

(6) We thank you for your time and *look forward to* discussing these crucial and pressing matters with you. (GCE)

Meanwhile, the 3-gram (*We look forward*, retrieved from concordance lines) refers more to visual perception, though metaphorically (example 7).

(7) Public opinion is already with us – if we unite by the millions we can turn this into political power and reclaim our democracy. We are not looking to the right or left. We *look forward*. (YEE)

On the one hand, *look forward* entails looking ahead, relying on sight. On the other hand, a metaphorical act of directing one's gaze is emphasized as a way to maintain focus on a goal without wasting time or being indecisive (i.e., *looking right or left*). Consequently, this combination is used to convey that the activists are staying on course, keeping their attention fixed on the path toward fighting climate change, while also drawing on the most primary sense, namely sight.

Among perception verbs, *seem* is the one considered to convey evidentiality more based on indirect evidence or inference (Fetzer 2014). This has been confirmed by 4-grams and 5-grams of this verb which present a strong presence of the modal *might*, which typically implies less epistemic certainty (Table 5).

ITEM
job and might seem endless
and might seem endless if
might seem endless if
seem endless if only a
might seem endless if only
seem endless if only
job and might seem
and might seem endless
job and might seem endless
and might seem endless if

Table 5. 4- and 5-grams for *seem*.

For this group of patterns, the combination of epistemic modality and indirect evidentiality conveys an idea of higher uncertainty or attempting prediction, as shown in example (8).

(8) This dissonance in what they practice and what they preach is however not just a communication mistake. Protecting the planet is a 24-hour job and *might seem endless* if only a few people are engaging in the fight. But individual and isolated actions are only a first step towards a better planet. (GCE)

Furthermore, manual analysis of concordance lines has revealed 3-grams of *seem* followed by a *to*-clause pointing to characteristics, states or conditions (e.g., *seem to have*, *seems to be*, *not seem to*), indicating how something probably appears rather than stating it as a fact. Similar to the previous patterns, this emphasizes perceptual evidence but with a low degree of certainty, as shown in example (9).

(9) Sadly, these obligations and commitments *do not seem to have translated into practice*. There is still only limited and superficial child involvement in key decision-making procedures. (EUC)

Here, *seem* in combination with the *to*-clause is used to convey an observation based on perception rather than concrete evidence. Therefore, the pattern seems to suggest that while there is an appearance or impression that the *obligations and commitments* have not been implemented, it avoids asserting this as a definitive fact. This usage highlights the speaker's reliance on perceptual cues to make a more tentative claim, with a lower degree of certainty.

The 4- and 5-grams analysis for *hear* has produced far fewer results than the previous verbs, due to its lower frequency in the corpus. The results are shown in Table 6.

ITEM
what we hear and
of what we hear and
of what we hear

Table 6. 4- and 5-grams for *hear*.

Because of this, the analysis of phraseological units was integrated with a manual analysis of concordance lines which gave out interesting results. A first pattern was noticed of *hear* in combination with *voice*. More specifically, the patterns with *hear* in the passive form, as in *voice needs to be heard* and *need to be heard*, as well as *voice to be heard*, refer strongly to the role of younger people in the fight against climate change and their traditional lack of agency in the political arena, as illustrated in examples (10) and (11):

(10) In an impressive show of unity, children and young people all over the world are standing up to fight for their voices to be heard on climate issues. (EUC)

(11) Excluding the cases of Ireland and Spain (whose state-run activities remain to be assessed, though) youth engagement was possible only in those regions where NGOs and youth activists had the mobilisation capacity and the will to make young people's voice heard. (GCE)

These phraseological units appear to emphasize auditory perception as a way for the recognition and amplification of young people's voices by a broader audience, possibly including policymakers. Most importantly, these phraseological units highlight clearly the active struggle for visibility and consideration of younger people in climate discourse.

On the other hand, 4- and 5-grams of *hear* used in the active voice (e.g., *of what we hear and*, *hear a lot about*) appear to be used in different phraseological units, referring in particular to climate-related information or sustainability issues, as in example (12):

(12) Is it a digital revolution that will allow us to live better (connected) lives? And most of all, what does it mean for our planet? *We hear a lot about* 5G, but what is it exactly? (GCE)

In the example above, *hear* in the active voice is employed to reference information that is widely discussed, suggests that there is considerable public discourse and awareness about *5G technology*. Yet, this information may not be fully understood, and the active voice construction highlights the role of both the speaker and the audience as recipients of the needed clarification on this matter.

Consequently, by looking at these units in their co-text, it seems that the auditory perception refers to the overwhelming influx of information experienced by young people (Seemiller and Grace 2019), especially when confronted with complex climate and sustainability matters. This use of *hear* appears interesting, as GenZ climate activists often have to navigate through unreliable sources or resort to sources that do not resonate with them (e.g., traditional news outlets or scientific reports) (Ibid.).

The last verb being analysed was *appear*. Due to its low frequency, phraseological patterns were retrieved manually from concordance lines, given that it was the lowest occurring perception verb in the GCWebC. The resulting phraseological units can be seen in Table 7.

ITEM
action additionally sdgs appear
analysis do not appear
and many gaps appear
appear as the cheapest option
appear further because wood
appear in several strategic documents
appear in the body
appear particularly interested in
appear that the company as
appear to be certain
appear to be quite important
evidence personnel does not appear
renewable sources may frequently appear
that did not appear
the hydrogen sector appear
under analysis do not appear
would want it to appear

Table 7. 4- and 5-word units for *appear*.

The resulting patterns reveal that *appear* is frequently used in combination with non-agentive grammatical subjects followed by *that*-clauses to indicate observation or inference on climate matters, as shown in example (13).

(13) Not only education is a key step in addressing the climate change issue, but also that climate change has serious consequences on the quality of and accessibility to education. And yet, *it appears that climate education is missing from conventional school programmes* across the globe, including EU member states. (GCE)

In this case, *appear* and its combining elements are used to infer about the absence of climate education in conventional school programs. The perceived issue is based on observed evidence or inference, rather than being presented as an unequivocal fact, implying a level of uncertainty. Therefore, observation is used as interpretation rather than a confirmed reality, reflecting a rather cautious approach to making claims.

Moreover, *appear* often co-occurs in combination with noun phrases, conveying evaluative statements, often deemed evident based on contextual

information, or in combination with *to*-clauses, as illustrated in examples (14) and (15).

(14) Taking into account the national plans of Russia and France to significantly scale up the production of low-carbon and carbon-free hydrogen by 2035 and 2030 respectively, the potential of nuclear power *appears to be crucial*. (YEE)
(15) The allure of new, cheap, and convenient, has evidently taken a toll on our demand for long-living, repairable products. Fixing our broken electronic goods *appears to have become too burdensome*. (EUC)

In example (14), the evaluation on the *national plans of Russia and France* and the importance of nuclear power are deemed evident based on the context provided. Similarly, in example (15), the perceived *burden of repairing electronic goods* is indicated based on the contextual trend of favouring *new, cheap, and convenient* products. In both instances, *appear* serves to present observations substantiated by an assessment on the surrounding contextual information, highlighting an evaluative perspective.

Overall, it seems that some level of tentativeness or subjectivity to the claims being made is being conveyed, rather than the certainty or statement, with a focus on the observation of contextual evidence. In addition, the preference of this verb to co-occur with non-agentive grammatical subjects further reinforces the more general nature of the evidence provided compared to other perception verbs in the GCWebC. Nonetheless, the statements made by the patterns of *appear* are still evaluative in nature and thus carry the point of view of the organizations.

5. *Conclusions*

This study has attempted to provide insights into how climate change and its related issues are perceived by GenZ climate activists, through an analysis of the phraseological patterns of perception verbs in a corpus of web texts from three youth environmental organizations (GCWebC). The initial quantitative analysis has revealed relevant frequencies for perception verbs compared to other verbal forms in the corpus, with *see* being the most prevalent, followed by *look*. This aspect has confirmed the hierarchy of sensory modality, with visual perception verbs (*see*, *look*) being the most prominent, followed by verbs related to oth-

er senses (*hear*). Therefore, visual and auditory perceptions can be considered more prominent. The analysis of the general wordlist has further supported the relevance of perception verbs in the corpus, with *see* and *look* ranking within the first 500 words in the GCWebC. Therefore, the quantitative exploration has revealed a key role of perception verbs in relation to the corpus's thematic structure, as they may be essential for expressing sensory experiences related to climate matters and environmental issues discussed in the corpus.

Based on the results of the wordlists, an analysis of phraseological patterns, starting from 4-grams and 5-grams, integrated with concordance line analysis of 3-grams in some cases, was carried out for the verbs *see, look*, *seem*, *hear* and *appear*. This analysis revealed that *see* was used predominantly in patterns to point to proposals or developments related to climate change and sustainability. This was evident in examples where *see* reflected mainly perspectives on policies and innovations, suggesting a forward-looking approach of the potential implications of the proposals mentioned.

Phraseological patterns for the verb *look*, mainly in the combination *look* at*, invited the reader to further examine climate issues by way of sight, emphasizing the shift from abstract concepts to concrete, observable impacts. Moreover, the few occurrences of *look forward* were also examined, revealing, on one hand, the idiomatic use linked to futurity, while on the other, a more metaphorical usage, implying reliance on visual perception to remain focused in the fight against climate change.

The analysis of *seem* showed that this verb, which typically conveys less certainty, was used to indicate actions to be taken or deemed necessary for solving problems related to climate change. In this case, uncertainty or inference were further reinforced by the presence of the modal *might*, indicating, therefore, a perception based more on indirect evidence. Meanwhile, *hear* was primarily used to highlight auditory perception in key patterns in combination with *voice*. More specifically, when used in the passive form, it referred to the importance of recognizing the voice of young people in the fight against climate change, while in the active form, it was used in relation to the need to interpret complex climate-related information.

Lastly, *appear* was used to indicate observations or inferences, often with non-agentive subjects and noun phrases, in evaluative statements based on contextual information. In this case, the use of the perception verb reflected a more cautious approach to making claims, while highlighting the evaluative

perspective of the organizations involved. Overall, the analysis revealed that visual perception has been more prevalent in relation to understanding present conditions and anticipate future outcomes of climate change. On the other hand, more tentative observation based on indirect evidence was also present in relation to sight. Though less frequent, the other sensory modality, hearing, was used in relation to particularly central matter: young activists' struggles for visibility and agency.

Arguably, perception verbs in the GCWebC have carried evidential weight, expanding sensory input into how environmental issues are perceived and understood by GenZ environmental activists. As the phraseological patterns of these verbs have highlighted sensory experiences and observations related to climate-issues, the analysis was able to reveal key insights into young activists' interpretation and experiential understanding of climate change and its related phenomena. Consequently, these verbs might be considered valuable in shaping how climate issues are discussed, evaluated and understood. Indeed, the analysis has reflected the complex and multifaceted nature of climate change discourse, and yet it has attempted to shed light on the underpinnings of current environmental discourse within an emerging community such as that of GenZ climate activists.

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