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Soothing the Green Anxiety.
A Critical Analysis of Negative Feelings in Social Media Discourses about the Environment

Abstract: In the last few decades, individuals and communities worldwide have increasingly experienced feelings of anger, anxiety, and frustration concerning environmental issues such as climate change, sustainability, or pollution, and the Covid-19 pandemic has further exacerbated such social fears on a global scale. In this context, popular environmentalist movements, together with other influential individuals, are giving voice to those feelings, offering a safe space for sharing negative emotions, and supporting people with guidance and information through social media. The present study focuses on the discursive construction of negative feelings in social media posts by environmental organisations and eco-conscious people. The term 'eco-anxiety' and other relevant keywords are used to assess the presence of eco-anxiety topics in online discourses by looking at recurrent verbal elements and language patterns. While qualitative Critical Discourse Analysis is the privileged methodology, the analysis adopts the Hogg's scale for eco-anxiety measurement to investigate the sense of urgency and negativity shared by social media users. The analysis is reinforced by data obtained through the corpus analysis tool *Sketch Engine* outlining points of contact among keywords and collocations, and validating hypotheses on eco-anxiety as a discursive theme.

Keywords: *eco-anxiety*, *environmental discourse*, *social media discourse*, *online communities*, *critical*, *discourse analysis*

1. Introduction

When Hannah Arendt observed the 'dark times' the world's society was living, in the first half of the 20th century, she made a prophetic consideration about the illuminating role of certain public figures who, with "their lives and their works", could be more helpful than many "theories and concepts" in giving hope to the world.[1] Such intuition cannot but recall, if applied to our contemporary times, the great influence that social media (also SM from now on) have granted people around the globe; while we cannot know whether the legacy of current public figures will stand the test of time, the possibility to reach large numbers of people through social media has surely enhanced forms of mutual help and support during difficult times. Although the 21st century has not been marked by global conflicts so far, the number and type of issues affecting our societies appear to be even more overwhelming due to the magnifying power of globalisation and social media. In the last few decades, the fierceness of social and economic crises, the disenchantment caused by the failure of governments and democratic systems around the world, and the plague of climate change have shaped and reinforced the 'age of anger' theorised by Pankaj Mishra.[2] As a consequence, the forms of social fears, panic, and anxiety affecting especially younger generations are today countless, and it is often left to individuals, informal groups, and communities to deal with them.

In 2020, the advent of Covid-19 marked the start of another traumatic chapter in recent global history. While the medium- and long-term consequences of the pandemic on all areas of human activity and the environment are still being assessed, the phenomenon has already earned the status of a 'Black Swan' event. This evocative label, originally coined by mathematical statistician Nassim

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[1] Hannah Arendt, *Men in Dark Times* (Orlando: Harcourt Brace & Company, 1968), ix.
[2] Pankaj Mishra, *Age of Anger: A History of the Present* (London: Macmillan, 2017).

Nicholas Taleb,[3] indicates rare and extremely impactful events, usually with negative repercussions on large systems and societies. In response to the sudden changes and traumas engendered by such disrupting situations, affected people and social groups naturally tend to gather and build communities for sharing negative feelings and emotions. It has been observed that Covid-19 is having a profound impact on people's mental health, including that of children and adolescents.[4] In a broad sense, it is no exaggeration to say that the scope of environmental issues such as climate change or pollution is similar to that of a Black Swan event, especially if considering their current and future effects on the world; the environmental crisis, however, lacks the theorised unpredictability of proper Black Swan events.[5] What remains in this forced yet incisive analogy is the need for certain communities and groups of people to get together and find safe spaces to give voice to their negative feelings. Indeed, the so-called 'eco-anxiety' is defined as "a chronic fear of environmental doom [or] mental distress or anxiety associated with worsening environmental conditions ... or anxiety experienced in response to the ecological crisis".[6] Emerging scientific evidence[7] on the subject suggests that eco-anxiety as a condition has similar symptoms as Generalised Anxiety Disorder (GAD);[8] it has been noted that "[e]xperiencing the effects of climate change first-hand is psychologically traumatic, and this shows up as a direct and severe impact on mental health outcome figures, including for rates of suicide, PTSD, depression, and extreme distress".[9] People in the broad age group 16-34, in particular, are more likely to be affected by forms of eco-anxiety.[10]

Given the rapid popularisation of the phenomenon, the term is also gaining official linguistic recognition. Last October 2021, the editors of the *Oxford English Dictionary* (OED) released an update to the list of new and revised entries: among the almost one hundred compounds of 'eco-', the OED now lists 'eco-anxiety' as "unease or apprehension about current and future harm to the environment caused by human activity and climate change".[11] Similarly, one newly added sense of the lexeme 'climate' reads: "as a modifier, designating emotional or psychological states arising from concerns over the impact of climate change and global warming, as *climate anger*, *climate anxiety*, *climate depression*, *climate fear*, *climate grief*, *climate optimism*, *climate pessimism*, etc."[12] The OED's project to "broaden and review its coverage of vocabulary related to climate change and sustainability"[13] shows the rising interest in environmental language and discourse, and validates prospective studies in the field.

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[3] Nassim Nicholas Taleb, *The Black Swan: The Impact of the Highly Improbable* (New York: Random House, 2007).

[4] See, among others: United Nations Children's Fund, *The State of the World's Children 2021: On My Mind – Promoting, Protecting and Caring for Children's Mental Health* (New York: UNICEF, October 2021); OECD, *Tackling the Mental Health Impact of the COVID-19 Crisis: An Integrated, Whole-of-society Response* (Paris: OECD Publishing, May 2021).

[5] See, for example, John Drake, "Was Covid-19 a Black Swan Event?", *Forbes* (2021), *www.forbes.com*.

[6] Yumiko Coffey et al., "Understanding Eco-anxiety: A Systematic Scoping Review of Current Literature and Identified Knowledge Gaps", *The Journal of Climate Change and Health*, 3 (August 2021), 1.

[7] Thomas J. Doherty and Susan Clayton, "The Psychological Impacts of Global Climate Change", *American Psychologist*, 66.4 (2011), 265; Panu Pihkala, "Climate Anxiety" (Helsinki: MIELI Mental Health Finland, 2019); Tsvetelina Filipova et al., "Mental Health and the Environment: How European Policies Can Better Reflect Environmental Degradation's Impact on People's Mental Health and Well-Being", Background paper by the Institute for European Environmental Policy (IEEP) and the Barcelona Institute for Global Health (IS-Global) (2020).

[8] Teaghan L. Hogg et al., "The Hogg Eco-anxiety Scale: Development and Validation of a Multidimensional Scale", *Global Environmental Change*, 71 (2021), 102391.

[9] Emma Lawrance et al., "The Impact of Climate Change on Mental Health and Emotional Wellbeing: Current Evidence and Implications for Policy and Practice", Grantham Institute Briefing paper 36 (May 2021), 8.

[10] For a comprehensive overview of existing studies, see Coffey et al., "Understanding Eco-anxiety", 2.

[11] *Oxford English Dictionary*, "-eco", *www.oed.com*.

[12] Oxford English Dictionary, "climate", *www.oed.com*.

[13] Oxford English Dictionary, "The Language of Climate Change and Environmental Sustainability: The OED October 2021 Update", *www.public.oed.com*.

The present study aims to explore the recently acknowledged link between environmental and mental health issues by analysing the discursive construction of eco-anxiety feelings on social media. It is assumed that more and more SM accounts by environmental groups and influencers are offering psychological and emotional support, thus giving eco-conscious individuals the possibility to vent and ease their forms of stress or anxiety as "a healthy psychological adaptation and response to threat".[14] The proposed analysis investigates the sense of urgency and negativity shared by environmentally conscious people and realised in online discourses. In the discussion that follows, the term 'eco-anxiety' – together with other keywords – serves as the starting point for a linguistic assessment of recurrent themes and language patterns in selected posts and comments to the purpose of identifying and textually locating a number of reported negative feelings and emotions. More specifically, the paper looks at various, sometimes subtle discourse markers to highlight the presence of eco-anxiety topics in user-generated content. The chosen methodology combines qualitative Critical Discourse Analysis and interdisciplinary frameworks from the fields of Psychology and Sustainability Studies, in particular Hogg's multidimensional scale for eco-anxiety measurement, of which more will be said in section 3.

2. Social Media Communication and Critical Discourse Studies

Since their appearance in the early 2000s, global social media have provided an inexhaustible source for linguistic research thanks to the impressive quantity and quality of textual material available for analysis, to the extent that it would be quite complex to give a comprehensive list of existing approaches and thematic foci on the subject. In the field of Discourse Studies, Majid KhosraviNik outlined the discursive possibilities offered by the online channel, highlighting the various communicative outcomes deriving from user interaction. Following his definition:

> Social Media Communication is viewed as electronically mediated communication across any electronic platforms, spaces, sites, and technologies in which users can: (a.) *work together in producing and compiling content;* (b.) *perform interpersonal communication and mass communication simultaneously or separately – sometimes mass performance of interpersonal communication and*; (c.) *have access to see and respond to institutionally (e.g., newspaper articles) and user-generated content/texts.*[15]

In this sense, social media – especially social networking and blogging sites – represent a convenient database for observing how communicative practices and discourses around different themes are shaped, and challenge researchers to trace the boundaries between small-scale interpersonal communication and largely-shared discursive practices. Gwen Bouvier, among others, reflected on the construction of identity between the online/offline worlds.[16] While this is not the locus to further explain these concepts, research in social semiotics has tried to examine how "social practices happening in the 'material world' are reformulated in texts and discussions".[17] Actually, it is still unclear whether the resulting discursive practices are born 'offline' and then transferred online, or they are created from scratch according to new and different communicative criteria;[18] such distinction may

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[14] Coffey et al., "Understanding Eco-anxiety", 3.

[15] Majid KhosraviNik, "Social Media Critical Discourse Studies (SM-CDS)", in John Flowerdew and John Richardson, eds., *Handbook of Critical Discourse Analysis* (London: Routledge, 2017), 582.

[16] Gwen Bouvier, "What Is a Discourse Approach to Twitter, Facebook, YouTube and Other Social Media: Connecting with Other Academic Fields?", *Journal of Multicultural Discourses*, 10.2 (2015), 149-162.

[17] Anton Törnberg and Petter Törnberg, "Muslims in Social Media Discourse: Combining Topic Modeling and Critical Discourse Analysis", *Discourse, Context and Media*, 13 (2016), 135.

[18] Darren G. Lilleker et al., "Informing, Engaging, Mobilizing or Interacting: Searching for a European Model of Web Campaigning", *European Journal of Communication*, 26.3 (2011), 195-213.

indeed be central to understand how shared information is received and interpreted by user groups, and it is certainly in line with Systemic Functional Linguistics (SFL) – which studies precisely the functions of language in social settings, as "the domain of meaning making associated with forging social bonds as interpersonal meaning".[19]

Among other topics, the meaning making potential of online interaction has been at the centre of several studies adopting Corpus Linguistics[20] as the privileged methodology, for example to investigate "probabilities, trends, patterns, co-occurrences of elements, features or groupings of features"[21] in a number of texts and corpora. More will be said about the applications of corpus-based discourse analysis in the Methodology section. At the opposite end, alternative frameworks[22] have foregrounded users so as to privilege "the practice where the text is used",[23] rather than the text itself as the starting point of investigation. In short, it is the communicative exchange among specific user groups which determines the discursive features of a text, hence the users' external context is given more relevance than other co-textual elements. Studies in Computer Mediated Discourse Analysis (CMDA)[24] have pointed out that the online channel may be another influencing contextual factor – with communications being heavily influenced in their form by the digital medium –, while computational linguists[25] have used sentiment analysis to group online communities based on shared language patterns. As a matter of fact, some of the difficulties of research on social media lie in attributing valid definitions in the first place, following the idea that "notions such as 'community' and 'genre' are familiar and evocative, yet notoriously slippery, and unhelpful (or worse) if applied indiscriminately".[26]

From the point of view of Critical Discourse Studies (CDS), all the above-mentioned approaches can be selected and combined to highlight problematic or power-related aspects of social media communication: as noted by KhosraviNik, "Social Media can and have provided new spaces of power for citizenry engagement, grass-root access, and use of symbolic resources".[27] Since CDS is "a

[19] Michele Zappavigna, *Discourse of Twitter and Social Media: How We Use Language to Create Affiliation on the Web* (London: Continuum, 2012), 11.

[20] Michael Stubbs, "Grammar, Text, and Ideology: Computer-Assisted Methods in the Linguistics of Representation", *Applied Linguistics*, 15.2 (1994), 201-223; Winnie Cheng, "Corpus-based Linguistic Approaches to Critical Discourse Analysis" in Carol A. Chapelle, ed., *The Encyclopedia of Applied Linguistics* (Oxford: Wiley-Blackwell Publishing Ltd, 2014), 1353-1360; Paul Baker et al., "A Useful Methodological Synergy? Combining Critical Discourse Analysis and Corpus Linguistics to Examine Discourses of Refugees and Asylum Seekers in the UK Press", *Discourse and Society*, 19.3 (2008), 273-306; Lynne Flowerdew, "Corpus-based Discourse Analysis" in James Paul Gee and Michael Handford, eds., *The Routledge Handbook of Discourse Analysis* (London: Routledge, 2013), 174-187.

[21] Teubert Wolfgang and Ramesh Krishnamurthy, eds., *Corpus Linguistics: Critical Concepts in Linguistics* (London: Routledge, 2007), 6.

[22] Suzie Wong Scollon, *Nexus Analysis: Discourse and the Emerging Internet* (London: Routledge, 2004); Ron Scollon and Suzie Wong Scollon, *Discourses in Place: Language in the Material World* (London: Routledge, 2003); Rodney H. Jones and Sigrid Norris, *Discourse in Action: Introducing Mediated Discourse Analysis* (London: Routledge, 2005); David Barton and Carmen Lee, *Language Online: Investigating Digital Texts and Practices* (London: Routledge, 2013).

[23] Barton and Lee, *Language Online*, 14.

[24] Susan C. Herring, "Computer-Mediated Discourse Analysis: an Approach to Researching Online Behavior", in Sasha Barab et al., eds., *Designing for Virtual Communities in the Service of Learning* (Cambridge: Cambridge U.P., 2004), 338-376; Susan C. Herring and Jannis Androutsopoulos, "Computer-mediated Discourse 2.0", in Deborah Tannen et al., eds., *The Handbook of Discourse Analysis*, Second Edition (John Wiley & Sons, Inc., 2015), 127-151; Jannis Androutsopoulos and Michael Beißwenger, "Introduction: Data and Methods in Computer-Mediated Discourse Analysis", *Language@ internet*, 5.2 (2008), 9.

[25] Anatoliy Gruzd et al., "Analyzing Social Media and Learning Through Content and Social Network Analysis: A Faceted Methodological Approach", *Journal of Learning Analytics*, 3.3 (2016), 46-71; Anatoliy Gruzd and Caroline Haythornthwaite, "The Analysis of Online Communities Using Interactive Content-Based Social Networks", *DalSpace* (2008), *www.dalspace.library.dal.ca*; Federico Neri et al., "Sentiment Analysis on Social Media", 2012 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (IEEE, August 2012), 919-926.

[26] Herring, "Computer-mediated Discourse Analysis", 338.

[27] KhosraviNik, "Social Media Critical Discourse Studies (SM-CDS)", 583.

socially committed, problem-oriented, textually based, critical analysis of discourse",[28] it can be exploited also to analyse both environmental and social issues, such as the phenomenon of eco-anxiety, as they appear online. In terms of users' empowerment, CDS can be chosen to look for direct links between participants' discourses and power relations: as members of pro-environment communities express their negative feelings and frustration through social media posts, comments, and other written samples, they also gain communicative spaces and contribute to spreading counter-narratives on established views, thus challenging and confronting dominant groups. For the same reason, critical approaches can help to highlight power-related issues by decoding recurrent language features and pointing out politically-loaded discourse. Relevant studies in the field have dealt with the democratisation process occurring between producers and receivers of information, for example in the dissemination of news,[29] or the more generic changes in information production, distribution and reception through social media.[30]

Concerning the topic of eco-anxiety, a growing body of literature in Discourse Studies and Communication is emerging;[31] interdisciplinary research in the areas of psychology and sustainability[32] is also bringing significant contribution to the discussion by disseminating important knowledge and information. Eco-critical Discourse Studies, in particular, are looking into the issue with reference to youth mental health and ecological awareness, focussing on specific case studies from the fields of news and media coverage and representation of environmental events.[33] Such body of research aims at critically describing the mental health impacts of (social) media narrations of ecological issues on conscious readers, thus reinforcing evidence on the relationship between eco-fears and anxiety disorders. In this study, the examined textual material is provided by user-generated content, rather than top-down communications; moreover, reference is made to widely renowned frameworks and models for classifying the symptoms of eco-anxiety, as illustrated in the Methodology section.

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[28] Ibid., 586.

[29] Gwen Bouvier and David Machin, "Critical Discourse Analysis and the Challenge of Social Media: the Case of News Texts", *Review of Communication*, 18.3 (2018), 178-192; Matt Carlson and Seth C. Lewis, eds., *Boundaries of Journalism: Professionalism, Practices and Participation* (London: Routledge, 2015); Sarah Niblock and David Machin, *News Production: Theory and Practice* (London: Routledge, 2014); Michele Zappavigna, *Discourse of Twitter and Social Media*.

[30] Norman Fairclough, *Discourse and Social Change* (Oxford: Polity Press, 1992); Majid KhosraviNik and Johann W. Unger, "Critical Discourse Studies and Social Media: Power, Resistance and Critique in Changing Media Ecologies", in Ruth Wodak and Michael Meyer, eds., *Methods of Critical Discourse Studies* (London: SAGE, 2016), 205-233; Jodi Dean, *Blog Theory* (London: Polity, 2010); Johann W. Unger et al., "Critical Discourse Studies and Social Media Data", in David Silverman, ed., *Qualitative Research* (London: SAGE, 2010); Gunther Kress, "Gains and Losses: New Forms of Texts, Knowledge, and Learning", *Computers and Composition*, 22 (2005), 5-22.

[31] Timothy Clarke, "A Critical Discourse Analysis of How Language Use in British Newspapers May Be Causing or Exacerbating Eco-Anxiety", *DiVA Portal* (2021), www.diva-portal.org; Brittany Bloodhart et al., "Be Worried, be VERY Worried: Preferences for and Impacts of Negative Emotional Climate Change Communication", *Frontiers in Communication*, 3 (2019), 63.

[32] Hogg et al. "The Hogg Eco-anxiety Scale"; Panu Pihkala, "Anxiety and the Ecological Crisis: An Analysis of Eco-anxiety and Climate Anxiety", *Sustainability* 12.19 (2020), 7836; Coffey et al., "Understanding Eco-anxiety"; Steven Taylor, "Anxiety Disorders, Climate Change, and the Challenges Ahead: Introduction to the Special Issue", *Journal of Anxiety Disorders*, 76 (December 2020), 102313; Panu Pihkala, "Eco-anxiety", in C. Parker Krieg and Reetta Toivanen, eds., *Situating Sustainability: A Handbook of Contexts and Concepts* (Helsinki: Helsinki U.P., 2021), 119-134.

[33] Brittany Smith, "Eco-Anxiety: A Discourse Analysis of Media Representations of the School Strike for Climate Movement", Diss. 2020; Laelia Benoit et al., "Ecological Awareness, Anxiety, and Actions Among Youth and Their Parents: A Qualitative Study of Newspaper Narratives", *Child and Adolescent Mental Health*, 27.1 (2022), 47-58; Anna Kelly, "Eco-Anxiety at University: Student Experiences and Academic Perspectives on Cultivating Healthy Emotional Responses to the Climate Crisis", *SIT Digital Collections* (2017), www.digitalcollections.sit.edu.

3. Methodology

For what concerns the choice of reliable and accurate methodologies, both qualitative and quantitative analyses of textual material obtained from social media can be risky and full of shortcomings. In both cases, the first problems arise when taking into account "the size and representativeness of data samples, data processing techniques, the delimitation of genres, and the kind and amount of contextual information that is necessary, as well as ethical issues such as anonymity and privacy protection".[34] Considering CDA, some risks include the lack of objectivity and purpose-driven data selection: Baker and Levon, among others,[35] defined such research flaws as "'cherry pick[ing]' or intentionally select[ing] (possibly atypical) data or linguistic features for analysis to prove a preconceived point in CDA".[36] To avoid the pitfalls of partial or biased analysis, and since there is no standardised method for doing research in this field,[37] it might be useful to combine several approaches. This study draws from Critical Discourse Studies in combination with Corpus Linguistics, following the idea that "corpus tools can identify how ... discourses are created incrementally",[38] that is, over time, even though certain features do not appear frequently. It has been noted[39] that "corpus-based CDA studies make use of both quantitative techniques, that is, frequency and keyword lists – complemented by more detailed qualitative textual analysis and combined in such a way so as to uncover the *non-obvious meaning*, unavailable to conscious awareness, in the discourse under investigation".[40] This is also in line with the principle that qualitative approaches "can also be emergent – that is, the researcher does not set out with a clear hypothesis to test, but rather gathers data, and then sees which features emerge as prominent from the collected material".[41]

In addition to these techniques, the present paper takes into account interdisciplinary approaches for the evaluation of eco-anxiety such as the Hogg eco-anxiety scale to outline objective thematic categories of analysis. This model establishes four main dimensions of eco-anxiety (affective symptoms; rumination; behavioural symptoms, and anxiety about personal impact), with a series of correlates, including stress, anxiety, depression, emotion reactivity, credibility of science, and climate change belief. More importantly, the Hogg's scale identifies 13 items or outcomes:

1. Feeling nervous, anxious or on edge
2. Not being able to stop or control worrying
3. Worrying too much
4. Feeling afraid
5. Unable to stop thinking about future climate change and other global environmental problems
6. Unable to stop thinking about past events related to climate change

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[34] Androutsopoulos and Beißwenger, "Introduction: Data and Methods in Computer-mediated Discourse Analysis", 1.

[35] Charles Antaki et al., "Discourse Analysis Means Doing Analysis: A Critique of Six Analytic Shortcomings", *Sheffield Hallam University* (2003), *www.extra.shu.ac.uk*.

[36] Paul Baker and Erez Levon, "Picking the Right Cherries? A Comparison of Corpus-Based and Qualitative Analyses of News Articles about Masculinity", *Discourse & Communication*, 9.2 (2015), 222.

[37] Norman Fairclough, "Critical Discourse Analysis", in James Paul Gee and Michael Handford, eds., *The Routledge Handbook of Discourse Analysis* (London: Routledge, 2013), 9-20; Ruth Wodak, "Critical Discourse Analysis: Challenges and Perspectives", in Ruth Wodak, ed., *Critical Discourse Analysis Volume I: Concepts, History, Theory* (London: SAGE, 2013), ixx-xliii.

[38] John Flowerdew, *Discourse in English Language Education* (London: Routledge, 2013), 168.

[39] Baker et al., "A Useful Methodological Synergy?"; Gerlinde Hardt-Mautner, "Only Connect. Critical Discourse Analysis and Corpus Linguistics", UCREL technical paper 6 (Lancaster: Lancaster University, 1995); Gerlinde Hardt-Mautner, "Checks and Balances: How Corpus Linguistics Can Contribute to CDA", *Methods of Critical Discourse Studies*, 3 (2016), 155-180; Costas Gabrielatos and Alison Duguid, "Corpus Linguistics and CDA: A Critical Look at Synergy", CDA20+ Symposium, University of Amsterdam, 9 (2014).

[40] L. Flowerdew, "Corpus-based Discourse Analysis", 179.

[41] Ruth Page et al., *Researching Language and Social Media. A Student Guide* (London: Routledge, 2022), 51.

7. Unable to stop thinking about losses to the environment

8. Difficulty sleeping

9. Difficulty enjoying social situations with family and friends

10. Difficulty working and/or studying

11. Feeling anxious about the impact of your personal behaviours on the earth

12. Feeling anxious about your personal responsibility to help address environmental problems

13. Feeling anxious that your personal behaviours will do little to help fix the problem.[42]

All the above items correspond to recurrent thematic motifs in the online discourse carried out by environmentalists.

The following analysis comprises a collection of about 200 online posts and comments in English on the topics of eco-anxiety in about 30 international SM accounts of environmental movements and influencers. While the list of global SM pages in English focussing on environmental topics is extremely vast, the selected SM accounts were picked from a larger group of about 50 relevant SM pages after extensive search; in particular, attention was given only to those SM accounts with at least one post on climate anxiety – whereas other pages dealing with unrelated environmental topics were discarded.[43] The study covers the period spanning from 2020 until today, given the already mentioned impact of the pandemic on people's mental health and environmental fears. Albeit small, the corpus of examples fulfils the need for specificity: given the nature of the inquiry and the indefiniteness of the subject, it appeared more on point to limit the data set and look for specific instances of eco-anxiety discourses. In this sense, the study is more concerned with contextual accuracy and thematic coherence, consistent with qualitative CDA.[44] As an additional text-external parameter, it considers only those SM pages and accounts with at least 10.000 followers – the so-called micro-influencers[45] – to provide representativeness; where existent, the same accounts are cross-checked on three major social media networks, namely Facebook, Twitter, and Instagram, so as to further enrich the analysis and collect more discourse samples on the same threads. Regarding this choice, it could be argued that other, perhaps more popular platforms (such as TikTok or Snapchat) could be included in the analysis; however, the above SM networks offer more verbal content, compared to other SM where photos or videos are predominant. Further studies making use of multimodal frameworks (for instance, dealing with visual elements as communicative material) may well open innovative perspectives in the field.

At the beginning of data selection, a keyword search was performed through the search bar available on the selected SM accounts. The query started from the reference keyword 'eco-anxiety', and then it expanded to other semantically and thematically related keywords, such as 'climate anxiety', 'environmental anxiety', 'eco-fears', 'environmental fears', 'climate stress', 'eco-grief', etcetera, for a total of roughly 10 keywords. Further studies may well expand the query to include other, less obvious keywords. Keyword annotation enabled to limit the number of posts published in the reference timeframe (from 2020 until to date), which resulted in roughly 1 to 10 posts for each account under consideration. Due to the very specific, and yet linguistically indefinite nature of the

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[42] Hogg et al., "The Hogg Eco-anxiety Scale", 9.

[43] For a list of influential environmental SM accounts, see: Jeremy Waite, "Top 66 Climate Change Accounts to Follow on Twitter", *Jeremy Waite* (2019), *www.jeremy.earth*; Alessandra Ciuffo, "Top 15 Climate Instagram Accounts to Follow Today", *Waterfront Alliance* (2021), *www.waterfrontalliance.org*; Olivia Lai, "20 Environmental Instagram Accounts to Follow Now", *Earth.org* (2022), *www.earth.org*.

[44] Lynne Flowerdew, "An Integration of Corpus-Based and Genre-Based Approaches to Text Analysis in EAP/ESP: Countering Criticisms Against Corpus-Based Methodologies", *English for Specific Purposes*, 24.3 (2005), 321-332; Almut Koester, "Building Small Specialised Corpora", in Anne O'Keeffe and Michael McCarthy, eds., *The Routledge Handbook of Corpus Linguistics* (London: Routledge, 2010), 66-79; Daniel Ross, "Small Corpora and Low-Frequency Phenomena: Try and Beyond Contemporary, Standard English", *Corpus* 18 (2018); Page et al., *Researching Language and Social Media. A Student Guide*.

[45] CMSWire, "Social Media Influencers: Mega, Macro, Micro or Nano", *CMSWire* (2018), *www.cmswire.com*.

research question – how is eco-anxiety constructed discursively by people online? – it was opted for manual reading of the results. However, in order to validate the findings, different search operations were carried out on the corpus analysis tool *Sketch Engine*. After taking note of recurrent themes and lexical items describing negative feelings about the environment (also exacerbated by the impact of Covid-19), the word 'anxiety' was contrasted with 'environment' and 'climate' through *Sketch Engine*'s Concordance tool to highlight attested usage in the English Web corpus *enTenTen*, "an English corpus made up of texts collected from the Internet";[46] this operation was also useful to show shared collocations and frequent modifiers of the lexemes. Subsequently, the Word Sketch tool was used to obtain a comprehensive overview of reference keywords and assess whether reported negative feelings appeared in each wordlist under any category, namely as nouns, adjectives, or verb expressions; to give an example, the feeling of anger matched the adjective 'angry', but also the verb construct 'lied to'. In this sense, all lexemes paired to reported feelings are intended as terminological wild cards for corpus observation.

4. Results and Discussion

At a first glance, linguistic data pertaining to the topic of eco-anxiety appeared rather hidden, with several posts and comments offering limited discussion strictly on the subject. Upon closer examination, it was possible to detect those verbal elements signalling negative feelings and emotions, and to collect discursive material for critical analysis.

Emotions associated with Hogg's item 1, 'Feeling nervous, anxious or on edge', are easier to observe, as this category makes generic reference to a wide range of negative feelings; in this case, social media comments report a number of words, especially adjectives, related to anger ('angry', 'pissed off', 'mad', 'furious', 'outraged'), anxiety ('anxious', 'sick'), or mental exhaustion ('powerless', 'hopeless'). In some instances, these feelings are addressed to older generations or politicians – deemed responsible for the environmental crisis – as the following two examples from the Facebook page of the group *Extinction Rebellion* show: "Mine is more anger than anxiety. I hate the politicians for following big business and ignoring the obvious. The worst criminals of my lifetime in my opinion"; "I am pissed off by boomers who refuse to believe in Climate Change, because they are too attached to their diesels [sic] and steaks!!!"[47] Interestingly, some comments suggest that anger and anxiety are necessary feelings leading to action, hence mitigating their negative emotional impact: "We must FEEL the problem before we ACT on the problem. ANXIETY is the precursor to ANGER which is the precursor to ACTION. It's a natural process";[48] "We need righteous wrath, to mobilize, to force us to use our knowledge in the face of status quo.... We need a force driving us to implement the future we want and need, and not yet another coping mechanism. How about we teach people to act, instead of sedating them? You don't need to 'tackle' feelings, but embrace them, focus them [sic], and ACT".[49]

In general, anger-related feelings clearly express frustration with existing power relations among different social groups; from an (eco)critical standpoint,[50] the discourse carried out in this thematic category provides evidence of the imbalance between older generations ('boomers') or other dominant groups ('politicians' and 'big businesses') and younger people (aged 16-34) when it comes to environmental policy planning and implementing ("I have no hope for the human race. The capitalists will continue to burn fossil fuels until the earth burns. Governments won't stop them and there will

[46] Sketch Engine, "enTenTen – English Corpus from the Web", *www.sketchengine.eu*.
[47] Facebook, "Extinction Rebellion" (2022), *www.facebook.com*.
[48] Twitter, "TRF" (2022), *www.twitter.com*.
[49] Facebook, "Extinction Rebellion".
[50] Arran Stibbe, "An Ecolinguistic Approach to Critical Discourse Studies", *Critical Discourse Studies*, 11.1 (2014), 117-128.

never be sufficient investment or impetus in green energy solutions. It's already too late").[51] In this sense, the recurrent adjective 'powerless' is emblematic, as it underlines the disappointment over the empty promises made by powerful categories. In one Instagram post, environmental influencer Vanessa Nakate writes:

> We are drowning in promises. Commitments will not reduce CO2. Promises will not stop the suffering of people. Pledges will not stop the planet from warming. Only immediate and drastic action will pull us back from the abyss. The truth is that the atmosphere doesn't care about commitments. It only cares about what we put into it – or stop putting into it. Humanity will not be saved by promises.[52]

As this and the above comments show, this aspect has points of contact with broader environmental justice claims, in which "climate communication reproduces or resists current contexts of sociopolitical power".[53]

At the opposite end of the emotional spectrum, items 2 ('Not being able to stop or control worrying') and 3 ('Worrying too much') are constructed similarly in the observed posts, especially through adjectives such as 'terrified', 'paralysed', or 'overwhelming'. In some cases, worry and concern reach severe forms, and the language becomes highly expressive: "Anxious? They should be absolutely shitting themselves. We all should. If there was ever a time to fight, it's now"; "I'm not anxious anymore I'm desperate"; "Sick to death and pretty helpless".[54] The feeling of being afraid (item 4), often reported with 'scared' or 'frightened', is also associated with sadness, as the adjectives 'sad', the verb construct 'to be in despair', and adjectives such as 'hopeless' and 'helpless' indicate ("I feel helpless, hopeless and frightened for the future"; "Helpless. Hopeless. Fearful for my children").[55] All the above items and their corresponding negative emotions are sometimes linked to general depression – "My depression has worsened with climate change and I have accepted that is [sic] what it will be"[56] –; however, as a coping and comforting action, some users find it useful to share their personal experience with the other readers: "I have been taking a little bit of action in the form of donations and ... I see that may offer me some relief";[57] "Climate anxiety is real and I am fighting it. I am trying to stave off despair by working on my diet (cutting out meat and dairy) and lifestyle (less plastic, fewer clothes, etc), and volunteering for wildlife research and getting to see nature while I still can".[58] In other instances, sadness (similar to anger) is used as a positive push to action: "It's important to let sad news make you sad. Let the gravity and inertia of the crisis overwhelm you just enough to fully realize who you are fighting & why".[59] This latter comment shows the informal coping mechanisms active in these online communities, in which people often share words of comfort to help other users dealing with negative thoughts.

The categories 5 ('Unable to stop thinking about future climate change and other global environmental problems'), 6 ('Unable to stop thinking about past events related to climate change'), and 7 ('Unable to stop thinking about losses to the environment') correspond to the state of rumination reported by Hogg et al.[60] This mental state, involving constant thinking about environmental degradation, is exemplified by the verb expressions "can't help but think" or "can't stop thinking

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[51] Twitter, "Greenpeace" (2022), *www.twitter.com*.
[52] Instagram, "Vanessa Nakate" (2021), *www.instagram.com*.
[53] Julia C. Fine and Jessica Love-Nichols, "Language and Climate Justice: A Research Agenda", *Journal of Sociolinguistics*, 25 (2021), 460.
[54] Facebook, "Extinction Rebellion"; Facebook, "Mind" (2022), *www.facebook.com*.
[55] Facebook, "Mind".
[56] Facebook, "Extinction Rebellion".
[57] Ibid.
[58] Facebook, "Climate Reality" (2020), *www.facebook.com*.
[59] Facebook, "Extinction Rebellion".
[60] Hogg et al., "The Hogg Eco-anxiety Scale", 4.

about". In particular, negative emotions linked to item 6 stress the disappointment over the delay in responding to the ecological crisis: "I feel it's too late for talking!"; "It isn't something new, now finally the world is taking note!!"[61] In some comments, negative thoughts revolve around dominant groups as opposed to laypeople and scientists: "We have known about it for decades now, successive governments have failed to attempt anything other than the most basic of measures"; "The saddest part of all this that it has been predictable not only by scientists but also by many others for the past 40yrs".[62] Speaking of the role of scientists, they are also part – although in an over-simplified, polarized representation of power relations – of the dominated minorities, given that public scientific concern over environmental issues has often been overlooked by policymakers. Since all four dimensions of eco-anxiety are reportedly "unrelated to trust in the credibility of science",[63] the popular hypothesis that climate change deniers are either poorly informed or not directly experiencing the effects of the climate and ecological crisis gains strength.

Moreover, predictions about future losses to the environment (items 5 and 7) go from envisioning necessary lifestyle changes ("Now it's come to a point where drastic lifestyle changes will need to happen very quickly") to dramatic scenarios for human survival ("Can't help thinking the World will sort itself with weather shifts that will thin us out enough to stop us destroying it").[64] Negative thoughts about having children or about the future of younger generations are also recurrent in these categories, as some comments point out: "I question whether it's ethical to have any children. I'm 33 and that is weighing on me. I feel it will be selfish to have kids largely for my own fulfillment, knowing that by the time they can have kids, it will be a much less viable option";[65] "Rather than worry, it would be beneficial if you stop all fuel travel, refuse plastic and wood products, grow all of your own food and try to breathe less. Of course no more babies please!"[66] Interestingly, quite a few comments in these thematic groups are written by older users who admit being part of the problem ("the baby boomer generation (mine) [sic] has been horrible stewards of our environment and it's downright immoral"; "we older generations must take actions to begin to address climate change, it is an intergenerational project but it is our responsibility to initiate it to give future generations some hope").[67]

Moving towards more severe symptoms of eco-anxiety, items 8 ('Difficulty sleeping'), 9 ('Difficulty enjoying social situations with family and friends'), and 10 ('Difficulty working and/or studying') are more rarely reported in social media discourse. In the first case, comments by users report difficulty sleeping ("I lose sleep over ecological overshoot"; "The truth is, if you're awake to the climate crisis during the day, finding yourself awake at night is a distinct possibility");[68] in the other two cases, the effects of climate anxiety can be more complex, for example leading to forms of apathy and resigned acceptance:

> The solution is to move from denial to acceptance, and not getting stuck in anger, bargaining, depression. For those that accepted climate change years ago, we've come to accept denial from those that haven't been paying attention. The world it seems, is polluted with victims that aren't experiencing the worst of climate change.[69]

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[61] Facebook, "Mind".
[62] Facebook, "Greta Thunberg" (2022), *www.facebook.com*.
[63] Hogg et al., "The Hogg Eco-anxiety Scale", 6.
[64] Facebook, "Greta Thunberg".
[65] Facebook, "Yale Program on Climate Change Communication" (2022), *www.facebook.com*.
[66] Facebook, "Extinction Rebellion".
[67] Facebook, "Climate Reality" (2021), *www.facebook.com*.
[68] Twitter, "Trf Climate" (2021), "Dr. Katharine Wilkinson" (2022), *www.twitter.com*.
[69] Facebook, "Climate Central" (2020)*, www.facebook.com*.

Other comments mainly reflect upon the general deterioration of people's lives ("No amount of therapy is gonna [sic] help me navigate ... climate change, the fact that there's still a pandemic, and the daily degradation of the lives of my friends and loved ones"), and the fact that, despite suffering from overlapping stress and anxiety, people must continue to work normally ("I have severe depression and anxiety, the climate is unstable, the world is on the brink of war, and I have to log on tomorrow and pretend all is fine and that I like my stupid job and the stupid people").[70] Comments such as the latter mark the social separation between small powerful minorities and the vast majority of people, almost unveiling the futility of common jobs in the face of the ecological crisis.

Finally, items 11 ('Feeling anxious about the impact of your personal behaviours on the earth'), 12 ('Feeling anxious about your personal responsibility to help address environmental problems'), and 13 ('Feeling anxious that your personal behaviours will do little to help fix the problem') have several points of contact with all other categories, as they make reference to subtle forms of eco-anxiety. Some comments in these groups show the same level of intolerance against elite categories as in item 10: "Instead of working people shouldering the guilt and grief of the climate crisis, we need to redirect that blame where it rightfully belongs – squarely at the feet of the global corporate elite and their political allies who have been stacking the deck in their favour for years";[71] "The world is eventually going to fry because of governments' inaction, industry resistance to change, economic growth, the world population explosion, etc." [sic].[72] Many common people experience feelings of guilt for the current climate crisis, and tend to blame themselves for not doing enough or doing little to help fix the problem ("The worst is feeling terrible about the things your [sic] already doing and saying you aren't doing enough"; "I still mess up and make excuses and go into a shame cycle. But just gotta [sic] keep trying!")[73] Existing literature in the field of green marketing[74] has denounced the paradox of consumer scapegoatism, a tendency of companies and corporations to load laypeople with excessive individual responsibility, while covertly promoting consumerism and directly fuelling the ecological crises. Confrontational language and wording is quite frequent in this sense, as some observe: "We certainly are in a David and Goliath situation trying to effectively combat climate change. I struggle with feeling discouraged. Taking action – getting educated, write/call reps, vote ... is key. Connecting with other like-minded people, and spending time in wild places are other ways to stay sane and engaged in this uphill battle".[75] Verbs such as 'lied to' or 'fooled', and adjectives going from 'ashamed' to 'indifferent' capture the full complexity of these latter items, as well as the multiplicity of negative feelings classified under all Hogg's categories.

4.1 *Results validation with Sketch Engine*

As explained in the 'Methodology' section, after observing how the theme of eco-anxiety is constructed in SM discourse, *Sketch Engine* was used to validate the results and obtain a qualitative evaluation of topic distribution. In particular, the tool contrasted the couple 'anxiety'/'environment' in the English Web corpus *enTenTen*; not surprisingly, there appear to be rare semantic points of contact between the two lexemes, thus confirming that the relation between anxiety and environmental issues is still emergent and not clearly established at a discourse level; as shown in Table 1, shared usage is found especially in the words 'stress' (more used with 'anxiety') and 'health' (more used with

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[70] Twitter, "Climate Reality" (2022), *www.twitter.com*.
[71] Twitter, "Emma Jackson" (2022), *www.twitter.com*.
[72] Facebook, "Climate Reality" (2021).
[73] Instagram, "plasticfreemermaid" (2022), *www.instagram.com*.
[74] See, among others, Lewis Akenji, "Consumer Scapegoatism and Limits to Green Consumerism", *Journal of Cleaner Production*, 63 (2014), 13-23.
[75] Facebook, "Yale Climate Change Communication" (2022).

'environment'), although both collocates may be semantically unrelated to eco-anxiety. While there is no attested presence of 'climate' among the collocates of 'anxiety', there is matching usage of 'depression', 'fear', and 'disorder' with both keywords, although limitedly with 'climate'.

anxiety/environment and/or ...		
worry	6,347	0
insomnia	5,911	0
depression	107,556	73
fear	33,204	167
disorder	11,782	89
stress	50,337	918
health	763	53,056
culture	73	14,568
climate	0	7,428
society	0	11,853
community	0	21,176
economy	0	17,712

Tab. 1: Anxiety/Environment concordance

Among the collocates, the noun 'concern' appears 76 times with 'anxiety', and 442 with 'climate'; as for the nouns modified by 'anxiety' and 'climate' respectively, 'fear' (3,719 vs 70), 'stress' (5,226 vs 289), and 'health' (130 vs 6,031) stand out. In addition, the noun 'adolescent' (27 vs 51) stands out among the 'possessors of anxiety/environment', which possibly suggests that young people are more likely to be affected by several forms of anxiety. Cross-search of the couple 'concern'/'environment' yielded similar results, with the noteworthy collocate 'climate' found 210 times with 'concern' (and 7,428 times with 'environment'). Subsequently, data obtained through the Word Sketch tool confirmed the selection of reference keywords, with the adjectives 'environmental' and 'ecological' found as modifiers of 'concern'.

Finally, the Word Sketch tool was also useful to cross-check feelings linked to eco-anxiety as appearing in Hogg's model. To give some examples, nouns modified by 'anxiety' include: 'depression', 'stress', 'fear', 'anger', 'irritability', 'panic', 'agitation', 'nervousness', 'frustration', 'worry', 'restlessness', 'fatigue', 'guilt', 'sadness', 'loneliness', 'grief', 'tension', 'sleeplessness', and 'distress'. These lexemes – besides corresponding to the main symptoms of climate anxiety described in literature – and their derived forms appear in the observed SM discourses, with users choosing them to describe their negative feelings. Albeit promising, the results yielded through software analysis are by no means, from a quantitative perspective, representative of the discursive links between environmental and anxiety topics. As explained in the 'Methodology' section, qualitative observation enables to focus on specificity and context in smaller data samples, rather than larger ones; the search operations performed through *Sketch Engine* concern single lexemes and pairs of words, indeed no frequency analysis (needed in quantitative studies) is provided, but rather lists of collocates and comparative word sketches; quantitative investigations using larger corpora may deal with representativeness on a more systematic basis.

5. Conclusions

The present paper has tried to highlight how the emerging issue of eco-anxiety is constructed in social media discourse by eco-savvy users wishing to share their negative emotions about the environment. While the study has some, already discussed methodological limitations, further research could adopt enhanced qualitative approaches or corpus-based methods for larger and more systematic linguistic investigation. Despite the lack of robust linguistic evidence on the subject emerging from corpus-aided

search operations, preliminary results suggest that there is a marked, somehow spontaneous relation between eco-anxiety themes and their language patterning. Indeed, the taxonomies of eco-anxiety produced in the field of psychology provide a valid point of departure to investigate this issue within the framework of Critical Discourse Studies: starting from the lists of identified symptoms, it is possible to trace related terminological seeds for linguistic examination.

In conclusion, the observed SM discourses document the varied, widespread negativity about the current state of the world's environment by eco-conscious people who often denounce the unwillingness of dominant groups (such as politicians and big businesses) to change the status quo. It is here that, as anticipated by Mishra, "the modern promise of equality collides with massive disparities of power, education, status and property ownership".[76] In all fields of discussion, social media are giving unprecedented visibility to individual and collective sentiments of anger, disillusion, anxiety, and powerlessness, all adding up to the modern age of 'ressentiment' described in Mishra's book; in ecological terms, the causes for negativity and concern are also clearly and widely stated online, but in fact little progress is being made in listening to the digital cry for help.[77]

Appendix 1 – Corpus

List of SM accounts with relative number of followers on Facebook, Instagram, and Twitter. The symbol '/' indicates that the number of followers is inferior to 10,000 or that the page does not exist on the selected SM platform.

	NAME	FACEBOOK	INSTAGRAM	TWITTER
1.	1 Million Women	1,000,000	166,000	18,100
2.	Autumn Peltier	45,100	124,000	/
3.	C40 Cities	37,500	40,400	114,700
4.	Citizens' Climate Lobby	/	16,900	43,500
5.	Climate Central	144,000	/	135,600
6.	Climate Change Committee	/	/	62,700
7.	Climate Group	14,000	15,300	159,100
8.	Climate Reality	960,900	328,000	625,200
9.	Earth Alliance	137,000	877,000	70,900
10.	Everyday Climate Change	/	136,000	/
11.	Extinction Rebellion	438,400	675,000	390,000
12.	Fridays For Future International	39,200	485,000	134,500
13.	Future Earth	/	387,000	/
14.	Greta Thunberg	3,500,000	14,300,000	5,000,000
15.	Intersectional Environmentalist	/	421,000	/
16.	Isra Hirsi	/	97,600	200,900
17.	Leah Thomas	/	233,000	18,900
18.	Little Miss Flint	/	148,000	146,000
19.	Mikaela Loach	/	134,000	10,200
20.	Oceana	1,000,000	2,900,000	470,400
21.	People & Planet	11,570	/	19,750
22.	Plasticfreemermaid	/	112,000	/
23.	Sierra Club	/	364,000	386,600
24.	Slow Factory	/	434,000	11,650
25.	Sunrise Movement	92,800	234,000	288,000

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[76] Mishra, *Age of Anger*, 31.

[77] Disclaimer on social media data. While the author acknowledges existing protection regulations for data retrieved on social media, all data presented in this paper has been collected from public social media groups or individual accounts of public figures, and has been anonymised to the author's capability. Moreover, all data is reproduced according to the copyright fair dealing for didactic and scientific research purposes.

26.	The Climate Coalition	23,380	15,400	35,300
27.	The Climate Council	273,800	53,300	61,900
28.	The Zero Waste Guide	13,000	868,000	/
29.	Treehugger	1,300,000	112,000	355,500
30.	Vanessa Nakate	/	165,000	253,300