

An Ecolinguistic Perspective in CDA and Critical News Analysis

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Abstract

The growing awareness of media's impact on societal attitudes towards environmental degradation and climate change has led to a surge of research examining the intersections between media and climate change. While the influence of language on environmental communication is well-known, this understanding is underutilized in understanding how ecological discourses may help or prevent response to climate change. Research on ecological discourses concerning climate change has both theoretical and practical significance. An increasing body of research has examined media discourses from an Ecolinguistic perspective, focusing on corporate-centric discourses of neoliberal economics and financial growth. The paper based on Social Constructionist Theory and Discourse Analysis Model and it provides a background on discourse and its relevance to discussions of climate change, energy crisis as a contextual factor and the societal role of media and language in discussing environmental issues. Ecolinguistics is introduced as a paradigm and rationale for researchers taking an ecolinguistics approach to discourse analysis, and linguistic concepts of word frequency, lexical cohesion, and modality are introduced. The methodology of this study is detailed in section three, describing the research aim, data gathering method and the process of applying an Ecolinguistic perspective. The analysis and findings are also mentioned in section four, followed by a discussion of the findings. The study concludes with a reference to the limitations, and suggestions for future research.

Keywords:

Media impact, environmental degradation, climate change, ecological discourses, ecolinguistic perspective.

مستخلص

لقد أدى الوعي المتزايد بتأثير وسائل الإعلام على المواقف المجتمعية تجاه التدهور البيئي وتغير المناخ إلى زيادة في الأبحاث التي تبحث في الترابطات بين وسائل الإعلام وتغير المناخ. وفي حين أن تأثير اللغة على الاتصال البيئي معروف جيداً، إلا أن هذا الفهم غير مستغل بشكل كافٍ لفهم كيف يمكن للخطابات البيئية المساعدة أو عرقلة الاستجابة لتغير المناخ. إن البحث في الخطابات البيئية المتعلقة بتغير المناخ له أهمية نظرية وعملية. وقد فحصت مجموعة متزايدة من الأبحاث الخطابات الإعلامية من منظور بيئي لغوي، مع التركيز على الخطابات التي تركز على يقدم البحث خلفية عن الخطاب وأهميته. الشركات في الاقتصاد الليبرالي الجديد والنمو المالي لمناقشات تغير المناخ، وتصف أزمة الطاقة كعامل سياقي والدور المجتمعي لوسائل الإعلام واللغة في مناقشة القضايا البيئية. يتم تقديم علم اللغة البيئي كنموذج وأساس منطقي للباحثين الذين يتبنون نهجاً بيئياً لتحليل الخطاب، ويتم تقديم المفاهيم اللغوية لتردد الكلمات والتماسك المعجمي تم تفصيل منهجية هذه الدراسة في القسم الثالث، حيث تم وصف هدف البحث، وطرق. والنمط جمع البيانات، وعملية تطبيق منظور اللغويات البيئية. كما تم ذكر التحليل والنتائج في القسم الرابع، متبوعاً بمناقشة النتائج. ويختتم البحث بالإشارة إلى القيود والاقتراحات للبحوث المستقبلية.

تغير المناخ، الخطابات البيئية، الكلمات المفتاحية: تأثير وسائل الإعلام، التدهور البيئي، المنظور اللغوي البيئي.

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1. Introduction

Global climate change, as one of the most severe "ecological crises" facing mankind in the 21st century, deserves enough attention from the international community. In the context of advocating a community of shared future for mankind, it is the social responsibility and historical mission of linguists to discuss climate change from the perspective of ecolinguistics. Therefore, the research on the ecological discourse of climate change has both theoretical and practical significance. As the primary source for the public to obtain information, news discourse can transmit certain attitudes, intentions, and emotions, thus affecting their cognition and behavior. Thereupon, news discourse on climate change plays an important role in guiding media opinion, shaping public perception, and facilitating the formulation of climate policies.

2. Literature Review

Previous studies of news discourse on climate change mainly focus on two academic approaches. One is to carry out research along the path of journalism and communication, focusing on guiding the media opinion environment, shaping the national image, and disseminating media information. The other is along the path of linguistics, such as the study of language features from critical discourse analysis and ecological discourse analysis, thereby exploring the role of language in mapping climate reality, building climate discourse power, and deepening the process of climate governance. The ecological discourse of news discourse of climate change is mainly studied from the aspects of evaluation theory, approach theory, and framework and metaphor theory.

Zhang (2020) pointed out that quantitative discourse analysis tools had become a growing popular method to operate various corresponding types. However, their applications are often simplistic and superficial and do not take full advantage of the discourse analysis resources available in the digital age. They discussed the potential for discourse analysis of a more sophisticated, advanced text analysis tool that is already frequently used in other similar methods, especially topic modeling.

Chen and Wang (2019) used critical discourse analysis and translation theory to analyze the discourse strategies in news reporting, to discover the ideology hidden in the reporting discourse beyond the surface language symbols. The chapter argues that opponents and supporters of the movement represent centripetal and centrifugal forces, respectively. The reporting discourse strategy seems objective and fair, but by setting various character frames for different quoted speakers, selectively using reporting verbs, and using the pragmatic functions of different reporting modes to convey ideology subtly.

Chang-Chen and Zhang (2018) used ecological discourse analysis to analyze the ecotourism texts of Jiuzhaigou scenic spots from the aspects of transitivity and attitude resources. They found that its purpose is to render a good ecological environment of ecotourism scenic spots, to create a harmonious, equal, and friendly atmosphere between man and nature, highlighting the attractiveness of eco-tourism scenic spots. The findings suggest that ecological analysis of advertising discourse can reveal economic behavior and influence the public's consumption behavior. The English advertisements mainly use psychological processes to express their ecological attributes, emphasizing the establishment of an emotional connection between man and nature. After a literature review, it is found that the existing studies have the following three deficiencies. First, it focuses on qualitative analysis, with less empirical quantitative analysis; Second, it focuses on the description of language features, and seldom involves the discussion of social and cultural factors. Third, it focuses on the perspective of critical discourse analysis, rather than the perspective of ecological discourse analysis.

At present, feature extraction methods based on artificial rules and dictionary resources often rely on a specific domain or specific corpus. Furthermore, the text feature dimension increases linearly with the increase of artificial rules and dictionary resources, which not only increases the training cost of the model but also reduces the generalization ability of the model. To realize the effective mining and expression of the emotional features of text, a PM's discourse method combining the emotional features of words is proposed. This method first establishes an abstract word vector expression method based on emotion dictionary resources and introduces emotional polarity and speech characteristics of words.

3. Discourse and Climate Change

Climate change discourse serves as the linchpin in our collective efforts to address one of the most pressing challenges of our time. Scientists like Katharine Hayhoe, a renowned climate scientist and

communicator, emphasize the critical importance of effective communication in bridging the gap between scientific knowledge and public understanding. Through her work, she underscores how framing climate change messages in relatable, empathetic ways can resonate with diverse audiences and inspire meaningful action.

Furthermore, the research of Michael Mann, a prominent climatologist, underscores the necessity of countering climate change denial through robust scientific discourse. Mann's studies on the impacts of human activities on the Earth's climate highlight the urgency of adopting evidence-based communication strategies to counter misinformation and promote climate literacy among the public.

In synthesizing the insights of these and other leading scientists, it becomes evident that discourse surrounding climate change is not merely a matter of conveying scientific facts but a complex interplay of language, power dynamics, and societal values. By recognizing the influence of discourse on shaping perceptions and driving action, we can harness the power of communication to foster a collective commitment to sustainable practices and environmental stewardship.

3.1 Defining Discourse

In an attempt to construct a social theory of discourse, Fairclough (1992) outlined a three dimensional framework for conceptualizing discourse. The first dimension is discourse-as-text, which encapsulates the linguistic organization and features of tangible occurrences of discourse. Various branches of linguistics, including grammar, choices and patterns in vocabulary, text structure as well as cohesion can be systematically analyzed for a more holistic understanding of different discourses (Blommaert & Bulcaen, 2000: 448). The second dimension is discourse-as-discursive-practice, which emphasizes how discourse is something that is produced, disseminated, and consumed in society. When framing discourse as a discursive practice, the analysis of concrete textual features should include notable attention to the three aspects that connect a text to its context - intertextuality, speech acts, and coherence (Blommaert & Bulcaen, 2000: 449). Fairclough's (1992: 93) third dimension is discourse-as-social-practice, which discusses the ideological effects and hegemonic processes in which discourse is a principal feature.

3.2 Climate Change Discourse

The term climate change commonly refers to changes and shifts in the global climate system that result in long term, often irreversible changes in weather patterns (Damico et al. 2020: 685). Even though the global climate system is continuously changing, climate scientists have demonstrated that current climate trends are explicitly tied to human

activity, notably increased greenhouse gas emissions. Climate change has evolved into one of the most urgent issues facing humanity today, partly due to it developing from a predominantly physical phenomenon to being concomitantly a cultural, political, and social phenomenon (Fløttum, 2014: 7). The influence of language on climate change communication is well acknowledged, and numerous discourses of climate change are formulated within different social groups through the utilization of varying types of language and concepts (Fleming, 2014: 407-408). Climate delay discourses encapsulate a variety of identifiable strategies, including individualism (Maniates, 2011), fossil fuel greenwashing and solutionism (Sheehan, 2018), as well as appeals to social justice, well-being, and economic factors (Bohr, 2016; Jacques & Knox, 2016). Lamb et al. (2020: 2) characterize discourses of delay as refutations of at least one of the following four questions: (1) Is it our responsibility to act? (2) Are transformative changes required? (3) Given the potential costs, is it advantageous to mitigate climate change? (4) Is it still plausible to mitigate climate change? Based on the differing positions to these foundational questions, Lamb et al. (2020: 2) conceptualized four separate categories of discourses that either ‘redirect responsibility’, ‘push non-transformative solutions’, ‘emphasize the downsides’ of climate actions, or ‘surrender’ to climate change. Similarly, Fleming et al. (2014: 409) identified three primary discourses that have a significant role in constraining proactive social action for climate change: the ‘logical action discourse’ which encapsulates issues associated with a lack of information, the ‘complexity discourse’ which discusses the lack of conclusive and understandable science, and the ‘culture of consumption discourse’ which emphasizes the role of a consumerist society in the escalation of climate change.

4. Climate Change and Society

The nexus of climate change and society underscores the profound implications of environmental transformation on human well-being and societal resilience. Scientists such as Dr. James Hansen, a leading climate scientist, have long warned about the dire consequences of unchecked global warming. Hansen's research on climate modeling and projections has been instrumental in shaping our understanding of the escalating risks posed by climate change and the urgent need for decisive action.

Dr. Katharine Mach, a prominent researcher at the intersection of climate change and adaptation, emphasizes the importance of considering societal vulnerabilities in the face of environmental shifts. Mach's work underscores the disproportionate impacts of climate change on

marginalized communities and the imperative of fostering equitable adaptation strategies to safeguard the most vulnerable members of society.

By integrating the voices of these distinguished scientists and their research contributions, it becomes evident that climate change is not solely an environmental issue but a multidimensional challenge that intersects with social, economic, and political dimensions. Through collaborative efforts that bridge scientific expertise with societal needs, we can forge pathways towards a more sustainable and climate-resilient future, one that prioritizes the well-being of both present and future generations.

4.1 Ecological Philosophy and Climate Change Theory

The concept of ecological philosophy refers to "an idea to examine the relationship between living things, inanimate things, and the natural environment, including human beings". In order to objectively evaluate the ecological value orientation contained in the discourse, the analyst of ecological discourse needs to ensure a prerequisite [17–20]. That is, on the basis of absorbing ecological philosophy or ethical thoughts related to the relationship between man and nature, integrating and innovating these thoughts in combination with the actual situation and specific problems, establishing a scientific and unified ecological philosophy view suitable for a specific context, and taking it as a yardstick to measure the ecological orientation of discourse. In the ecosystem, humans, animals, plants, microorganisms, inanimate organisms, and other ecological factors will have an effect on the climate. In turn, they are also affected by climate, and the interaction between these ecological factors is a cyclic process. The ecological environment is the basic condition of human survival, and also the precondition of sustainable development. The situation of climate change is becoming more and more serious. Any environmental policy formulation should adhere to the principle of "ecological priority", pursue "green development", practice green ideas, and take concrete actions to protect the climate and environment. The relationship between man and nature is a "harmonious coexistence". Nature is the source of human life, and human beings should respect, comply with and protect nature. In the face of the climate crisis, the international community needs to jointly build a "community of life on Earth". Ecological discourse analysis focuses on the ecological attributes of discourse and needs the guidance of universal ecological philosophy. Therefore, this study will follow the ecological philosophy of "green development, harmonious coexistence" from the point of climate change theory, and judge the ecological attributes contained in the news

discourse, so as to effectively screen the beneficial, ambiguous, and destructive discourse.

5. Role of the Media and Language

Within the context of examining the media's impact on the attitudes towards environmental matters, mass media can be defined as a heterogeneous and influential set of non-state actors that operate as central channels to both formal and informal discourses regarding various topics, including geopolitics and cultural politics (Castree, 2006; Dalby, 1996). Pioneering research by Trumbo (1996) & Weingart et al. (2000) outlined the influence of the news media. Additionally, numerous studies have examined the role of mass media in accurately and adequately reporting climate-related scientific findings (Bell, 1994; Dunwoody & Peters, 1992; Nissani, 1999; Boykoff & Boykoff, 2004), the ways in which environmental communication can be emotionally anchored (Höijer, 2010), the influence of political actors (Carvalho, 2005) as well as the political stances of journalists (Elsasser & Dunlap, 2012) in framing climate change risks and the varying levels of expertise regarding climate change issues among journalists (Brüggemann & Engesser, 2014). Moreover, a series of research has discussed the potentially destructive influence of the journalistic norm of balance in the coverage of climate change and 'global warming'.

Media plays a central role in the way climate change and practices of sustainability are discussed, debated, and contested (O'Neill, 2020: 10). Not only does media coverage act as a key agent in raising awareness and disseminating information to a broad audience, it also provides a central forum for the discussion and legitimization of climate governance (Schmidt et al. 2013: 1233). Numerous people become inescapably engaged in the media-presented narratives of the ongoing environmental crisis through daily media reports of global events (Ponton & Sokół, 2022: 446). Mass media have framed the issues of climate change and consequent environmental degradation in ways that underline the potential causes for it as well as the factors that may be responsible for it and ways in which problems can be addressed (Kaushal et al., 2022: 3582). However, a vast number of prior framing research has predominately focused on conceptualizing frames as pre-arranged narratives or whole perspectives on specific news topics, whilst giving minimal scholastic attention to how individual linguistic attributes, such as altering word choices, may shape audience perceptions (Zhang & Borden, 2023: 3).

5.1 Media Framing's Impact on Climate Policy

To illustrate the integrated approach, let's consider a case study on climate change policy. We examine media framing techniques and their influence on public opinion and policy-making. By analyzing news articles, policy documents, and conducting interviews, we can identify the discursive strategies employed, the stakeholders involved, and the subsequent policy outcomes. This case study showcases how an integrated analysis can shed light on the complex interplay between ecology, journalism, policy, CDA, and CNA.

6. Ecolinguistics and ecological discourse analysis

Ecolinguistics Emerging as a part of a broader ecological turn within the humanities and social sciences (Stibbe, 2015: 7), ecolinguistics focuses on the relationship between language and the environment, as well as the way in which they mutually influence one another. As defined by Ainsworth (2021: 390), within the context of ecolinguistics, ecology is how humans treat one another and the natural world, while language comprises of how our ideas, ideologies, thoughts, and worldviews affect how we treat others and nature. Fundamentally, ecolinguistics aspires to examine linguistic phenomena found in inter-language, inter-human, and human-nature relationships within the normative framework of a specific ecological philosophy (S. Chen, 2016: 109).

According to LeVasseur (2015: 22), there are currently three distinctive yet interrelated schools of thought in ecolinguistics: The Haugenian tradition, Hallidayan tradition, as well as the biolinguistics tradition. The Haugenian approach, also known as language ecology, is mainly concerned with the study of the effect of the environment on language (Haugen, 1972). Steffensen & Fill (2014: 7) further elaborated on the Haugenian tradition by defining four subtypes of ecologies that language can be situated in, including symbolic ecology, natural ecology, socio-cultural ecology, as well as cognitive ecology. Similarly, to the Haugenian approach, the biolinguistic tradition adopts a more practical understanding of language and ecology by conceptualizing the existing global multilingual system as a single ecological system, with the extinction of minority languages resembling the loss of biodiversity on Earth (S. Chen, 2016: 110).

Inversely to the two other theoretical strains, the Hallidayan approach, often referred to as ecological linguistics, studies the effect of language on the environment (Halliday, 1990). Halliday adopts a functional approach toward language research, due to which the anthropocentricity of human language gives it partial accountability for human being's unecological practices (S. Chen, 2016: 110). Researchers

utilizing the Hallidayan framework commonly situate their research in the intersection between ecolinguistics and critical discourse studies (Stibbe, 2014; Stibbe, 2015). As further noted by Stibbe (2014: 122), as the contemporary media landscape is heavily dominated by discourses encouraging and glorifying material growth and consumerism, ecolinguistics can provide insightful theoretical and methodological contributions in raising ecological awareness among varying groups of people.

As an independent paradigm, ecological discourse analysis (EDA) is an ecologically oriented analytical framework that examines linguistics based on a specific ecosophy (He & Wei, 2018: 66). Primarily drawing from function-orientated theories of linguistics, EDA aims to expose the effects of language use on the environment (Cheng, 2022: 189). Prior research utilizing EDA has examined the involvement of the language system in constructing or influencing a viewpoint on ecological issues (Alexander & Stibbe, 2014: 107). Numerous of these studies have focused on lexical choices and their discursive implications.

Studies employing ecological discourse analysis vary in purpose and depth of analysis, but many of them share a set of general characteristics that define their Ecolinguistic approach (Stibbe, 2014: 118). Notably, the focus of these studies is on discourses that have a consequential effect on how people treat the ecological systems that life is built upon. Such discourses are examined with reference to how clusters of linguistic features represent shared values, norms, and social beliefs, which are in turn examined through the employment of a particular ecosophy. Overall, such studies aim to either expose discourses which are deemed ecologically destructive or ambivalent, or bring attention to discourses which appear as ecologically beneficial. Aside from its ecological dimension, the central characteristics of EDA are similar to those of traditional critical discourse analysis (Stibbe, 2014: 119).

Employing the method of description-explication-explanation, ecological discourse analysis can be utilized to provide an in-depth analysis of the attitude resources as well as the intended information conveyed in news discourses discussing climate change (Zhang et al. 2023: 5). Notably, the descriptive dimensions of ecological discourse analysis refer to the examination of language features in such news discourses, while the explication approach describes the processes of discourse production, and the explanative perspective aims to rationally explore the abstract cultural and social factors of discourse (Zhang et al. 2023: 5). Applying these three dimensions in examining news discourses within the context of this study will aid in conducting a detailed

ecological discourse analysis of the news samples and provide more thorough overview of the types of linguistic features that may be used in constructing environmental discourses.

6.1 Ecological News Discourse Analysis Framework

As a major research paradigm of ecolinguistics, ecological discourse analysis extends the research object of discourse analysis to the whole ecosystem covering the social system. It aims to clarify the ecological factors that are not conducive to the harmonious development of man and nature in the discourse and urge humans to reflect on and correct the ecological crisis, thereby enhancing the awareness of environmental protection and helping the balance of the ecological system. Following the method of "description-explication-explanation", the study conducts an in-depth analysis of climate change news discourses. Specifically, the description approach refers to the analysis of the language features in news discourses on climate change, the explication approach stands for the analysis of the process of news discourses' production, and the explanation approach refers to the rational exploration of abstract social and cultural factors. These three dimensions have intrinsic and self-consistent logical correlation, and point-to-surface linkage analysis will be more conducive to the systematic grasp of ecological discourse.

The ultimate goal of this study is to conduct a detailed and in-depth ecological discourse analysis of the attitude resources in the news discourses on climate change, so as to realize the independent judgment of the ecological information conveyed by the news discourses on climate change. In other words, discourse analysts compare the ecological concept presented by attitude resources with the ecological philosophy under the climate change theory to determine whether the two are compatible, thus identifying the ecological value orientation in the news discourse on climate change. The consonant is beneficial discourse, the neutral is an ambiguous discourse, and the contravention is destructive discourse. Therefore, this study constructs an ecological discourse analysis framework for attitude resources in the news of discourses climate change. Fig 1 presents the ecological discourse analysis framework:

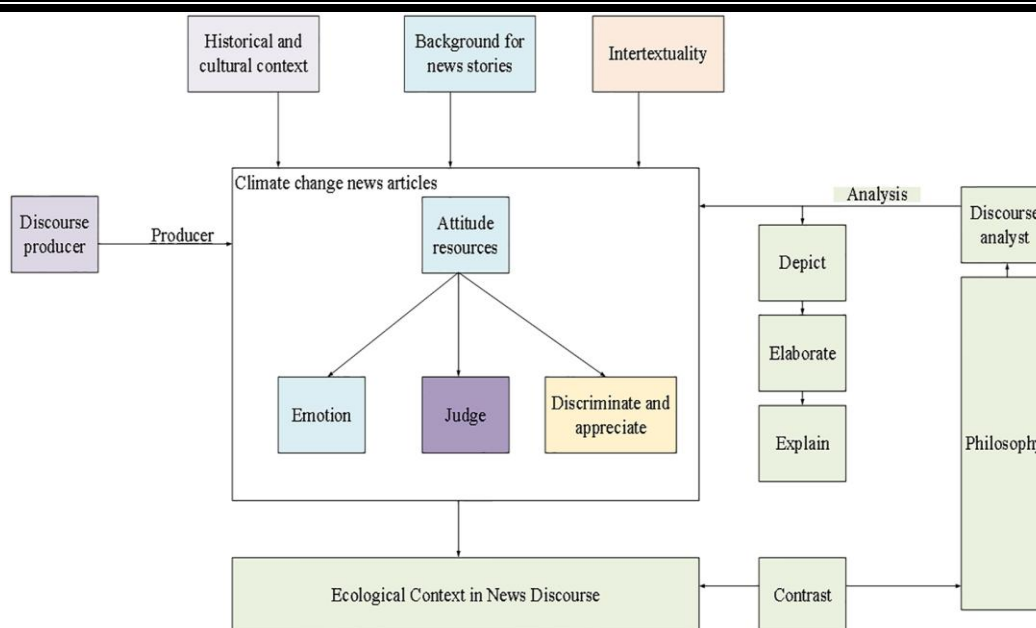


Fig 1. Ecological discourse analysis framework of attitude resources in news discourse.

6.1 Experimental results of the discourse analysis

The beneficial ecological discourse database is processed through the word segmentation statistical software developed by the country, and the emotional words are sorted in descending order with the frequency of occurrence as an indicator. Table 3 presents the results of the top 10 beneficial ecological discourse-emotional words.

Emotional words	Frequency	Frequencies	Emotional words	Frequency	Frequencies
A	0.012	8	D	0.0045	5
B	0.009	6	E	0.003	3
C	0.0075	7	F	0.0016	2

Table 3. Ranking of beneficial ecological discourse-emotional words.

The meanings of A-F in **Table 3** are forced, welcome, support, thanks, understanding, and worry.

In **Table 3**, the above emotional words mainly appear in the description of natural disasters destroying human well-being. By appearing at the beginning of news discourse, the purpose is to explain the ecological changes to readers, which plays a crucial role. At the same time, it guides readers to realize the importance of the ecological environment, publicizes environmental protection work, applies the power of ecological language, and stimulates the enthusiasm of readers to protect the ecological environment. Emotional words loaded with

ecological change semantics can touch readers' perceptions, so that readers can re-examine their relationship with nature and take action.

The emotional words are sorted in descending order by word segmentation statistical software, and the arrangement of neutral ecological discourse-emotional words is indicated in **Table 4**.

Emotional words	Frequencies	Frequency	Emotional words	Frequencies	Frequency	Emotional words	Frequencies	Frequency
a	1	0.0038	b	1	0.0038	c	1	0.0038

Table 4. Arrangement of neutral ecological discourse-emotional words.

In **Table 4**, the meanings of a-c are belief, guilt, and regret.

In the neutral ecological discourse database, the frequency of emotional words is lower than that of the beneficial ecological discourse database. There are only three words that meet the statistical conditions, namely "believe", "shame" and "regret", and the frequency is only once. Among them, the emotional word "believe" refers to more perfect data accuracy and full confidence in ecological environmental protection. From the perspective of system function, "believe" has no effect on readers' awareness of environmental protection. The "shame" expresses a human's reflection on the destruction of the natural environment and expresses the writer's guilt for the destruction of the natural environment. The "regret" contains rich emotions and focuses on the writer's disappointment in the ecological construction path, and will not affect the readers' ecological view.

7. Ecology and Journalism

Ecology, as the study of the relationships between organisms and their environment, provides a scientific foundation for understanding the ecological crisis. Journalism, on the other hand, plays a crucial role in informing and engaging the public. By combining ecological knowledge with journalism practices, researchers and journalists can collaborate to raise awareness, communicate scientific findings, and promote sustainable behaviors.

8. Policy and Ecology

Environmental policies are essential for implementing effective solutions to ecological challenges. Integrating ecology into policy-making processes ensures that decisions are based on scientific evidence and ecological principles. By bridging the gap between ecology and policy,

researchers can contribute to the development of informed and sustainable policies that address pressing environmental issues.

9. Critical Discourse Analysis (CDA) and Ecology:

CDA examines the power dynamics within language and discourse and how they shape social realities. Applying CDA to ecological discourses allows researchers to analyze how environmental issues are framed, constructed, and communicated. By critically examining the language used in ecological debates, researchers can uncover hidden ideologies, power structures, and discursive strategies that influence public opinion and policy-making.

10. Critical News Analysis (CNA) and Ecology:

CNA involves analyzing news media content to uncover biases, framing techniques, and underlying narratives. Applying CNA to environmental journalism helps identify how ecological issues are portrayed, what information is emphasized or omitted, and how different stakeholders are represented. By critically analyzing news coverage, researchers can assess the role of media in shaping public perceptions and influencing policy agendas.

11. Conclusion

Ecological discourse analysis is carried out on the relevant corpus of news reports on climate change in Britain. Specifically, from the perspective of ecolinguistics, it conducts a comparative analysis of the report title, vocabulary selection, and topic selection, to analyze the similarities and differences in the attitudes and measures taken by Britain in dealing with the issue of global climate change. It can be found that news reports on Britain's climate change objectively expressed their attitudes and views on relevant events in the title; in the choice of words in the text, more positive and affirmative words were chosen to create a responsible image for readers. In the aspect of topic selection, it is more inclined to choose authoritative organizations and personnel. In contrast, news reports on climate change in the UK tend to choose the negative impact of the measures taken by their political circles on the future of the UK in the headlines. The selection of text vocabulary is mostly negative; the theme is mostly aimed at the UK. It can be seen that it has conducted a more in-depth analysis of the news reports on climate change in Britain.

As a review article, the analysis further examines the discursive structures of the sampled articles by comparing them with the discourses identified by Lamb et al (2020). In addition to the lexical and modal qualities of the language employed in the examined articles, the extent to which the discourses described in this study are reflective of Lamb et al.'s (2020) discourses of delay are further drawn upon the combinations of

arguments as well as underlying logic of the energy related narratives in the articles, notably in terms of the overall economic orientation of the texts. The deconstruction of such discourses may aid in distinguishing misleading and deceptive environmental communication which may induce false positive perceptions of an organization's environmental contribution through in genuine reporting as well as normalization processes in media coverage.

Integrating ecology, journalism, policy, CDA, and CNA provides a comprehensive perspective for understanding and addressing environmental challenges. By bringing together these diverse fields, researchers can contribute to more informed public debates, evidence-based policy-making, and the development of sustainable solutions. This integrated approach acknowledges the interconnectedness of ecological, social, and media systems, highlighting the importance of interdisciplinary collaboration in tackling environmental issues on a global scale.

The rapid progress of Internet-related technologies has brought quiet changes to people's daily life. It has become a part of daily life for users to express their views on social networks through microblogs and other we-media, and to evaluate online products on e-commerce platforms. It has become an important research issue in the field of artificial intelligence how to analyze such texts by using machine learning (ML) and natural language processing technology to obtain the viewpoint orientation and emotional polarity in them. Traditional sentiment analysis techniques can be roughly divided into rule-based approaches and statistics-based methods. The rule-based approach is mainly from the perspective of linguistics, using the knowledge of language experts to compile dictionaries and templates to analyze the emotional tendencies in the text. The statistics-based method starts from the point of ML, uses the manually labeled training corpus for feature extraction and statistical model construction, and automatically realizes the judgment of emotional polarity. In the development of text sentiment analysis for more than ten years, the two kinds of methods have infiltrated each other, making sentiment analysis technology move towards a higher level. In the process, researchers have amassed a wealth of resources, tools, algorithms, and models.

12. Limitations

As the study described in this article review is principally deductive, it is limited to the premises conceptualized by the research conducted by Lamb et al. (2020). Moreover, as the scope of the study does not allow for the analysis of a broader and more varied set of data, the statistical analysis

of the prevalence of specific words as well as modal forms are not highly extensive.

13. Further Research

Further research should be done to account for all three dimensions defined in Fairclough's model of discourse analysis with a larger sample size to provide a more holistic overview of how environmental issues are discussed in broadsheet mass media. Notably, as discourses are commonly multimodal, future analysis should incorporate consideration of other modes, such as images, videos, and music. Other methods, including systemic functional linguistics, could be applied to examine textual function as well as modality from different perspectives. As a methodology, systemic functional linguistics could also provide deeper insight into the function of the language employed in media discourses regarding environmental degradation and popular attitudes regarding the fossil fuel industry. Lastly, as ecolinguistics has predominately focused on the negative and destructive aspects of environmental discourse in media, future research should also focus on what Stibbe (2017) describes as positive discourses, which promote holistic wellbeing and a more ecological worldview.

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