

The Importance of Language Use in the Discussion of POC and Minority Groups in the Biological Sciences

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Introduction

Knowledge of people of color and minority groups in the studies of the biological sciences has been intrinsic to the discipline as a whole, especially in regards to diversifying ecological and environmental subgenres. The ways that scientists orchestrate their research articles when discussing diverse groups of people is particularly important in regards to the ethics upheld by the community as a whole. Researchers have examined linguistic patterns that are relevant to this by exploring language associated with persistent biological and medical racism, along with a shift towards a succinct authorial stance, the formation of stance and associated biases, and value arguments (Carter, 2016; Hyland & Jiang, 2016; Jones & Medina, 2021; Sawaki, 2014). Hyland and Jiang (2016) point to Atkinson's (1999) observation of the move from the "experiencing gentleman scientist to community-generated research problems" (as cited in Hyland & Jiang, 2016, p. 270) in their discussion of orchestration trends over time, noting that there is a shift from a narrative experience to one that is more succinct. Though they note an increase in stance markers in the scientific community, particularly related to self-mentions, the implications they propose are limited. Although they identify there may be publication/foundation biases involved, these biases can further extend into racial and ethnic biases that may be upheld by certain publications, foundations, or institutions. Today, scholars recognize that there continues to be racial and ethnic biases that persist in present research (Jones & Medina, 2021). Further, language use becomes especially important when expressing one's voice while speaking about others and can influence how an author positions themselves and the reader's interpretation of their stance (Carter, 2014; Hyland & Jiang, 2016; Sawaki, 2016).

I will be exploring how presuppositions and assertions in the context of attitude markers in biological-anthropological research articles have changed over time, and where future implications for people of color (POC) and minority groups are being discussed in these articles. The results of this study suggest that the disciplines of the scientific community have reflected a trend towards subtle use of attitude markers and clearly defining a study group through the use of assertions, and have moved away from a heavier use of attitude markers with presuppositions about the study groups, indicating an acknowledgement of the historical contexts of biological and medical prejudices POC and minority groups

being discussed have dealt with. First, I will present the key terms relevant to the search for these articles by decade. Next, I will discuss the presence of terms to describe POC or ethnic minorities in relation to presuppositions, assertions, and the appearance of attitude markers by decade and theme, and lastly, I will discuss the relevance of these findings and the potential impacts for the reader.

Methods

To understand how presupposition and assertion use has changed over time, this paper examines 30 scientific research articles from the 1970s to 2021, sampling at 2-year intervals across 10-year sections (i.e., 1970-1972, 1980-1982...). Originally, the focus of the search was on the ecological and environmental sciences related to anthropological contexts, but was expanded to the generalized biological sciences in order to build a sufficient corpus. Some main subgenres explored in these sciences include: ecology and environmental sciences, such as population dynamics, environmental justice, and sustainability, and medical sciences, such as pathology, genetics, and epidemiology. In order to further focus my corpus, I selected articles pertaining to ethnic groups, people of color, and minority groups. Notably, each decade appeared to feature different keyword choices in order to find relevant articles (see Table 1). Searching for texts before the 90's required more drastic change in keyword selection, such as searching for "indigenous" and "native" referring to flora and fauna, rather than people.

Decade	Key Words
1970	Race, racial groups
1980	Ethnic groups, ethnics
1990	Ethnic, racial, minority groups, POC
2000	Environmental justice, indigenous, native populations, POC, minorities
2010	Environmental justice, indigenous, native populations, POC, ethnic minorities
2020	Environmental justice, indigenous, native populations, POC, ethnic minorities

Table 1: Keyword Usage Over Decadal Sampling

Analysis

My analysis involved sorting through each article and identifying attitude markers in the presuppositions and assertions of the article's summary/abstract, introduction and background, as well as the results discussion. I composed an Excel spreadsheet in order to physically count the instances of each; this also acted as an annotated resource for developing the discussion.

Results

As discussed by Jones and Medina (2021), the rhetoric regarding race as biological has resounding impacts on the way groups of people are presented throughout the scientific disciplines. Earlier texts published from 1970-1972 utilize a variety of dated language (see Table 1) to describe POC and ethnic minorities: Tobias (1970), Charlton and Bothwell (1971), Kretchmer et al. (1971), Dunn (1972), with the exception of one (Hart et al., 1971). To note, the piece by Tobias (1970) is an abstract of a speech. During initial corpus creation, many studies from this era were dedicated to the inclusion of POC and ethnic minorities for drug-related subjects.

Presupposition-use occurs most frequently when describing scientific names and study groups related to the subject matter, while assertions are typically used when discussing common names. For example, Kretchmer et al. (1971) note how the Fulani people participating in the study were separated into two separate groups based on "the distinctive physical characteristics of 'typical' Fulani and those who looked more like Hausa" (n.p.), without clarifying what these features were.

Author	Dated Term(s) Usage
Tobias (1970)	"Negroes"
Charlton & Bothwell (1971)	"Coloured," "Whites"
Kretchmer et al. (1971)	"American Blacks," "American Whites," "North and South American Indians," "Orientals," "Thais," "Australian aborigines," "Eskimos," "Semites"
Dunn (1972)	"Aborigines"

Table 2: Terms Used to Describe Groups In Articles Since 1970.

From 1980-1982, there is a trend towards alternate vocabulary to describe POC and minorities, but the research still appears to include these groups of people as

a means to gather information to better understand biological-anthropological issues, rather than how these issues may affect these groups being studied. The phrases “ethnics” and “ethnic groups” are much more apparent in these texts: Kolonel et al. (1981), Payton (1981), Dubowitz et al. (1982), Bernstein et al. (1982), and Feldman et al. (1982). Though, it should be noted that the phrase “coloured” appears in Dubowitz et al. (1982) to describe populations in Cape Town, South Africa. “Whites,” “blacks,” and “Jews” also appear (Feldman et al., 1982), along with “negroid” (Bernstein et al., 1982), but there is a trend towards using alternate descriptors in other texts, such as “ethnic groups” (Kolonel et al., 1981; Payton, 1981).

Overall, there is a continued trend of using presuppositions for describing most scientific jargon, as well as referencing prior studies and establishing deficits in knowledge. Most assertions are strictly kept to establish knowledge present in the study, with a declining trend of attitude markers. Rather, attitude markers are more subtle in this era, their use urging the need for more research in the discipline. Notably, Dubowitz et al.’s (1982) study contained the most attitude markers present in comparison to the other texts from this era, given the “Cape Town population seemed to satisfy these criteria”; the criteria were presuppositions about “coloured” infants being “small and not necessarily growth retarded” or the “Indian” infant with low birth weight is contributed to “an ethnic characteristic,” none of which were elaborated on or defined.

From the 1990s on, more contemporary language is used to describe POC and ethnic minorities, and there is a shift towards environmental sciences and environmental justice surrounding minority groups. However, the early 1990’s still lean towards terminology that has been better clarified in a modern context. Phrases such as “race/ethnicity” appear, while describing groups as “Blacks, Whites, Hispanics, American Indians, and Asians,” insinuating there is a mix of races and ethnicities present in the study, but neither are made distinct from one another (Lynberg et al., 1990). In contrast, Easterbrook et al. (1991) distinguishes between “Hispanic whites and nonwhites,” and “blacks and Hispanics,” which would insinuate “Hispanic” as an ethnicity, while “white” and “black” are races.

Even in as short a time frame as this, papers in 1992 begin to show broader, more widely-accepted terminology that steps away from racial differences and towards categorizations by region and ethnicity. Cook (1992) exemplifies this by defining “ethnic” and “ethnology,” noting that “ethnology” is more relevant to the current (1992) study since it is “the science which treats ... races and peoples, their relations, their distinctive characteristics, etc.,” noting there are more complex features that can define the “ethnic groups” being examined in the study. Edwards (1992) also shows this by using much broader, regional terminology such as “Americans of color” and “people of color.” This era highlights trends and traditions that are mostly followed in our contemporary context. Attitude markers are typically very subtle, unless paired with assertions to “warrant further investigations” (Lynberg et al., 1990) on a subject matter.

In the 2000's, there was a clear shift towards sciences incorporating language use akin to that present in Cook (1992) and Edwards (1992). More specifically, there is typically a better definition of the study group, typically in the form of an assertion, rather than a presupposition typical of earlier years. For example, "Pacific Islanders' refers to the people of Polynesia, Melanesia, Micronesia, and Oceania; because Native Hawaiians are people of Polynesia, we will hereafter refer to the entire group as Pacific Islanders" (Spencer et al., 2020, p. 45). Here, there is a clear definition of the study group and the context surrounding the labeling that this group is receiving, with authors choosing to assert rather than presuppose. Furthermore, attitude markers rarely appear unless in context to assertions about the importance of the research at hand. Phrases such as "The literature needs to," "it is critical to," "this work is also a reminder to," "This is especially important for," or some form thereof are common (Edgar et al., 2011; Kimberly & Caplins, 2020; Spencer et al., 2020; William et al., 2000).

Discussion

The guiding question aimed to identify how presuppositions and assertions in usage related to attitude markers may reflect how the academic community views ethnic minorities and POC in their research. To note, the use of attitude markers was more common in the '70s and '80s, but began to trend away from usage unless in a succinct, subtle manner. Regardless of the language used to describe POC or ethnic minorities, the use of attitude markers in most papers typically reinforced the author's stance on the importance of the work being completed, or emphasizing the continuation of relevant research. For example, in McGreavy et al. (2021) there is emphasis to "continue to challenge discourses about what counts as formal knowledge in academic institutions," and Kretchmer et al. (1971) discuss the importance of lactose intolerance as "worldwide and not uncommon," because it can lead to "severe consequences in a poorly nourished population." In research articles published in later years that trend away from more obvious attitude markers, there were also more clarifications being made for study groups, with more frequent use of assertions rather than use of presuppositions, as well as more neutral and widely accepted and neutral language to describe POC and ethnic minorities.

Surprisingly, there was one article that followed the trend identified by Hyland and Jiang's (2016) reference to Atkinson's (1999) "gentleman scientist" approach to orchestration, and this becomes apparent with the use of presuppositions and assertions. Dubowitz et al. (1981) approaches the subject more like a narrative compared to the other research articles, and in tandem with heavy use of assertions to establish context, can make it appear that assumptions about the study group have been made. There is a mention of excluding "the possibility of ethnic or environmental factors" on the populations of both "Coloured" and "White" infants, but the authors fail to elaborate what these are in either the introduction or discussion. Furthermore, presuppositions were made in tandem to the study group of "Coloured" infants, more so than "White" infants. With all of

these factors in consideration paired with the “gentleman scientist” approach, it comes off as though the only reasons POC were being studied in this paper was to be a comparison, or baseline, for “White” infants. A similar phenomenon occurs in an earlier paper where presuppositions are applied to specific ethnic groups in Western Africa, where there are “characteristics” used to tell two groups apart alongside imagery, but these characteristics are never explored or clarified (Kretchmer et al., 1971). It is assumed another expert in the field would understand what these characteristics are, and that they are apparently accepted as criteria to distinguish these two groups of people apart.

The limitations of this study of language use regarding POC in scientific articles include the constrained size of the corpus and highlighting representative articles to describe the output of an entire decade. Examining years individually across a decade might allow for more subtle changes in language use to become apparent. But this study provides a possible “snapshot” of the types of linguistic changes in use from decade to decade. A follow-up study might gather research articles according to both year and region. This would more precisely reflect the differences in regional attitudes towards ethnic minorities and POC that may be more prevalent to the area of study. For example, attitudes held by White Americans about African Americans over time may be unique to the United States, and there are obviously differences between countries and what would be defined as a “POC” or “ethnic minority.”

Conclusion

It is important to consider how the use of presuppositions and assertions contribute to the contextual understanding of POC and ethnic minorities as members of study groups, especially in the biological and anthropological sciences. It is clear that the usage of these linguistic tools can indicate to a reader whether or not assumptions are being made about the study groups, and what these assumptions may be. We must continue to carry out the traditions established in research articles from the 2000's, in which there are clearly defined study groups that include POC and ethnic minorities and subtle attitude markers in order to complete research that is both succinct and mindful of the personhood of those involved in the research.

Expanding upon this research could help to ensure that academic spaces remain inclusive, and acknowledge the history of biological and medical racism that have appeared in the past, and sometimes continue to appear today. Comparisons of regional definitions of ethnic minorities and POC can help create a more global roadmap for navigating this subject in the sciences as well. Overall, it is imperative to continue to be mindful of presupposition and assertion usage to foster research that is both meaningful and considerate of those being studied.

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