

The Influence of Cross-Cultural Language and Background on Climate Change Perception – An Empirical Investigation

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Abstract: There is a crucial importance of looking at climate change from the perspective of cultures and of individuals in order to implement adaptation and mitigation strategies that are appropriate at local scale. Cognizant to this, this paper employed a focus on the local scale and on individuals in bringing to light the variety of climate change meanings within the same physical space using respondents from two geopolitical zones in Nigeria (South-South and South-West). Empirically, this paper presented the results of in-depth interviews and data analysis from survey (questionnaire) with South-south and South-west respondents who are resident in Port Harcourt city. This approach permitted the investigation of the ways that construal levels inform climate change meanings across cultures. The empirical findings disclose the role that culture plays in climate change's perception in terms of values, experiences, understandings of nature and trust in the self and in others as agents of change. The findings from the tested hypotheses reveal that there are significant relationships between geopolitical zone and cultural background, and climate change perception of people. This paper highlights the importance of taking into account society and individuals in the climate change debate and of recognizing the role of culture in individuals' climate change meanings. Only by so doing, will it be possible to effectively tackle climate change and to convert it from threat into social opportunity.

Keywords: Cross-culture, Language, Climate change, Perception, Nigeria.

I. INTRODUCTION

Climate change effect has been phenomenal on the society, the blame which goes to both the most industrialised societies of the world as well as the 'less industrialised' because they are contributory to the factors causing climate change. In the last century, the world mean atmospheric heat has gone up by 1.04 degrees Fahrenheit, with warming over the last 50 years occurring at twice the rate of the prior 50 years. Climate scientists expect that the global average temperature will increase even more rapidly over the 21st century (IPCC, 2007). In its Fourth Assessment in 2007, the Intergovernmental Panel on Climate Change stated that "most of the observed increase in World mean temperature right from the mid of the last century could be attributable to the elevation in greenhouse gases (IPCC, 2007). There is a need to improve communication and education about climate change now because mitigating global warming will require widespread individual and government-led action. The role

that culture plays in contemporary climate change adaptation is not a well understood or studied area (Adger *et al.* 2011). Yet, culture, the full range of learned ideas and behavior patterns that are acquired, shared, and modified by people as members of a society, is ever present, guiding and lending meaning to perceptions of climate risk, decisions about whether to address climate change, and if deciding to take action, what it will be. Communicating the science clearly is critical, and we must do so in a way that actively engages people and motivates them to act. Scholars whose interests are in climate and climate change are increasingly coming to the reality that culture is significant in addressing climate change through adaptation (and mitigation) policy and planning measures (Kahanand, 2006; Adger *et al.* 2013).

Climate change is a worldwide issue. It often has varying impacts on different nations, however, the phenomenon is one that impacts the whole world. Hence, different nations must join forces in the fight against climate change. A worldwide issues deserves a worldwide solution. To offer a solution, cross-cultural communication comes in handy. People from various cultures, countries, with various backgrounds, have to exchange their ideas and opinions about how to solve this problem. The cultural variations among individuals impacts on their message content and the manner of expression of the message (Shadid, 2007).

People's cultural circumstances impacts on the manner they communicate. Gudykunst, Ting-Toomey en Chua (1988) outlined four distinct ways of communication and linked individual communication styles and cultural backgrounds. These classes of communication as per Gudykunst, Ting-Toomey en Chua (1988) include: Direct and indirect, Elaborate and briefly, Personal and contextual, Instrumental and affective. The choice of a specific style is influenced by people's cultural circumstances. For instance, the indirect form is typically utilised among people with collectivistic cultures such as Japan and China. In such cultures people concentrate on not bursting the feelings of the other person. Whereas in individualistic nations such as the US and the UK, the priority for the sender is to ensure that the sent message is well understood rather than caring about the feelings of the recipient of the message.

“Little is known about how people of varying cultural backgrounds conceptualize issues such as sustainability, climate change...” (Maller, 2011). Therefore, the aim of this paper is to find out in what way the content of the message (climate change) is influenced by the cultural differences of people. This paper was guided by two research questions:

1. What are the perceived causes and consequences of climate change in different cultural groups?
2. Are the notions concerning climate change and the frameworks from several nations’ administrations influenced by the cultural specific dimensions of the people?

To answer these questions, the cultural elements of climate change and how it affects the people’s belief towards climate change was investigated. In addition to the research questions, two null hypotheses were also formulated to further guide the study:

H_{01} : There is no significant relationship between geopolitical zones and climate change perception of people.

H_{02} : There is no significant relationship between cultural background and climate change perception of people.

II. METHODOLOGY

This paper offered an answer to recurrent calls to understand climate change culturally (Hulme, 2015) and to investigate how culture and climate change interact (Adger *et al.*, 2013). This study adopted the Twenty Statements Test to climate change and primary data collection through survey (questionnaire). The Twenty Statements Test (TST) is a simple and straightforward method to collect data on individuals’ self-construal. TST is intended to guarantee spontaneous and free answers. It is deployed when an author seeks to elicit statements that reveals subjective self-definitions rather than expected and biased self-definition. Thus, the TST is designed to investigate self-construal; the method has been generated from and informed by self-theory. The test proves to be especially suitable for investigating how individuals belonging to different cultures differ in their self-image (Margola *et al.*, 2011). In addition to its predominant application in self-theory, the TST has also been employed in different fields and, in particular, in organizational research (Jung *et al.*, 2009).

The fact that this method is straightforward and allows flexibility in its application, in its interpretation, and in its format, resulting in different interpretations by different authors, is one of its main advantages.

These features were taken advantage of as TST was adopted to achieve the objectives of the study. The researcher reinterpreted it and redesigned a different test structure, a different coding scheme, and, most importantly, applied it to the theme of climate change. Hence, it was deployed in this new format to investigate climate-change perception.

In this paper, some respondents responded to both the survey and the interview and were selected purposively. In the interview, the respondents were first asked to fill in a blank page answering the question “Who am I?” with ten statements, and then they were asked to write ten statements on “climate change” on a second blank page. In both cases, the instruction included statements that prompted respondents to answer spontaneously and stated that there was no “wrong or correct answer”. As the TST was distributed in person in a one-to-one setting, it was possible to guarantee the respondents that responses would be kept anonymous. These remarks were necessary, as the main benefit of using the TST is its capability for eliciting spontaneous and free-associative answers. In order to be able to investigate climate-change perception in a reliable and open way, it was important that respondents be allowed to express their own climate-change meaning instead of an expected one. Through the TST, respondents were free from superimposed scientific definitions of climate change. Respondents were provided with a blank sheet on which they were able to disclose their climate-change meanings in the forms of adjectives, single nouns or whatever statements they thought were appropriate. This freedom is of further relevance when considering the cross-cultural nature of the paper.

People with different cultural background might ascribe different meanings (and values) to surveys or certain quantitative research instruments, leading to biased results (Spector *et al.*, 2015; van de Vijer, 2015). Notwithstanding, survey was still utilized in order to gather primary data to test the hypotheses formulated for the study. The format of TST is reduced and simplified to the extent that the likelihood of importing or generating cultural bias is minimized. Consequently, data collected from the TST are comparable, even if carried out in different cultural settings. The “Who am I?” shed light on existing cultural differences and helped to reveal them. Specifically, cultural patterns of self-image came to light. These were not of secondary importance, as self-perception has been shown to bear an impact on emotion, cognition and motivation, which in turn influence individual (environmental) behaviour (Cho *et al.*, 2013; Gatersleben *et al.*, 2014). Statements of self-image also informed the interpretation of climate change-related statements and of interview contents. The way that respondents saw themselves also revealed their construction of their relationship with the earth and the environment.

Furthermore, the “Who am I?” statements prepared a “subject-centered” ground for the second set of statements regarding climate change. The structure of the test allowed respondents to familiarize themselves with the format and ground themselves in their self-image while answering the “Who am I?” question and then to be at ease in the second part of the test. Starting with a uniquely personal question and stimulating a certain amount of self-reflection focused attention on the respondent and on his/her personal views

rather than on the theme under investigation. This helped to overcome the barrier between interviewer and interviewee.

Interviews

In this paper, the TST was followed by in-depth semi-structured interviews. In-depth interviews are a common research tool, widely used in qualitative research. They have been the prevalent method when the study focus is climate-change sense-making among individuals and/or communities (Nielsen & D’haen, 2014). Cognizant to this, one-on-one interview allowed the interviewer to delve into respondents’ understandings of climate change, and by the use of iterative or successive questions revealed how those understandings are formed and what facets are inherent to them. The approach generated rich and context-specific data, providing valuable access to the multiplicity of climate-change meanings. The interview was of particular importance with respect to climate change, which is itself a negotiated knowledge that includes different aspects (e.g. social, economic, ethic), and it encompasses both the individual and collective level, as well as both local and global dimensions. For this paper, it was important to give the respondents the freedom, the flexibility, and the time to negotiate such knowledge and to express their climate change images in an exhaustive manner. Given the focus on individual meanings, the interview provided the necessary opportunity to clarify ideas and aspects raised by the interviewees. This information was collected and analyzed along with those previously iterated. The semi-structured interviews made it possible to combine flexibility and freedom by providing guiding structure and allowing the interleaving of spontaneous questions with prepared ones (Clifford *et al.*, 2010). The combination of TST with in-depth interviews provided space for spontaneous and free-associative answers as well as for in-depth elucidations of climate change understandings with respect to the cross-cultural backgrounds of the respondents.

Survey

Questionnaire instrument was used to gather information that was directly used for this study in testing the hypotheses by seeking opinions from respondents on specific areas of concern in the study.

Respondents

In this study, 8 people with different cultural backgrounds (south-south and south-west) all resident in Port Harcourt city were selected purposively for data collection. This was done to bring to light the diversity of climate-change framings co-existing in the same physical space.

Data Analysis

Pearson product moment correlation was used to test the null hypotheses at 0.05 alpha level of significance.

III. RESULTS AND DISCUSSIONS

This study contributed to the inquiry of the effects of culture on developing and employing different mental representations

of climate change. This paper investigated the different knowledge dimensions and structures underlying the perception of climate change among people of two different geopolitical zones in Nigeria. To achieve this, the researcher analyzed the content of the interview, the filled questionnaires, and the linguistic forms employed to express climate change meanings as the language of the respondents represents an analytical unit which can assist to reveal the framings and views nested in their cultural conception of climate change.

Test of Hypotheses

Hypothesis 1: There is no significant relationship between geopolitical zones and climate change perception of people.

Table 1: Pearson Product Moment Correlation on the relationship between geopolitical zones and climate change perception of people

Category	N	r	z-ratio	z-crit.	p-value	Alpha level	Remarks
Cultural background and Climatic change perception	560	0.765	19.12	1.96	0.006	0.05	Significant

Table 1 revealed that the r-values is 0.765, therefore there is a positive high relationship between geopolitical zones and climate change perception of the people. Thus, it can be said that the geopolitical background of a person significantly influences the way they perceive climate change and its causes and effects. The calculated probability value (p-value) of 0.006 is less than the alpha value of 0.05. In this case, the null hypothesis is rejected; thus there is a significant relationship between geopolitical zones and climate change perception.

Hypothesis 2: There is no significant relationship between cultural background and climate change perception of people.

Table 2: Pearson Product Moment Correlation on the relationship between cultural background and climate change perception of people

Category	N	r	z-ratio	z-crit.	P-value	Alpha level	Remarks
Cultural background and Climate change perception	560	0.867	21.68	1.96	0.009	0.05	Significant

Table 2 revealed that the r-values is 0.867, therefore there is a positive high relationship between cultural background and climate change perception of people. Thus, it can be said that cultural background significantly impacts on the way they see climate change, and their causes and effects. The calculated probability value (p-value) of 0.009 is less than the alpha value of 0.05. Therefore, the null hypothesis is rejected; thus

there is a significant relationship between cultural background and climate change perception of people.

Interview Findings

The respondents in this study were interviewed in order to develop a contrasting data-set based on the assumption that members of individualistic (independent) and collective (interdependent) societies hold converging but also diverging climate-change framings. In order to minimize language barriers and provide cultural sensitivity, each interview was conducted by a native speaker. On average, the semi-structured interviews lasted between 30-45 minutes and started with the open question, what is climate change for you? This initial question was followed by questions that build on each other such as ‘What are the impacts of climate change?’ What are the sources of climate change? What measures could be taken to tackle climate change? Who is in charge of dealing with climate change? What sources of information do you use to know more about climate change?

How would you assess the quality of information? And finally is there anything more you would like to add to or comment upon in what we have been discussed? All interviews were transcribed by the native interviewer who had previous experience in conducting interviews. The final step of the analysis consisted of selecting the qualitatively and quantitatively most salient categories for the analysis. General framing of climate change, causes and consequences of climate change, responsibilities for climate change and typical measures of mitigation and adaptation appear to be the most important categories for the scope of the analysis, as they provide the best insight into the convergences and divergences between South-South and South-West ways of framing climate change.

General framings of climate change

To introduce the analysis of the main categories encountered, how the respondents of this study referred to the general framing of climate change in the interviews is illustrated. Due to the abstract, scientific nature of climate change, people seem to appeal to salient, concrete and experienced phenomena to make sense of it. Taylor *et al.* (2014), for instance, conducted a survey in the United Kingdom which showed that participants correlated climate change with atypical weather patterns and in particular with hot and wet weather-related events. Capstick and Pidgeon (2014), on the other hand, focused on cold weather events and their ascription to climate change among United Kingdom citizens. Notwithstanding the different focus of the phenomenological aspect of climate change, both surveys agree on the relevance of perceived correlation of climate change with weather change to make climate change less abstract and more familiar. These quantitative results are in line with findings based on the interviews carried out in this study. Some of the South-South respondents, considered changes in seasonal temperatures and increasing rainfalls and extreme heat periods as expressions of climate change:

1. “In rainy season, it rains so much, in dry season, the heat becomes so much. The harmattan period was so short”.
2. “What I can feel is that in recent years, the rainy season is getting severe and longer in Port Harcourt and the dry season is getting hotter and hotter. That’s the climate change that I can feel” Yet, there are some differences in the choice of the typical phenomena perceived to be related to climate change. Some of the South-west interviewees refer to flooding and landslides as consequences of climate change:
3. “Then there are unusual flooding and landslides are happening more and more frequently”.
4. “It directly impacts on our daily living! For example flooding affects our lives especially the people in Riverine areas”.

Causes and Consequences

In addition to questions of what represents climate change, interviews addressed its causes and resulting consequences. However, one of the advantages of interviews is the process of reflection that can be instigated, which in this case led interviewees to specifically refer to civilization and industrialization as main causes for climate change. These concepts were refined with individual experiences and moral values during the interview. This becomes particularly apparent in the following quote, in which a South-west person offers an almost all-encompassing explanation for the causes of climate change from the perspective of his/her own behaviour, and includes strong reference to climate justice:

5. “The causes are the excessive use of energy and its uneven distribution at a global level. We have houses in Lagos that, in the global distribution of resources, are shameful as in the end, people live in houses which is irresponsible to the energy need of an average world citizen”.

What can be seen here is first, a moral argument addressing the idea of climate justice and, second, a critical self-evaluation. The conceptual merging of global and local scales against a cause and consequence image-schema blends the global into the local and vice versa and, implicitly, establishes an explanatory relationship between an individual actor and climate change. One South-south interviewee, on the other hand, stated that climate change takes place:

6. “...as a result of industrialization. Because industrialization has caused air pollution by emitted gases from cars, chimneys, machines, for instance. I think it’s the big problem brought about by modern civilization.

This statement is based on the same cause-consequence schema as the previous one. It could, thus, be concluded that both South-south and South-west interviewees identify industrialization and civilization as causing

climate change. But at a closer look, an important distinction can be found. In the case of South-South interviews terms such as “industrialization”, “civilization” remain on a generic level and are not individualized.

This contrasts with the recurrent cause-consequence schema encountered in the interviews undertaken with South-west interviewees, which are characterized by a certain degree of individualization. The use of compounds and adjectives such as “excessive use”, “shameful” and “irresponsible to the energy need” express criticism and individual moral scruples. In the South-south interviews comparable structures and the individual dimension are simply absent.

In addition to the degree of individualization of perceived causes, clear differences exist also in the identification of climate-induced consequences. On one hand, South-west interviewees highlight climate-induced disasters, and, on the other, South-south migrants emphasize the negative impact of climate change on the economy. It is likewise interesting to observe how these results compare to surveys by Ratter *et al.* (2012) which identified storm surges as the main hazard of climate change. These results show a variety of ascribed meanings of climate change existing within the same physical space, thereby revealing the importance of culture in climate-change perception.

In this study, South-west identify climate-induced migration as an important social consequence. For example:

7. “It [climate change] will cause only few human lives [...]. And then even if the water will rise some centimetres the consequences will be quite bearable. But what is strongly happening is the issue of populations’ inlands where they cannot survive due to this climate change”.

The natural impacts such as sea level rise are here depicted as manageable, while the probability of climate-induced migration is metaphorically estimated as strong (“strongly happening”).

From this result, one could conclude that holistic and atomistic mind-sets conceptualizing causes and consequences affect the South-south and South-west ways of framing climate change. These same cultural models of thinking also inform concepts of responsibility, adaptation and mitigation.

Responsibilities of climate change

This study approached the question of responsibility by analyzing how the feeling of being responsible for something is a strong cultural construct.

One South-south interviewee affirms that “...we have been taught that one individual is very insignificant”. Such culturally engrained assumptions about the impossibility of individual competency have clear ramifications for acting against climate change. If the individual cannot be

held morally accountable, he or she may also perceive his or herself unable to take effective action.

Transcripts of interviews carried out in this paper showed that South-south interviewees mainly reject individual responsibility and assign it to the government that is in charge of finding solutions:

8. Should you “require the people to do make changes, then the government has to enforce it. [...] The masses, [...] they need the government to function as a platform to guide them!”
9. “If government act, it would be more efficient. Not only for the people aware of the problem, but also for those who are not. To enable them be aware that “OK, I need this”
10. “It is left for the government to act. Because it involves so many money, human resource, technology”.

In the above quotes phrases such as “pushes the masses” and “guides” reflect both a sense of hierarchy and a sense of trust. This might be better understood considering the Confucian conception of a government based on a powerful, leading figure who possesses superior wisdom and provides moral guidance (Shi & Lu, 2010).

While South-south interviewees tended to locate responsibility with the government, interviews with South-west interviewees exhibited a belief in individual responsibility for climate change. By contrast with South-south understandings, South-west interviewees frame government as an untrustworthy and self-centered caste that does not represent citizens’ interests.

11. “At the end, every person is responsible. So I think I had my stake in the change, in a negative way but also, in the last years, [...] I know I am contributing positively. [...] Who has the power in their hand, instead of taking care about their [politicians’] own pockets; they should do what they [Politicians] really are supposed to”.

Two different ideas can be shown in this quote: first, the concept of the self as the unit responsible for acting against climate change; and secondly, the sense that politicians as a social group are corrupt, which is linguistically expressed by the metaphor “care about their own pockets”. In essence, this South-west person postulates a pro-active self who takes over the responsibility of the irresponsible government to tackle climate change.

The previous quotations provided evidence for different philosophical traditions and cultural patterns structuring the concept of responsibility and the self with regard to climate change. In this context, climate change is not only constructed via a restricted range of cultural reservoirs, but also informed by underlying worldviews and philosophies.

Cultural differences as opportunities

Looking back at the spectrum of results, they suggest that unconscious climate change views exert a vital impact on the conceptualisation of climate change. This aspect became particularly visible in the analysis of causes and consequences where underlying different views emerged. It was shown that South-west interviewees hold the tendency to primarily analyse objects as separated from the context and on the basis of categorical membership, while South-south individuals acquire meaning on intertwined causes and consequences once they are contextualized and related with other objects. Another important aspect revealed in this paper was the role of the self-concept and its relation to the responsibility of government and government authorities to tackle climate change. Here, two divergent concepts emerged in the course of this study: the powerful and wise government combined with a weak “self” in the South-south interviews stood in contrast to the South-west perception of an untrustworthy government where the individual has to accept and shoulder responsibility.

IV. CONCLUSION

This study explored cultural framings of climate change, and, in particular, to investigate how individuals construct climate change as a cultural object. This paper developed a combined and interrelated methodological framework to investigate climate change from the perspective of individuals, which allowed participants to freely express their meanings of climate change. This paper has proven that climate change is a cultural and social issue. Results of this study revealed that culture mediates and informs the individual framing of climate change in multiple ways. The hypotheses tests confirmed that there are significant relationships between geopolitical zones and cultural background, and the climate change perception of people. The analysis of interviews undertaken with South-west and South-south respondents in Port Harcourt and the TST carried out with these different cultural groups showed that climate-change meanings are permeated by, expressed and assessed with the help of cultural views, individual experiences and moral values. This study found two crucial cultural aspects informing climate change meanings: a) culture-specific anchors and b) cultural conceptions of the self. Both findings enabled insight into perceived causes and consequences, trust in government.

The use of culture-specific anchors became particularly evident in the analysis of perceived causes and consequences of climate change. Regarding this finding, the paper showed a general lack of scepticism coupled with agreement on the anthropogenic causes of climate change. When asked about the consequences of climate change, participants widely identified weather patterns as concrete manifestations of climate change. This analysis revealed that the South-west culture of climate change showed a high degree of individualization: the problem of climate change was seen

from the perspective of the self, and it was approached by looking at one aspect at a time, which was separated from the context. The South-west interviewees showed a high degree of lack of trust in government, resulting in perceived individual responsibility to act against climate change. By contrast, in the analysis of South-south interviews, a collectivistic and holistic approach emerged. The individual level was not considered, and tackling climate change was conceived as a responsibility of the government.

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