Social Representations of Climate Change: A Cross-Cultural Investigation

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Abstract

The study explored the social understanding of climate change among Filipinos and Americans, employing Social Representations Theory. Six hundred seventy three participants from the Philippines and Guam were asked to answer a free association questionnaire in which they were to write the first three ideas that came to their mind at the thought of climate change. Abric's (2008) Hierarchical Evocation Method (HEM) was used in analyzing the data. Both groups have similar comprehension of climate change. Central to that understanding is the idea that this social phenomenon is very much related to global warming. Peripheral elements include climate change as associated with environmental destruction as well as calamities and disasters, its causes as well as impacts. Even though there are similarities in their representations, the two groups show differences in the way these are expressed. Results have implications on the construction and enactment of strategies and courses of action on climate change adaptation and mitigation..

Keywords: Leadership, Global Leadership, Global Dynamics, Global Business, Leadership Perspectives

Introduction

Climate change is an issue that is currently being talked about by various sectors of society because of how it strongly impacts the vulnerable ecosystem and human societies (Nichols, et al., 2010). Defined as long term change of weather patterns, either due to natural variability or as a result of human activity (IPCC, 2007; Haywood & Schulz, 2007), this phenomenon is believed to be causing people to hear warning bells, it being observed now to be occurring at a much quicker pace (Cunningham, et al., 2005).

As such, different countries have responded to the climate change issue in various ways. In the Philippines, for instance, the Climate Change law was legislated to ensure protection of both the environment and the people. The law endorses sustainable development to meet human needs and at the same time protect the environment for the benefit of the present and future generations. The law enjoins government agencies and local units to come up with and implement programs which include, among others, mitigation and adaptation measures. We posit that to enable the society to act on the climate change issue, it is vital that we first know and understand where the society members are coming from by looking at the meanings that they make out of this phenomenon. It is essential that we thus forage people's social knowledge on this issue as this has implications on their behaviors. Their social meanings of climate change shape their participation in the implementation of programs and policies for climate change mitigation and adaptation.

One way of delving deeper into people's social understanding of an issue is by using a social representations approach. In the next section, we first give a brief overview of climate change as society's current subject of concern; then we discuss the value of a social representations approach in investigating the issue.

The social issue that is climate change

Current events like shifting of weather patterns, catastrophic flooding, severe El Nino and La Nina, and rising sea level are observed to have impacted food production (Parry, et al., 2004), affected people's health (Patz, et al., 2005), increased the number of people suffering from illness and injury (EPA, 2010), and even messed up the ecosystem (IPCC, 2007). These events are associated with climate change and are believed to be brought about by anthropogenic causes. This notion has made some groups in the society to feel alarmed and consider climate change as a major challenge to today's societies.

In response to this concern, researchers have looked at the phenomenon from different angles and fields: natural sciences, social sciences, agriculture. Natural sciences studies point to ecological effects that are set off by the occurrence of global environmental changes (see Hughes, 2003; Cotton, 2003; Harley, et al., 2006) as well as increased risks brought about by the phenomenon in people's lives (see Hunter, 2003; Patz, et al., 2005; O'Brien & Leichenko, 2000). Social research studies, on the other hand, call attention to short and long term strategies in coping with climate change (see Berang-Ford, et al., 2011; Berkes & Jolly, 2001) as well as possible ways of mitigating its impacts (Betsill, 2001).

The numerous investigations on climate change point to the unquestionable relevance of the phenomenon to today's society. The results of these studies convey a dismal future if the trend in changes in climate continues. As such, there is a pressing need to engage people in mitigating the negative impacts of climate change (Whitmarsh, et al., 2011). However, one cannot just tell people to do something. People's behaviors are influenced by their perceptions (Myers, 2008). Thus, it is vital that people's thoughts that shape their involvement in the enactment of climate change action plans and policies be examined first as knowing where they are coming from as a group will point to how programs can best be created and implemented.

Climate change and social representation theory

Climate change may be studied using the lens of Social Representation Theory (SRT). A theory that was developed by Serge Moscovici (1988), this framework looks at how people create their reality together through their interactions and communications. Thus, people's social representations are the products and processes that give a picture of a group's "common sense" thinking (Jodelet, 2006). To Wagner and colleagues (1999), social representation is the "ensemble of thoughts and feelings being expressed in verbal and overt behavior of actors which constitutes an object for a social group. It is a collective phenomenon that pertains to a community and co-constructed by individuals in their everyday talk and action. These representations reside across the minds of these co-acting individuals," (p. 96). Social representations include "explanations of (attribution); attitude towards; emotion towards; and stereotypes about those objects linked to the representation object" (Echabe, Guede, & Gonzalez-Castro, 1994, p. 342).

Making representations social. Social representations are shaped and modified through communications (Duveen, 2000) such as when members of a group discuss any social issue like climate change. What makes representations social is not so much as the ideas contributed by the members during the discourse, but rather the very fact that the representations are formed by the process of group interaction (Moscovoci, 1988). Moscovici believes that communication is not just the articulation of thoughts and feelings but the action underlying them, be it instrumental or entirely ritualistic. Thus, reality is created, transformed into practice that objectifies feelings and thoughts, and then communicated and shared. With this, we can see that the use of Social Representation Theory will, thus, help us apprehend how people create their reality together (e.g., how they view climate change) as members of one society.

Understanding the contexts of social representations. SRT proposes that constant group interactions serve as backdrop in the construction of group knowledge. Social meanings that a group creates of any social object are attached to their thoughts and feelings that are, in turn, anchored on their way of life. Social representations, thus, are intricately linked with a group's culture (Moscovici, 2001). For instance, a group's social understanding of climate change would be closely related to the members' shared beliefs, values, and ethos. If the members have a strong religious background, they may associate the changes in climate with the teachings and philosophy that their church advocates. Using Social Representation Theory, then, allows for investigation of social meanings of any social object, such as climate change, in their own contexts (Howarth, et al., 2004).

Social representations across cultures. One group's social understanding of a social object such as climate change may be the same or dissimilar with that of another group's whose values and culture are much different. It is not surprising, therefore, to see a cross-cultural approach in investigating social representations (e.g., Doise, et al., 1999; Liu, et al., 2002). These studies mostly highlight the resemblance and disparity of various group knowledges. The findings lend more support to social representations being subjective productions of knowledge which integrate people in their distinct shared group practices (Rey, 2006).

Structural approach to understanding climate change. Jodelet (2006) described a structural approach to explaining representations. This approach states that social representations are organized in a central nucleus that is being surrounded by peripheral elements (Abric, 2001). As such social representations are comprised of central and peripheral components (Jodelet, 1991) that are in harmony with each other (Abric, 1993) and are hierarchical in nature (Wachelke, 2008). These central and peripheral elements give meaning to the entire social representation (Echabe, 1994).

To Abric (2001, 2012), the central core is the main element, which determines the significance of the representation as a whole as well as its structure. It is stable and non-negotiable and plays a key role in the functioning and the dynamics of representations (Abric, 1996). The central core can be a belief, an opinion, or an attitude (Moliner, 1995) and it defines the homogeneity of the social group (Molinari & Emiliani, 1996). For instance, what is central to the understanding of Filipinos about climate change is their main notion about the issue and is shared by most members of the group. It is an understanding that is almost always unwavering and around which other ideas would organize themselves. The peripheral elements, on the other hand, are representations that give concrete expression to the central system (Abric, 2012) and they are organized around the central core (Echabe, 1994). They are flexible, adaptable, may be constantly changing (Abric, 2012) and can put up with a group's interindividual differences (Abric, 1993). They also serve to protect the central core (Abric, 2001).

Methods

The study aimed to find the social meanings that Filipinos and Americans make of climate change using the structural approach to capturing social representations. In doing so, we used the Hierarchical Evocation Method that was advocated by Abric (2012).

Sample

Five hundred forty three (543) Filipinos and 130 Americans participated in the study. Sixty three percent (63%) of them were females, 33% were males. Their ages ranged between 15 and 45 (*M*=19, *SD*=4.11). The respondents from the Philippines were mostly from Davao Oriental; while the ones from the United States of America are from Guam. The latter were chosen because many of the residents of the place are Asians and of Filipino descent. Thus, even though there might be similarity in their heritage, there are differences in the social and physical environment that they are exposed to. We wanted to see if these have implications on the two groups' understanding of climate change.

Procedure and Data Analysis

Using the free association technique, respondents were asked to answer the question, *what comes to your mind when you think of climate change?*. The participants wrote the first three ideas that came to their minds upon reading the question.Following the steps advanced by Abric (2008) in doing hierarchical evocation method, answers in the free word association technique were first reduced using lexical analysis so that the answers were trimmed down and we were left with only eight categories.

To obtain the structure of the social representation, we crossed the occurrence frequency and the average ranking of importance of the responses. The average frequency was calculated through the division of the number of occurrences of words included in the analysis by the number of categories. The middle point for average evocation was 2 because we asked for 3 evocations. This method of obtaining the structure of the social representation is similar to the method used in studies conducted, among others, by Gomes, et al. (2008), Sarrica & Wachelke (2010), and Montiel, et al. (2013). The combined analysis resulted in a four-area chart, with the core elements at the upper left corner, the first peripheral elements at the upper right corner, the contrasting elements at the lower left corner, and the second peripheral elements at the lower right corner. Categories that were evoked more frequently and more promptly were salient, and thus belonged to the central core. Categories, on the other hand, that were more promptly but were less frequently evoked were regarded as contrasted elements.

Those that were frequently, yet less promptly evoked were considered elements of the first periphery; while those that were evoked less frequently and less promptly were seen as elements of the second periphery.

Results

Analysis of the evocation corpus that focuses on the understanding of climate change revealed 1,279 words/expressions/statements, which were reduced to 8 categories through lexical analysis. The remaining words/expressions/ statements belonged to categories having very low frequency (5% or less of the total frequency), thus were excluded from the analysis. Tables 1 and 2 present the frequency of occurrence and examples of words included in each category as expressed by the respondents.

Table 1: *Category, Sample words, and Frequency of Occurrence Generated from Free Evocation Task about Climate Change among Filipinos*

	Category	Sample Words	Frequency
1	Impacts of climate change	*daghang tao ang maporhesyo* (many people are affected), cause a problem in our health, *maraming magkakasakit dahilan ng* climate change (many people are getting sick because of climate change), stress in physical and emotional	147
2	Calamities, disasters	*bagyo* (typhoon) *o trahedya* (tragedy), there might be a tsunami, calamities, tidal wave, disaster, cause of typhoon, flood	106
3	Causes of climate change	*Bunga ng ating mga ginagawang mali tulad ng pagsusunog, pagtatapon ng basura* (consequences of our abusive behaviors such as burning and throwing of garbage), *Dahil kasi sa pagputol ng mga kahoy* (because trees are being cut), results of abusive acts to the environment	79
4	Modifications of weather, climate, season, temperature	environmental changes, changes of weather and the environment, *pagbag-o bag-o sa atong panahon* (changes in weather patterns), change in weather or season, changing of temperature	279
5	Environmental destruction	*grabi na ang* destruction *na nangyayari sa kalikasan* (too much environmental destruction), damage of ozone layer, deforestation, damage to our ecosystem, depletion of natural resources	97
6	Incomprehensible weather	*di-maintindihan na paiba-iba na kondisyon ng klima at temperature* (confusing changes in climate and temperature), *malamig ngayon bukas mainit na* (it could be very cold today; the next day it could be very hot), during summer instead *na ting-init, ting-ulan na hinoon* (summer has become rainy), *panahon ay paiba iba* (weather changes), *di-maintindihan na paiba-iba na kondisyon ng klima at temperature katulad ng maulan o mainit* (bewildering changes in climate and temperature), *walang sigurado sa timpo ng panahon* (weather has become unpredictable)	93
7	Global warming	Greenhouse effect, Global warming, Rising sea level, too hot temperature, *masyadong mainit ang panahon* (very hot weather), melting of iceberg/glaciers	154
	Total Frequency		955
	Average Frequency		136

Table 2: *Category, Sample words, and Frequency of Occurrence Generated from Free Evocation Task about Climate Change among Americans*

	Category	Sample Words	Frequency
1	Global warming	Global warming, greenhouse effects, global "wierding"	94
2	Calamities, disasters	Typhoon, floods, hurricanes, tsunami, water surges, tornado, droughts, acid rain, earthquakes	37
3	Modifications in weather, temperature, season	Change in weather and temperature, seasonal change, change in environment, ecological change, drastic temperature change	29
4	Environmental destruction	Thinning of ozone layer, lacks water resources, disturbed ecosystem, destruction of coral reefs, dying trees	49
5	Impacts of climate change	Loss of lives, people dying, people suffering, stress, illness, diseases Endangered species, animal migration, animals at risk, polar bears (homeless), change in food cycle among animals	29
6	Extreme, unpredictable, bipolar weather	Extreme hotness or coldness, on Guam it's hot/cold; rain/shine, bipolar weather, unpredictable weather, seasons unpredictable, temperature extremes, sunny t rainy	22
7	Causes of climate change	Pollution, carbon dioxide emission, overconsumption, growing population, cutting of tress, industrialization	22
8	Human adaptation	Adjustment, great adjustment, adaptation, change of attire, great change, acclimate, coping to different temperature	19
	Total Frequency		301
	Average Frequency		38

Table 3 shows the Filipinos' structure of the representation of climate change. Central to their understanding is that any modification in the patterns of weather, climate, season, temperature, and some parts of the environment is referred to as climate change. The Filipinos see these changes in an impartial way – neither positively nor negatively. Another predominant understanding of climate change is that it is synonymous with global warming and greenhouse effect. They see the environment as getting hotter, with the temperature getting higher. Along with this is the melting of the icebergs, the glaciers, and the polar caps in the North Pole, as well as the rising of the sea level as a consequence.

Contrasted elements include associating climate change with disasters and calamities that are happening these days, environmental destructions, and seeing climate change as a kind of weather that is no longer comprehensible. Disasters and calamities, for them, include *bagyo* (typhoon), tsunami, *baha* (flood), tidal wave, and landslide, amongst others. These natural disasters, according to them, would result to great tragedy for the people. Environmental destructions, on the other hand, take account of damage to the ecosystem and other parts of our environment such as depletion of the ozone layer or deforestation. Seeing climate change as a kind of weather that is incomprehensible means observing sudden and abrupt changes in weather or temperature in a matter of minutes. For instance, it could be sunny now, but rain may just come pouring down suddenly. Or it could be raining hard, yet it could still feel hot. Some also observed rainy days during summer. Thus, for them, one can no longer be so sure of the weather these days.

Element in the first periphery takes account of the social impacts associated with climate change. These social impacts include health problems, emotional and physical stress, and even death. This element is something that may not be mentioned promptly; however, they are mentioned frequently.

Element in the second periphery points out the causes of climate change, which focus mainly on the abuses that human beings have done and are still doing to the environment. These environmental abuses involve causing pollution, not controlling the population, production of industrial waste, combustion of fossil fuels, cutting of trees, and burning of plastics, amongst others. For them, these activities treat the environment badly and the resulting climate change is nature's way of getting back at people.

Table 3: *Structure of the Representation of Climate Change among Filipinos*

		AEO	
		Low Rank (< 2)	High Rank (> 2)
Frequency	*High frequency (>136)*	ZONE OF CENTRAL CORE Modifications in weather, climate, season, temperature (*f*=279, *AEO*=1.46) Global warming (*f*=154, *AEO*=1.92)	FIRST PERIPHERY Impacts of climate change (*f*=147, *AEO*=2.09)
	Low frequency (<136)	CONTRASTED ELEMENTS Calamities, disasters (*f*=106, *AEO*=1.92) Environmental destructions (*f*=97, *AEO*=1.72) Incomprehensible weather (*f*=93, *AEO*=1.85)	SECOND PERIPHERY Causes of climate change (*f*=79, *AEO*=2.22)

Table 4, on the other hand, shows the Americans' structure of the representation of climate change. Central to their understanding of the phenomenon is that it is almost synonymous with global warming. They see the environment as getting hotter, with the temperature getting higher. Along with this are the melting of the icebergs, the glaciers, and the polar caps in the Antarctic, and the rising of the sea level as a consequence and even disappearance of island nations. Contrasted elements include associating climate change with disasters and calamities that are happening these days and seeing climate change as modifications in the patterns of weather, season, temperature, ecology, and some parts of the environment. The changes can be dramatic and drastic; or it can simply be gradual. Disasters and calamities, for them, include typhoon, storm, tornado, flood, hurricane, tsunami, earthquake, and water surge. Calamities may also come in the form of acid rain and drought.

Element in the first periphery includes environmental destructions that result from the onset of climate change. These environmental destructions may take the form of devastated ecosystem, damaged coral reefs, dying trees, depleted ozone layer, and even diminishing water resources. The earth, according to them, is dying.

This element is something that may not be mentioned promptly; however, they are mentioned frequently. Elements in the second periphery, on the other hand, include what the respondents believe as the effects of climate change to animals and human beings, the causes of climate change, as well as the adaptive behaviors human being have to get inured to in response to changes in the environment. This quadrant also includes understanding climate change as weather that has become extremely hot and cold as well as unpredictable. Climate change, according to the respondents, would endanger the lives of the animals. It could change the food cycle of animals, cause them to migrate, and even render the polar bears homeless.

Human beings, on the other hand, may be caused much stress by the changing climate, as well as grapple with various forms of illness and diseases, which could lead to much suffering and even loss of lives. Causes of climate change for them include pollution and overconsumption caused by growing population, industrialization, excessing cutting of trees, and high level of carbon dioxide emissions.

For many respondents, the changes in climate would cause human being to adapt in order to cope and survive. Part of this adaptation would be to get acclimatized to changing temperatures as well as getting new set of clothes that are weather-appropriate. This would entail much expense, especially in trying to convince people to act in relation to doing environmental conservation.

Lastly, respondents see the changes in climate as extreme as well as unpredictable. That is, climate change is associated with weather that could range from extremely hot and extremely cold. And this could happen anytime. The word commonly used by respondents is *bipolar*. Paralleled to mental disorder, the weather could swing from one extreme to another, unpredictably so.

Table 4: *Structure of the Representation of Climate Change among Americans*

		AEO	
		Low Rank (< 2)	High Rank (> 2)
	High frequency (>38)	ZONE OF CENTRAL CORE Global warming (f=94, *AEO*=1.63)	FIRST PERIPHERY Environmental Destructions (f=49, *AEO*=2.10)
Frequency	*Low frequency (<38)*	CONTRASTED ELEMENTS Calamities, disasters (f=37, *AEO*=1.97) Modifications in weather, temperature, season (f=29, *AEO*=1.86)	SECOND PERIPHERY Impacts of climate change (f=29, *AEO*=2.07) Extreme, unpredictable, bipolar weather (f=22, *AEO*=2.05) Causes of climate change (f=22, *AEO*=2.32) Human adaptation (f=19, *AEO*=2.11)

Discussion

Results of the study provide information about how both groups socially apprehend climate change. Findings of the study do not attempt to give causal explanations of the phenomenon; rather, they show various meanings of climate change in the eyes of these two groups. This gives us a glimpse of how their minds work. Getting "inside" their minds would also give us clues as to the kind of possible interventions that would work effectively with them.

With the result of the study, it is easy to see that if we were to develop and implement policies on climate change mitigation and adaptation, it would be best to anchor them on people's social understanding of the phenomenon. Knowing people's social meanings of climate change would give a peek of where they are coming from; and thus, making it easier to know the kind of policies to create as well as how best to carry them out. For instance, as it is the belief of the respondents that the root cause of climate change is the irresponsible behavior of human beings, the program of actions to be crafted could be something that points to modification of human behaviors. These behavior modifications may focus on preventive actions such as use of renewable energy and energy conservation; developing in people resilience to the changing climate; as well as empowering people against the impacts of climate change. As Steyaert and colleagues (2007) have emphasized, knowledge about the various meanings created by groups about climate change is certainly valuable as solutions to environmental issues are something that are constructed by those concerned and affected themselves.

We hoped to reinforce the potential of the theory of social representation in addressing social issues through this study. The results would tell us that social representations of climate change are reflective of the ideas that people have about the phenomenon, borne out of their everyday interactions (Moscovici, 1988), the influence of the media (Bauer & Gaskell, 1999), as well as their culture (Moscovici, 2001). For instance, there is the perception that the disasters (e.g., flood, tsunami) that people experience are a result of human beings' rash behaviors towards the environment (e.g., excessive cutting of trees, burning of plastics). The respondents are clearly talking about a similar experience as well as experiences of other people in other parts of the world, as seen on television, read on the newspapers, or encountered on the internet.

Trying to put the blame on human beings' behaviors is reflective of how the group makes attributions of the things that they are now going through. Social representation theory proposes that frequent social interactions serve as a background in which apprehension about a social object is created. And the explanations used to understand a social object are attached to various factors that link to the culture of the group. It is interesting to note that that both cohorts actually perceive climate change as similar to a person with mental disorder, particularly one with bipolar (manic-depressive) disorder. The weather swings between being extremely hot and extremely cold – something that is not normal and at the same time, something that is hard to comprehend. This points to social representations as universally understood even by people coming from different cultures and backgrounds.

Another detail that is worth paying close attention to is the dissimilarity of the answers of the two groups. There is one theme found among the understanding of climate change by Americans, but not by Filipinos: human adaptation. The Americans believe that it is vital for human beings to adapt to the changing climate in order for them to survive. This adaptation may be physiological (e.g., getting acclimatized) or behavioral (e.g., getting weather-appropriate clothes). Filipinos, on the other hand, do not seem to have looked that way. Moreover, both groups seem to show certain distinguishing feature in terms of how they express themselves. Where Filipinos seem to be illustrative in terms of their responses giving glimpse of their emotions in the process, Americans, on the other hand, seem to be more clinical and objective. For instance, Filipinos say words showing displeasure (e.g., *Dahil kasi sa pagputol ng mga kahoy* [because trees are being cut], results of abusive acts to the environment) or words expressing pain (e.g., *pagbababago nang ating panahon na minsan di nalang natin alam marami nang nagdudurusa na mga tao dahilan sa matinding pagbabago kaagad nang panahon* [people are suffering because of the changes in weather patterns]). Americans, on the other hand, tend to stick to facts using such words as *thinning of ozone layer, lacks water resources, bipolar weather*. Filipinos, thus, seem to lean towards being more "personal" while Americans seem to be more inclined to being "scientific."

This difference in the way the two cohorts perceive and express their perception of climate change is reflective of their respective experiences and their culture that provide a backdrop against which their understanding of climate change came about. The personal experiences of Filipinos brought about by major disasters, the ensuing impacts (e.g., misfortunes, sufferings), and the lack of system and resources for disaster management in the country could have made the idea of climate change more real for them. These circumstances could impede them from thinking along the lines of adaptation. The Americans, on the other hand – particularly the respondents who are from Guam whose area is not highly prone to disaster – could afford to think more logically about adaptation as a natural means of survival. This diversity illustrates multiplicity of representations among various groups in society. This points to social representation theory as very useful in investigating locally-embedded phenomena, allowing investigation of knowledge in its own context and milieu (Howarth, et al., 2004). Policy makers may want to take this into consideration when they craft and implement policies on climate change mitigation and adaptation.

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