A Project entitled

Hellish memes in climate change discourse: is Internet memes affecting youngsters' climate engagement?

Submitted by

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Declaration

I, Liu Sin Ying declare that this research report represents my own work under the supervision of Dr. Pei Qing, and that it has not been submitted previously for examination to any tertiary institution.

Signed

Liu Sin Ying 20th April, 2022



Abstract

Climate change is undoubtedly a pressing issue, young people are more likely to bear the consequences of climate change in the future which makes their engagement in climate campaign become more crucial. Recent studies have proved the socio-political functions of Internet memes as a new landscape, including in climate engagement issue. Yet, existing research have not yet covered hellish memes, the subtype of Internet memes that gaining popularity in Asian region. Young people as the age group with the most exposure to Internet memes have also not yet become the focus of recent studies. Therefore, this study is aimed to focus on the socio-political function of Internet hellish memes on the issue of climate engagement in Hong Kong, a Chinesespeaking region among young people. To obtain a profound understand on the evoked emotion from the memes and its subsequent intention of climate engagement, this study adapted an approach of semi-structured interview with photo elicitation. Two groups of researcher-controlled memes: human and animal climate change hellish memes were used to perform as visual stimuli in this study. Major finding of this study suggested that animal hellish memes and the hellish nature evoked higher level of empathy and guilt, which possibly act as a mediator in increasing youngster's intention of climate engagement. The comprehensible feature of memes can also be a good tool to raise youngsters' risk perception. Yet, concerns over money post restriction and suppress the willingness for youngster to participate certain climate activates. By combining younger generation's interest in Internet hellish memes and the advancement of social media, this study adapted an innovative perspective to investigate a fresh way that can possibly increase youngsters' climate engagement.



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1. Introduction

Climate change is unquestionably one of the most major challenges in the twenty-first century. Despite stern warnings from scientific groups, climate change is still assumed as a minor issue for many people across the globe (Schäfer & Schlichting, 2014). As many people have narrow means to assess the validity of facts concerning global climate change, and have yet to experience its effects first-hand, media framing or messaging methods are likely to sway their perceptions on climate change or engagement (Jang & Hart, 2015).

In this, the concept of media or message framing has been applied to mass media, which can be comprehended as how a message is delivered and how does it affect the interpretation of audience (Ross & River, 2019). Apart from the traditional medium, Internet memes are also employing media framing as a new media landscape (Zhang & Pinto, 2021). By using visual presentation that combining common memes template and humorous or ironic texts, Internet memes convey messages in a simplified and condensed way (Denisova, 2019). As such, Internet memes are being widely used in social platform, where memes are often share freely between users (Dancygier & Vandelanotte, 2017). Due to its comprehensible and transferable features, research have proved that Internet memes can act as a potential socio-political tool in online



community particularly in America (Davis et al., 2016; Milner, 2013; Ross & River, 2017), including climate engagement issue (Zhang & Pinto, 2021). But still, little research has been done on the implications of memes on climate change (Zhang & Pinto, 2021), especially in Chinese-speaking region where research is still absent. Also, youngsters as the age group with the most exposure to Internet memes, has not yet become the focus of recent studies.

Under Internet memes, hellish memes are the subtype that symbolized by its use of dark humour and offensive characteristics in presenting some taboos or sensitive issues in a humorous format (Guadagno et al., 2013). Despite its rising popularity in Asian countries among the youngsters (Tsai, 2020), the use of hellish memes has still been neglected in present study.

To fill the research gap, this study is aimed to focus on the socio-political function of Internet memes on the issue of climate engagement in Hong Kong, a Chinese-speaking region. As to narrow down the sampling of memes and better fill the research gap, hellish memes were selected as research material in investigating whether it can be a potential tool in affecting perceptions upon climate engagement among youngsters.



2. Literature Review

2.1. Internet memes

In the current digital era, various online media platforms have immensely changed the manner of acquiring and spreading information. As such, the growth of visual platforms, Instagram, has given "memes" an idea of popular culture (Shifman, 2013), and has greatly consolidated Internet memes as a new model of media (Highfield & Leaver, 2016). Under this revolution, the most commonly used definition of Internet memes has been defined as "the propagation of content such as jokes, rumour, videos, or websites from one person to others via the Internet" (Shifman, 2013, p. 362).

The format of Internet memes is varied. Yet, according to Shifman (2013) and Dancygier & Vandelanotte (2017), the most common types are:

- (1) Image macro (an image with text on top and/or at the bottom to convey punchline)
- (2) Multi-layered images with text to convey punchline

Both types use common memes templates from the Internet and incorporate a humorous undertone. On top of that, Internet memes are user-generated, which encourages people to recreate and convey the messages that they want to distribute. In view of that, this study also adapts recreated memes on the two common types, to fit the theme of climate change and engagement and the objectives of the study.



2.2. Hellish memes

Hellish memes are symbolized by their use of dark humour to make fun of others' disabilities, gender, races, etc. It can also relate to serious political issues or hazards such as refugees, climate change, and deadly earthquakes (Tsai, 2020). As the audience knows it is immoral and unethical to create and view those memes in which the sin may lead them to hell according to Christian theology, the memes are thus named "hellish" (Chen, 2017).

By reviewing the existing research, it is rare to see the studies on hellish memes done by Western countries. It is deduced that the dominance of Christianity has depressed their interest in hellish memes (Chen, 2017). Alongside the phenomenon of "political correctness" under the prevalence of left-wing's egalitarianism, unethical hellish memes thus become less popular (Tsai, 2020). While in the Asian region such as Taiwan, hellish memes are more common, and several studies are found. According to Tsai (2020), "anti-political correction" is encouraged in some Asian region such as Taiwan, which builds up a social environment that favour the creation of hellish memes. In Hong Kong, criticism of the "Leftard" (i.e. unrealistic left-winger) such as vegetarians, environmentalists, and feminists also encourage the spreading of hellish memes (Ho, 2021).



Although hellish memes seem offensive, they may provoke certain emotions which sway the audience's perception of related issues. Hsiao (2008) and Huang (2017) indicated that the discrepancy between empathy and humour can stimulate guilt, anger, or fear, which leads to self-reflection. However, research on its socio-political functionality is still far from enough, and that will also be the focus of this study.

2.3. Socio-political function of memes

Research has discovered that Internet memes can influence an audience's sociopolitical information processing which allows them to virtually participate in public dialogue (Davis et al., 2016; Milner, 2013). Recent research by Ross and Rivers (2017) on the effect of Internet memes during the 2016 United States Presidential Election is an example of this. It demonstrated how memes have evolved from simple humour to a solid way to participate in politics. The reasons behind this can be concluded in two aspects: (1) entertained socio-political matters have ignited people's interest in such issues, which has also a long-term influence on levels of socio-political engagement (Bartsch & Schneider, 2014); (2) simple and convenient creation, delivery, and interpretation of memes, alongside with the anonymity encourage people to participate (Ross & Rivers, 2019). As can be seen, playfulness and convenience make Internet memes potentially far more powerful than traditional media platforms.



2.4. Climate engagement

Engaging the public in climate change is a challenge, as climate change is an issue that signifies great complexity. According to Schäfer & Schlichting (2014) and Leiserowitz (2006), climate change has been seen as an "unobstructive" affair by the public due to three reasons. First, climate change is distant, which is usually depicted on large spatial and temporal scales. Climate change's impacts are anticipated to be more severe in some vulnerable countries than in others, the majority of the public is well beyond such biographical dimension and finds it unconnected to their lifeworld. Second, climate change is abstract. Scientific information and terminology are primarily used in describing climate change's consequences and cause, which is way too complicated for the public to comprehend. Third, climate change is becoming political. Plentiful conferences, policies, and castigations have become the tool for political tug-of-war, in a way that the public is hard to participate in.

Given this, scholars have striven to investigate the mediator to increase people's climate engagement. Interestingly, studies have proved that emotions, either positive or negative, can potentially change the public's attitude towards climate change through humour or individual life stories (Osnes et al., 2019; Kaltenbacher & Drews, 2020; Gustafson, et al., 2020). In these, it is suggested that the utilization of emotions



as forms of communication in a climate change context can translate distant and abstract information into solid and relatable messages, which the emotional engagement could break the psychological distance, hence heightening risk perception and overall engagement (Gustafson, et al., 2020; Osnes et al., 2019). For this, provoked emotion will be the focus of this study.

2.5. Internet memes and climate engagement

A further unprecedented study by Zhang & Pinto (2021) investigated the effectiveness of humour in Internet memes within the climate engagement context, with a focus on the relationship of humour, empathy, and intention to climate engagement. The result indicated that low and high humour in Internet memes share the same promising impacts in getting people to participate in climate change, which associates with empathetic feeling. Notably, human and animal memes provoked different levels of empathy which provides an insight to examine the difference in emotions between these two types of memes. Although empathy was the sole emotion being studied, the study by Zhang & Pinto (2021) established a practical implication instead of existing critical or symbolic analysis, which provides an empirical basis for this study.



2.6. Climate media frames

Posts or information related to climate change on the mass media and social platforms is conveying messages through various media frames. Jang and Hart (2015) have concluded the five common frames observed in current social media through keywordbased analysis, with further integration by Ross & River (2019). The five common frames are (1) real frame: climate change is real; (2) hoax frame: climate change is a hoax; (3) cause frame: climate change is caused by humans; (4) action frame: intention to handle or take action; (5) impact frame: the consequence of climate change. These concepts have given explicit dimensions to evaluate and build up the content of memes in this study.



3. Methodology

3.1. Research questions

Based on the observed research gaps and empirical precedent, this study focuses on the provoked emotions of climate change hellish memes, and the relationship between the audience's intention to climate engagement and risk perception among Hong Kong's youngsters. With this, four research questions (RQ) have been developed for this study:

- RQ1. What emotion or feeling do animal and human climate change hellish memes provoke respectively?
- RQ2. After the exposure to climate change hellish memes, are youngsters more likely to engage in climate change campaign or related action?
- RQ3. Is there any relationship between the provoked emotion and subsequent willingness to engage in climate change campaign or related action?
- RQ4. After the exposure to climate change hellish memes, are youngsters having a higher risk perception of climate change?

With existing understanding, it is expected that animal hellish memes can provoke a higher level of empathy than human hellish memes, which can increase the intention of climate engagement. But based on the precedent result from Zhang & Pinto (2021), the risk perception of youngsters may be more likely to stay unchanged after the exposure to climate change hellish memes.



3.2. Method

Empirical precedent by Zhang & Pinto (2021) adapted a survey experiment to see whether Internet memes can affect people's climate engagement. Nonetheless, they suggested that future studies can focus on a more profound individual's feelings, and to see whether there are mixed emotions. Therefore, to obtain detail-oriented data that incorporate human emotion, feelings, and perceptions, this study adopts a qualitative approach by using a semi-structured interview with photo-elicitation. It is a method that uses visual mediums such as images in a semi-structured interview. In this, the verbal discussion is generated to construct data and understanding through exposure to images (Glaw et al., 2017). To match the theme of the study, the visual medium used in this study is the researcher-controlled climate change hellish memes which illustrate in Chinese.

Compared to a traditional word-based interview or quantitative survey, integrating photo-elicitation into an interview enables the researcher to evaluate participants' reactions to the images throughout the interview. As Clark-Ibanez (2004) described, in this participatory approach, the researcher can expand the discussion and questions spontaneously by images, and it allows participants to comment and communicate deeply. Harper (2002) also recommends the usage of photo-elicitation in qualitative



research as visual stimuli elicit deeper aspects of human consciousness and stimulate implicit emotions. Accordingly, photo-elicitation in the interview could enhance the clarity and authenticity of an image-based study, as it digs deeper into distinct aspects of human emotions (Harper, 2002).

In sum, it is interpreted that by applying the approach of photo-elicitation in a semistructured interview, layers of discussion can be fostered to evoke deeper ideas and emotions such as by spontaneous questions. As this study intends to see the evoked human emotion and perception, photo-elicitation enables the researcher to not only simply investigate the type of evoked emotions but also to have a clearer picture of how the emotion generates and links to participants after the exposure to the memes.

3.3. Selection of visual mediums

Adapted from a previous study by Zhang & Pinto (2021), 12 Internet memes are performed as visual stimuli in photo-elicitation, which is further divided into two categories: 6 human memes and 6 animal memes. Each category involves images and/or contextual text related to its corresponding group (e.g. human, polar bear).

Different from previous practice, Internet memes used in this study are "hellish" in



nature and illustrated in Chinese. To determine whether the memes are hellish, this study has adopted the explanation from Tsai (2020), which indicated that the mocking style of hellish memes can be concluded as "rubbing salt in the wound". This can be understood in two ways: (1) mocking the target is the tragedy that is happening but people mock its consequence and show no empathy to help the situation; (2) denial of a tragedy. Based on the 5 common media frames on climate change raised by Jang and Hart (2015), the above statement includes certain frames: (1) present, cause, consequence frame; (2) hoax frame. To put it in simpler words, in the climate change context, the hellish nature can be comprehended as two statements:

Table 1. Definition of hellish nature in climate change context

Nature of "helllish"	Frames used	Statement
Mocking target are the tragedy	Present, cause,	climate change is real, I
that is happening but people mock	consequence	recognize the cause and
its consequence and show no		consequence, but I don't
empathy to help the situation		want to take action
Denial of a tragedy	Hoax	climate change is not real

The hellish memes selected in this study are based on the above concept, in which each meme performs one of the above nature. Referring to the study by Zhang & Pinto (2021), hellish memes used in this study are retrieved from the Asian biggest Internet memes website, Memes House (<u>https://memes.tw/en</u>) and Google Image. In this,



searching keyword "climate change hellish memes" is used. Nonetheless, the search result is very limited. As Internet memes encourage people to recreate and convey the messages that they want to distribute, this study also adopts common memes template from Memes House (<u>https://memes.tw/en</u>) to recreate hellish memes that fit the theme of climate change and engagement, and the objectives of the study. As such,

12 climate change hellish memes are obtained in searching and recreated basis (Appendix I, II).

3.4. Participants

17 participants (Table 2) who are currently studying in or graduated from local universities in Hong Kong are invited to conduct the study. To minimize bias, participants are from different academic backgrounds. Judgmental sampling is used to select participants who match the criteria of the study by the researcher, including: (1) currently studying in or graduated from a local university in Hong Kong; (2) 18-25 years old; (3) native Chinese speaker or able to read and understand Chinese. To protect participants' privacy, PN is used to represent each participant in this report. For example, P9 is Participant 9.



Participants (PN):	Age:	Academic background:
P1	25	Accounting (OUHK)
P2	23	Management (CityU)
P3	23	Psychology (SYU)
P4	22	Language Studies (English) (EdUHK)
P5	22	Nursing (PolyU)
P6	20	Translation (LingU)
P7	25	Engineering (PolyU)
P8	21	Global Environmental Studies (EdUHK)
P9	19	Electrical Engineering (CityU)
P10	22	Science (HKU)
P11	23	Journalism (HKBU)
P12	19	Visual Studies (LingU)
P13	24	Human Resources (HKBU)
P14	24	Marketing (CityU)
P15	18	Film (HKBU)
P16	23	Early Childhood Education (EdUHK)
P17	22	Geography (EdUHK)

Table 2. Background of participants

3.5. Data collection procedure

The data collection period was set for March and April 2022. Due to COVID-19 development in Hong Kong, the whole process of semi-structured interviews was done on Zoom. Before the interview, a consent form and information sheet were given to all participants to seek their consent and fully inform them of the process of the interview.

The interview was divided into four parts. Part 1 is a lead-in section. Four structured questions (Appendix III) were asked to understand their academic background,



perception, and knowledge of climate change and climate engagement before the exposure to climate change hellish memes. Parts 2 and 3 are photo-elicitation sessions in which six human and six animal climate change hellish memes were shown respectively. Participants were asked to view the memes for 15 seconds each, then structured questions were also raised to understand their emotions, intention to engage in climate change, and risk perception. Follow-up spontaneous questions were also asked to grab a more detailed explanation from participants, in an attempt to better understand how the memes evoke such feelings and to see the relationship between subsequent perceptions towards climate engagement. Following this, Part 4 is a roundup session that was used to understand participants' perception and knowledge of climate change and engagement after the exposure to climate change hellish memes. In this, structured and impromptu questions were asked to guide participants in expressing their overall feeling and perception.

3.6. Data Analysis

The data collected in the interview are analyzed by thematic analysis approach. As defined by Braun & Clarke (2006), "thematic analysis is a method for identifying, analyzing, and reporting patterns (themes) within data" (p.6). Further explained by Castleberry & Nolen (2018), thematic analysis can flexibly reduce data by extracting



and identifying key themes, which are suitable for various topics of research.

Adapted from the framework from Braun & Clarke (2006), this study first familiarizes the interview transcript by highlighting key points. Then, coding is performed to draw initial codes within the data set and generate explicit ideas for easier observation. Following this, the researcher condenses and groups the codes into relative themes. Finally, an analysis and conclusion can be made based on the identified themes. After the process of coding, four groups of themes and sub-themes are organized under the main research foci:

Themes:		No. of times mentioned	
1. Favourable factors			
Sub-t	heme: 1.1. Mode o	f campaign	
	1.1.1.	Online	9
	1.1.2.	Convenience	5
	1.2. Dual be	enefits	
1.2.1. Save money 3			3
	1.2.2. Improve health		1
2. Conce	erns		
Sub	o-theme: 2.1. Cost		
	2.1.1.	Money	17
	2.1.2.	Time	4
2.2. Effectiveness			
	2.2.1.	Powerless	9
	2.2.2.	Lack of trust	5
	2.2.3.	Gimmick	3
	2.3. Respo	onsibility	3

Table 3. Themes of climate engagement:



Table 4. Themes of em	notion:
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	Themes:	No. of times mentioned
1.	Elements that trigger empathy	
	Sub-theme: 1.1. Real-life pictures	12
	1.2. Sarcasm of own thoughts	10
	1.3. Ironic captions	6
	1.4. Discrepancy	3
	1.5. The animal itself	3
2.	Elements that trigger amusement	
	Sub-theme: 2.1 Showing suppressed hellish	13
	thoughts	
	2.2. Memes template	1

Table 5. Themes of emotion & climate engagement:

Themes:	No. of times mentioned
1. Factors affecting the relationship between	
empathy and climate engagement	
Sub theme: 1.1. Level of hellish	9
1.2. Mocking target's fragility	3
1.3. Self-reflection	1

Table 6. Themes of risk perception:

Themes:	No. of times mentioned
1. Design features that affecting risk perception	
Sub-theme: 1.1. Terminology	9
1.2. Prevalent knowledge	7



4. Results

4.1. Evoked emotions

RQ1 explores the provoked emotions. After the exposure to human and animal climate

change hellish memes, different emotions are observed:

 Table 7: Emotions evoked by human climate change hellish memes

Emotion:	No. of participant who claimed this
	emotion (n=17)
Amused	17
Empathetic	2

Table 8: Emotions evoked by animal climate change hellish memes

Emotion:	No. of Participant who claimed this
	emotion (n=17)
Amused	4
Empathetic	12
Guilty	4
Angry	1

Two types of memes stimulated distinct emotions. Human climate change hellish memes mainly elicited amused feelings, yet animal climate change hellish memes evoked a significant level of empathy.

Amusement is the main emotion evoked by human memes and some laughers was observed during the interviews. For the majority (12 participants), the human memes show suppressed hellish thoughts which aroused amusement:



We've been taught the universal value of protecting the planet since childhood. I bet most of us don't want to do that, but it's not very nice to say this thought out loud. These memes show exactly what we want to say but are afraid to say, so it's very fun to think of someone who has the same evil thoughts as I do. (P1)

One participant found the memes template is the reason for fun:

The existing hellish memes on Internet are also using these memes templates. So, when I look at the memes and see the template, like the Pain Harold and the African kids, I already want to laugh. (P15)

Still, two participants showed an empathetic feeling due to the ironic texts:

It's funny. But it seems the memes are mocking the people on purpose, sometimes I found it was too much, especially the one with an African kid. (P3)

While for the animal climate change hellish memes, participants were mostly showing an opposite reaction. A high level of empathy is observed, mainly due to the application of animal suffering in real-life pictures and the fragility of animals:

I feel bad for the animals, maybe because of the use of the real pictures, especially the polar bear. (P2)

That's weird to say but I think animals are more fragile than humans, so these memes did evoke my compassion. (P8)



Alongside the ironic captions that show sarcasm of own behaviour, the empathy is heightened and evoked mixed emotions with guilt and anger in some participants:

It was like a slap on my face! The captions remind me that there's the same coolness and laziness in myself. I suddenly felt guilty that I still laughed at the memes, but I was just laughing at the feeling of being satirized. (P7)

I sympathized with the animal, and I felt kind of angry when viewing some of these. Like the one with a polar bear eating its own baby. I think it is a serious thing that is not suitable to make as a meme. It's just too much. (P3)

Even so, four participants felt amused by the animal memes also due to the expression of suppressed hellish thoughts.

It's a bit pathetic, but I think it's more amusing. Because these memes are more accurate in showing the innermost hellish thoughts of hypocritical humans like me, so I think it is fun. (P12)

As observed, animal hellish memes generally evoked more complex emotions than human climate change hellish memes.

4.2. Intention of climate engagement

RQ2 investigates the intention of climate engagement after the exposure to climate change hellish memes. After each session, participants were asked to rate their



intention. The average rating before the exposure to the climate change hellish memes was 1.29 over 10. While after the exposure, the average rating increased to 1.88 over 10. From this, 8 participants remained unchanged. Inside the group with unchanged intention, two types of participants are observed. First, participants who have a relatively high intention of climate engagement originally are less likely to have change after the exposure to the memes as they think the memes are not pathetic enough to boost their intention:

I think the memes did show the impact in a very hellish way and I sympathize the situation. But I don't think they are that pathetic to push me to do even more. (P4)

Another significant group who showed an unchanged stance are the participants with zero intention of climate engagement originally. In fact, 7 participants gave a zero rating before the exposure to memes, while after the exposure, 4 of them remain unchanged. The major factors are the doubt about the effectiveness of the climate campaign and the distribution of responsibilities, which the exposure of memes cannot change their perception:

Even though I know that some people and animals are miserable, I'm too powerless to help. Besides, it's the business owners 'responsibility as they are the ones who greatly damage [the environment]. (P1)

It is not that I'm heartless. I'm just very clear that many of the campaigns



are just gimmicks. It's also difficult to trust NGOs, especially those involving money. That's why I don't want to be involved in anything. (P12)

Still, the overall intention of climate engagement after the exposure to hellish memes among all participants is low. The major concerns about cost and the mode of campaign restrict their desire to engage even if they want to engage more after seeing the memes.

All participants mentioned that they concern about money. As they are students or fresh graduates, they find it "unrealistic" or "unworthy" to use money in participating in climate campaigns that would not see the effectiveness:

I want to help, but *I* know *I* cannot help much. *I'm* just a student, it's not worth it to use the money on it (climate campaign). (P17)

I think climate change is a problem that cannot be solved in the short-term. Even if I pay to help, I think I wouldn't see the effectiveness before I die. I am not rich, I'm just a student. I think it is unrealistic to use money like that even if I want to help, it is just like throwing money into the ocean. (P8)

Convenience is a concern as well, over half of the participants claimed that they are reluctant to take part in non-online campaigns or actions that would affect their original lives. 5 participants gave the same example over the desirable format of the climate



campaign:

If the campaign is online, like reposting an Instagram story, I'm very happy to participate. Just keep it easy and online. (P9)

4 participants were even concerned about the dual benefit:

If the action like eating less meat can help me save money or improve my health at the same time, I may have a higher intention to do it. (P10)

As observed, with various concerns, participants only showed a slight increase in intention of climate engagement after the exposure to climate change hellish memes.

4.3. Evoked emotions and intention of climate engagement

RQ3 explores the relationship between evoked emotions and the subsequent intention of climate engagement after the exposure to climate change hellish memes. As photoelicitation of human memes and animal memes evoked different emotions, it is vital to see the changes after each session for the purpose of having a clear picture of the relationship.



	No. of participants (n=17)
Overall showed no change	8
Overall showed an increase	9
I. Showed the increase after the exposure to	0
human's memes only	
II. Showed the increase after the exposure to animal's memes only	8
III. Showed the increase after the exposure to both human's and animal's memes	1

Table 9. Intention of climate engagement between sessions

Previous observation discovered that animals' climate change hellish memes evoked a relatively higher level of empathy. Simultaneously, participants tended to have an increase in intention of climate engagement after the exposure to animal memes only. For instance, in the session of animal memes photo-elicitation, 12 participants claimed the feeling of empathy, guilt, and anger. In this, 75% of them (9 participants) gave an increased rating in the intention of climate engagement:

It's quite sympathetic, you know. I immediately thought "okay, this summer I will use less air-con". Like...at least do something to ease this feeling. (P16)

It shows a positive relationship that the evocation of empathy and guilt can possibly lead to an increase in the intention of climate engagement.



4.4. Risk perception

RQ4 investigates the risk perception of climate change after exposure to climate change hellish memes.

	Participants' average rating of risk
	perception (out of 10)
Before the exposure of climate change	3.6
hellish memes	
After the exposure of climate change	4.67
hellish memes	

Table 10.	Participants'	risk perception	of climate change hellish	memes
			0	

After the exposure, the average rating of risk perception increased by 29.6%. From this, participants who had a relatively higher rating (i.e. 4-6) originally showed no change after the exposure to the climate change hellish memes. They all agreed that the contents of those memes were common knowledge that they have already known, so it is not very useful for them to improve their knowledge or perception of climate change:

I have studied geography in secondary school, so I think I know quite a lot about climate change. These memes are just showing some very basic knowledge about climate change that I already know. (P11)

While for the participants who had a relatively lower rating (i.e. 1-3) originally, they all showed an increase in the risk perception after the exposure by learning the terminology from the memes' content. For instance, "climate refugee" and "carbon



footprint":

When I first saw the term "climate refugee" in the second meme, I didn't really know what it means. But after I view the rest, I can get what it means. (P2)

I have heard of "carbon footprint" before but I am not sure about what exactly it is. I thought it is just about the emission of the vehicles [laugh]. But now I know, at least I have a basic idea about what it is, though I took some time to think after I viewed the memes. (P14)

But the overall rating is low. Participants claimed that the effectiveness is limited as the memes only covered prevalent knowledge:

Almost all memes are talking about polar bear and air-con, those are the facts that's well-known, so they didn't help me to know more. (P15)

As such, the effect on risk perception can be varied, depending on the level of knowledge that the audience has.



5. Discussion

The result of this study provides a more profound understanding of the evoked emotions of climate change hellish memes and how the emotion affects youngsters' climate engagement and risk perception.

When depicting the threat of climate change, the result indicated that individuals display higher degrees of empathy for animals than for humans as key characters of the hellish memes. From this, empathy-based guilt or anger is evoked which leads to self-reflection. Animal imagery, particularly polar bear iconography, serves as a visual synecdoche for climate risk in the media for a long time, thus progressively perceived as victims of climate change (Born, 2019). Linking the suffering of animals with climate change, the audience unwittingly draws an equivalence between the animals and the sacrifices of climate change, creating a perception that animals are more vulnerable to climate change. This kind of emotionalized display is more likely to ignite empathy in the viewer (O'Neill, 2020). As a result, when images of animals are used as the main theme of the Internet memes, viewers will be reminded of the plight of the animals, which in turn evoke emotions of compassion, guilt, and anger. This kind of empathy and guilt toward animals are equivalent to the empathy triggered by "innocent bystander" in empathy-based moral theory (Hoffman, 1998). Subsequently,



it transfers as a feeling of injustice and moral motivation (Decety & Yoder, 2016) that raises the audience's incentive for climate engagement.

Alongside the hellish nature of the climate change hellish memes, the result of this study indicated that the sarcasm and the presentation of people's suppressed hellish thoughts in hellish memes also evoked empathy, guilt, and self-reflection. Hence, the intention of climate engagement increased. This can be comprehended as the "virtual transgressor" effect in empathy-based moral theory, in which the audience sees themselves as the culprits and the feeling of guilt and empathy subsequently stimulates intention or behaviors that defend the unknown from harm (Hoffman, 1998). All in all, empathy evoked by the climate change hellish memes, especially in the animal context can act as the mediator with climate engagement.

Still, the result suggested that empathy is not necessarily lead to the change in climate engagement. Although participants who showed an increase in intention claimed the feeling of empathy, not all participants who showed empathy would make a change. Moreover, overall climate engagement intention remains low. Through conversations with participants, it was found that although empathy was evoked, the intention to engage is suppressed due to practical considerations such as cost. For young people,



money is always the biggest consideration as they do not have a high level of financial ability. This leads to more restrictions and even psychological barriers to their participation in climate activities. But fortunately, through dialogue, this study found that young people are more likely to participate in online climate activities due to their convenience and simplicity. Among them, the use of Instagram is more popular and preferred. This provides some insight and ideas for the organization of future climate events.

Apart from practical concerns, the effectiveness of Internet memes in climate engagement is limited for those who already have a firm stance (low or high) or with strong doubt about climate action. Moreover, everyone has different levels of acceptance of hellish. With these restrictions, the climate change hellish memes may be seen as a simple joke for some audiences which confines the effectiveness to a narrower scale.

For risk perception, the result also shows that the effectiveness is limited. Indeed, risk perception is an innate concept that takes time to change as it involves personal experience, knowledge, and cultural influence (Van der Linden, 2015). Yet, the findings suggested that Internet hellish memes can lead to a more significant increase



in their risk perception for youngsters with less awareness and knowledge of climate change. Internet memes condensed complex knowledge of climate change and present it in an entertained format (Denisova, 2019). Its characteristics still make it a good tool for the youngster to be aware of climate change.



6. Limitation

The limitation of this study includes low external reliability. Although part of the memes was extracted on Internet, some memes were recreated by the researcher in order to fit the theme of this study. Also, non-identical design and the level of hellish may affect the reliability. For example, the choice of images, and the captions. Besides, sustainable climate engagement can show a long-term influence. Yet, this research only focuses on the immediate effect which cannot show the long-term effect on whether the exposure to climate change hellish memes is a sustainable tool for motivating climate engagement. Despite the reduction of bias by recruiting university students with different academic backgrounds, the sampling size (n=17) is still small which cannot show the bigger picture of the influence of the memes on youngsters.

For future implications, it is suggested to enlarge the sampling size and adapt a pretest that aimed to standardize the design and the level of hellish memes. Also, the study can perform in a real social media context to increase external reliability. The longterm effect of the exposure to climate change memes can also be the focus of future studies. To acquire a more diverse finding, it is suggested that future studies can select different themes in the context of the climate change memes, to see their influence on the audience.



7. Conclusion

Climate change is undoubtedly a pressing issue, the impacts are foreseeable the young people are more likely to bear the consequences of climate change in the future. Therefore, their participation in climate change is vital. By combining the younger generation's interest in Internet hellish memes and the advancement of social media, this study adopted an innovative perspective to investigate a fresh way that can possibly increase youngsters' climate engagement by filling in the research gaps on hellish memes, younger age group and Chinese-speaking context. Major findings of this study suggested that climate change hellish memes can possibly increase the intention of climate engagement of youngsters, especially with the usage of animal context. Results also provided a clearer picture of the mediating effect of empathy on the subsequent willingness of climate engagement. It is also discovered that online campaigns are preferred, and climate change hellish memes can be an introductory tool to increase the risk perception of youngsters with lower awareness. With the findings, future climate change campaigns are suggested to hold online, usage of climate change hellish memes with animal context and ironic captions for promotion is also encouraged.

Hellish memes are often seen as taboo in many cultures. Also, Internet memes are still



a relatively new area for conducting environment-related research. Yet, with the evolving digital ecosystem and its strong potential socio-political functionality, Internet memes and hellish memes are believed to be valuable research areas for scholars.



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Appendixes

Memes	Translation
以前的我:	Тор:
冷東開太多 氣候問題會	I used to be: use too much air-con,
速酸里	climate change will get serious.
現在的我:	Bottom:
開爆它	Now: Just use it! Cool!
	Top-left: Climate refugee
氣候難民	Top-right: Me (left hand), climate
	refugee (right hand)
	Bottom-left: Cheer up!
	Bottom-right: Climate refugee
前香港天文台台長林超英	Top: Former director of the Hong
	Kong Observatory insists not using
	air-con in hot summer
你不開 我就可以多開點啦	Bottom: If you don't use it, I can
ELE IV	use it more. Thanks!

Appendix I. Climate change hellish memes and translation – human







Memes	Translation
不開冷氣(救北極熊? 他吹幾萬年了)該換我了吧	Top: Do not use air-con to save polar bears? Bottom: They enjoy it for tens of thousands of years, it should be my turn now.
また、単語のでは、「「「「「「」」」」では、「「」」」では、「「」」」では、「」、「」、「」、「」、「」、「」、「」、「」、「」、「」、「」、「」、「」、	 Top: Environmental organization: eating beef emit greenhouse gases. Many animals die under the drought of extreme climate. Bottom: Me: oh, so scary! Let me eat a piece of beef to ease my fear.
紀錄片8全球暖化求生艱難 北極熊食兒充飢	Top: Documentary: difficult survival under global warming, polar bear ate its own child.
HAR-SKIFHEARST	Bottom: That's scary that I have a cold sweat, let's turn on the air-con.

Appendix II. Climate change hellish memes and translation – animal



Top: Stop using air-con, the polar bears and the penguins are going to extinct! Bottom: Is that my business? Did their teachers teach them they should solve their own problem?
Top: Can you turn off the air-con, eat less beef for my sake?
Top-right: Polar bear (green), Air-con (Pink) Bottom: Air-con



Appendix III. Interview structured questions

Sessio	n 1: Lead-in
1.	What is/was your major in university?
2.	Rate from 1 to 10, how much do you think you know about climate change
	such as its causes, consequences?
3.	Have you participated in any climate change campaigns?
4.	Rate from 1 to 10, how willing do you think you are to participate in the
	climate change campaign?
Sessio	n 2: Photo-elicitation - human
1.	In general, what was your feeling when viewing those memes?
2.	Are there any memes you found more remarkable?
3.	Do you think the memes helped you to know more about the risk that
	climate change poses to human/animal?
4.	After viewing those memes, how likely you are going to engage in the
	climate change campaign or to take any action to help the situation?
	(Researcher reminds the score that the participant has given in session 1
	and ask participant to answer based on this score)
Sessio	n 3: Photo-elicitation - animal
1.	In general, what was your feeling when viewing those memes?
2.	Are there any memes you found more remarkable?
3.	Do you think the memes helped you to know more about the risk that
	climate change poses to human/animal?
4.	After viewing those memes, how likely you are going to engage in the
	climate change campaign or to take any action to help the situation?
	(Researcher reminds the score that the participant has given in session 1
	and ask participant to answer based on this score)
Sessio	n 4: Round-up
1.	Overall, what is your feeling when viewing the memes?
2.	. Rate from 1 to 10, how much do you think you know about climate change
	such as its causes, consequences after viewing the memes?
3.	. Rate from 1 to 10, how willing do you think you are to participate in the
	climate change campaign after viewing the memes?



