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Perceived Temporal and Geographic Distance and Public Opinion about Climate Change

There is mounting scientific evidence linking extreme weather events with anthropogenic climate change (Trenberth, 2012). However, a key challenge for promoting the need for people to take action on climate change is that people in developed nations that contribute the *most* to carbon emissions associated with anthropogenic climate change are the *least* likely to suffer severe consequences (Jamieson, 2010). This asymmetry presents a challenge for climate change communication, given that those who most need to act on climate change (the largest emitters) are those likely to be the most removed from the impacts of carbon emissions, and may thus be less convinced of the critical need to act. This article examines the emerging literature examining the effect of perceptions of temporal and geographic distance on public opinion about climate change.

Public opinion can be gauged in many ways, and this article examines a range of outcomes as indicators of public opinion on climate change, including belief in climate change, intentions to engage in mitigation or adaptation action, perceptions of the risk associated with climate change, and attitudes to climate action. “Belief in climate change” means acceptance of the position that humans are contributing to a changing climate due to their production of CO₂ emissions. People differ in the extent to which they state that they are willing to engage in (or support) a range of behaviors aimed at mitigating climate change (e.g., reducing emissions by saving energy at home, not driving a car, using renewable energy sources) or adapt their actions (e.g., by building walls to defend against sea-level rise). Attitudes refer to people’s general evaluations, positive or negative, about an issue or object; in this context, a positive attitude toward climate action would indicate support for engaging in mitigation and/or adaptation behaviors. Here I review all relevant studies encountered using a keyword search including the terms “psychological distance,” “spatial distance,” and “temporal distance,” and “climate change.”

Psychological Distance

The psychological distance that people perceive between themselves and the impacts of climate change may have implications for their belief in, concern about, and willingness to act on climate change. Psychological distance is the extent to which an object is perceived as distant from the self in time, space, certainty, or social similarity (Trope &

Liberman, 2010). Construal level theory (CLT) proposes that psychological distance from (or proximity to) objects and events is associated with different mental construals. For example, when people perceive an object or event as close to the self, they tend to perceive it more concretely, that is, focusing more on details and practical attributes. In contrast, when people perceive something as distant from the self, they tend to construe it more abstractly, that is, focusing on the “big picture.” These construals are important because they have implications for people’s attitudes and decisions. For example, if climate change is perceived as close to the self, people may construe it more concretely, and this could increase their likelihood of taking action if the threat seems more “real” to people (Tullett, Teper, & Inzlicht, 2011). On the other hand, if climate change is perceived as far away, people could construe it more abstractly—which may make the threat feel *less* real—and reduce their support for action. Alternatively, people seeing climate change in a more global way (i.e., see the “big picture”) may increase perceptions that they need to take action now, if this leads to the perception that it is more serious. Additionally, abstract construals associated with psychological distance have been shown to relate to more attention being directed toward desirability (rather than feasibility) concerns (Liberman & Trope, 1998). Therefore, among those who perceive climate change as an important but difficult issue, increased psychological distance may be associated with greater support for taking action. Thus, while psychological distance has an intuitive connection with issues like climate change, predicting the effects of distance and proximity may not be straightforward.

Though climate change may be perceived by those in developed nations as distant on any or all of the four dimensions of psychological distance, temporal and geographic distance are likely to be particularly important in the context of climate change, given the global nature of the problem and the long time horizons associated with predicted impacts. Social and hypothetical distance are also likely to play key roles, especially considering these dimensions are seldom independent from each other. Future events are inherently more uncertain than present events, and people in distant places are also likely to be less socially similar than people in one’s local area. Thus, when reviewing the effects of temporal and spatial distance, the current review acknowledges that other dimensions of psychological distance may also be contributing to the observed effects, and the different dimensions of psychological distance may interact with each other to influence public opinion (Trope & Liberman, 2010).

Given the potential distancing of climate change from the self, it is possible to examine how perceptions of temporal and geographic distance influence public opinion about climate change, in terms of belief, concern, and support for action. Many researchers have suggested that the distal nature of climate change is a key reason for failures to engage in widespread mitigation and adaptation efforts (e.g., Milfont, 2010; Weber, 2006). However, studies of temporal and geographic distance reveal mixed effects on belief in climate change and support for action (McDonald, Chai, & Newell, 2015). These findings reveal that it may not always be ideal to encourage the perception of climate change as psychologically close in order to promote support for climate action, and thus it is worth exploring when psychological distance and psychological closeness may help or hinder attempts to influence public opinion on climate change action.

Perceptions of Climate Change as Distant in Time

While the effects of climate change are happening now, people may tend to perceive (in some cases accurately) that serious effects of climate change will occur in the distant future. Leiserowitz (2005) found evidence that Americans perceive climate change impacts as occurring in the distant future. In a representative survey of Americans examining perceptions of health risks of climate change, people tended to estimate that few current deaths, illnesses and injuries could be attributed to climate change, but estimated that these would number in the thousands after 2050. Further, this survey revealed that a large percentage of respondents (38–41%) answered “don’t know” when asked to estimate health risks of climate change, which the author suggests is an indication that a majority of people do not currently associate climate change with a danger to human health. However, this response may also reflect a lack of familiarity with the specifics of the question, or an unwillingness to take a stance on the issue.

Gifford and colleagues (2009) also demonstrated that people tend to perceive environmental problems such as climate change as more serious in the distant future. Participants were surveyed across 18 countries, and in all but one country

people exhibited the temporal pessimism effect. That is, they tended to believe that current environmental conditions were relatively good, and that future environmental conditions would be worse than current conditions. Extrapolating from this finding, it seems that people do not believe serious effects of climate change are happening now.

In a survey of Israeli students, Carmi and Kimhi (2015) found that climate change was perceived as psychologically distant in terms of temporal, social, and hypothetical distance. Further, their results revealed that these perceptions of psychological distance were strong predictors of the extent to which climate change was seen as a threat and the perceivers' willingness to engage in pro-environmental behaviors. Thus, the results provide support for the notion that minimizing perceptions that climate change is far away in time should be associated with public opinion shifts in favor of climate change action.

Relatedly, research on time perspective has demonstrated that the extent to which individuals adopt a future time perspective is associated with more pro-environmental attitudes and behaviors. A future time perspective is characterized by meaningful mental representations of future events and a tendency to consider potential distal outcomes of current behaviors (Milfont, Wilson, & Diniz, 2012). In a meta-analysis of the time perspective literature conducted on over 6,000 participants, Milfont and colleagues (2012) found that future time perspective had a small but significant positive association with pro-environmental attitudes, and a moderate association with pro-environmental behaviors. Thus, while people may perceive climate change as occurring in the distant future, to the extent that they adopt a future time perspective, this need not have negative implications for public opinion and action on climate change.

Perceptions of Climate Change as Spatially Distant

In addition to many dire climate impacts being predicted to occur beyond individuals' own lifetimes, for those in Western nations, the effects of climate change may also be perceived as primarily affecting those in distant developing nations who lack the resources to prepare appropriately. For example, Reser, Bradley, Glendon, Ellul, and Callaghan (2012), in a survey of a representative sample of Australians, found that people tend to perceive climate change impacts as being more serious in geographically distant areas, as opposed to in their local areas. Leiserowitz (2005) found that 68% of Americans surveyed were most concerned about the spatially distal impacts of climate change: those affecting people around the world, and nonhuman nature (in any location). In contrast to this finding, a small minority (13%) was most concerned about more proximal impacts on themselves, their family, or their local community.

Uzzell (2000) also found evidence of a global or local dichotomy in a study conducted in Australia, Ireland, and Slovakia. Participants tended to perceive not just that environmental problems were more serious the further they were from the person, but also that people's sense of responsibility decreased with increasing spatial distance. That is, people saw environmental problems as more serious the further those environmental problems were from themselves, but also perceived less responsibility for doing something about these problems when they were more removed from themselves. This result highlights the challenge of harnessing public opinion in favor of climate change action, given the asymmetry between the location of perceived impacts and the willingness to act.

Schultz and colleagues (2014) also demonstrated that this spatial bias in perceptions of the severity of environmental problems holds across cultures. That is, people generally perceive environmental problems to be more serious when they are more distal from themselves. However, this analysis also reveals that this effect is particularly strong among people who are happier, and among younger people. This finding suggests that while optimism is likely to have some utility in combating a challenging global problem such as climate change, there are also ways in which it may undermine attempts to emphasize the seriousness of the issue for some people.

In a study of 2,502 Australians, Leviston, Price, and Bishop (2014) elicited images associated with climate change from participants. Though some nationally relevant images were elicited (e.g., droughts and floods), people tended to associate more global, distal, and iconographic images with climate change (e.g., melting polar ice caps, rising sea levels). In a

second study, when participants were provided with a subset of images and asked to select those that were most closely associated with climate change, distal images were again most common, with a polar bear balancing on a melting iceberg and a collapsing ice shelf being the most commonly selected images. Similar research conducted in Great Britain and the United States also revealed that participants do not tend to associate personally relevant causes or impacts with climate change, instead selecting those associated with more distant places, providing further evidence that people tend to view it as a psychologically distant phenomenon (Lorenzoni, Leiserowitz, de Franca Doria, Poortinga, & Pidgeon, 2006).

Other researchers have examined the effects of perceiving the impacts of climate change as far from the self on belief and concern about climate change and willingness to support climate change actions. Blennow, Persson, Tomé, and Hanewinkel (2012) examined strength of belief and the perception of local impacts of climate change among forest managers across Europe, and found that together these were significant predictors of engagement in climate change adaptation measures. Thus, perception of experience can be seen to have impacts on behavior, beyond increasing belief in climate change itself.

Other research has examined perceptions of climate risk as a function of objective risk indicators. Brody, Zahran, Vedlitz, and Grover (2008) surveyed residents about their perceptions of climate change risk, and examined indicators such as proximity (to potential coastal or inland flooding), temperature trends, natural hazards, and fires. Their results revealed that proximity variables were associated with climate change risk perceptions. That is, residents on higher ground or located further from the coastline perceived climate change as significantly less risky. Similarly, Milfont, Evans, Sibley, Ries, and Cunningham (2014) found that proximity to the coast was associated with belief in climate change. In a nationally representative sample of New Zealanders, they found that that people who lived closer to the coast reported higher levels of belief in climate change and more support for government initiatives to regulate carbon emissions. The effect of proximity to the coastline held when controlling for the distance above sea level as well as regional poverty levels and a range of sociodemographic factors. These findings again highlight the importance of perceptions of spatial distance or proximity to climate change impacts as drivers of public opinion on this issue.

In contrast to the assumption that people in Western nations see climate change as a geographically distant phenomenon, Spence, Poortinga, and Pidgeon (2012) found that the majority of their sample in Britain believed that Britain was already experiencing the effects of climate change. People were more concerned about climate change when they perceived it as affecting primarily distant areas, yet willingness to actually take action on climate change was linked to perceptions of local impacts. These results reveal a conundrum for communicators: people are willing to act only when they think the problem is local, but they tend to discount the severity of impacts at the local, as opposed to distal, level.

Brügger, Morton, and Dessai (2015) shed some light on this problem, by examining the extent to which proximal and distal risk perceptions of climate risk predict different types of adaptation and mitigation behaviors. Their results highlight the notion that making climate change appear closer to people is unlikely to be universally beneficial. Specifically, they found that when examining support for mitigation and adaptation policy, *distal* perceptions of risk were better predictors of policy support than proximal risk perceptions. In contrast, when examining individual behavioral intentions to engage in mitigation and adaptation actions, both proximal and distal risk perceptions predicted individual mitigation intentions, whereas only proximal risk perceptions predicted individual adaptation intentions. That is, there seems to be a match between perceived risk and the type of behavior endorsed, with more distal perceptions of risk being associated with behaviors with more global impacts, and proximal perceptions of risk associated with individual-level behavior with local impacts.

These findings highlight a potential explanation for the sometimes inconsistent findings of previous research with regard to proximizing climate change. Much extant work has not systematically differentiated between the type of climate action (mitigation versus adaptation), nor the level at which it is undertaken (individual behavior versus policy support), and these may be important moderators of the effects of making climate change appear close to people. Thus, the type of behavior needs to be considered when choosing a framing to adopt in communicating about climate change impacts.

Personal Experience of Climate Change

In contrast to examining people's perceptions of climate change as distal from themselves in space and time, we can also gain insight into the effects of proximity (versus distance) from climate change by examining scenarios in which all psychological distance is removed, that is, when people personally experience the effects of climate change. These studies provide insights into the potential effects of proximizing interventions, designed to make climate change appear closer in space and time, as well as in social and hypothetical distance.

There is evidence that perceptions of weather events that people attribute to climate change are associated with public opinion on climate change. The perception that one has personally experienced climate change impacts is associated with a range of beliefs, including the extent to which climate change is seen as a risk (Akerlof et al., 2013), belief in anthropogenic climate change (Borick & Rabe, 2014; Egan & Mullin, 2012; Hamilton & Stampone, 2013; Joireman, Truelove, & Duell, 2010; Li, Johnson, & Zaval, 2011), and how worried people are about climate change (Donner & McDaniels, 2013; Spence, Poortinga, Butler, & Pidgeon, 2011).

Akerlof, Maibach, Fitzgerald, Cedeno, and Neuman (2013) examined climatic data and survey responses for a county in Michigan, and found that people's perceptions of personal experience were borne out in climate data (including precipitation and temperature records), and importantly, that perceptions of such experiences were associated with increased perceived local risk of climate change. Haden, Niles, Lubell, Perlman, and Jackson (2012) also found a relationship between perceptions of change in water availability among farmers in the United States and their intentions to engage in both mitigation and adaptation actions. This study also revealed that the effects on intentions to engage in mitigation behaviors occurred via changes in global concern, whereas intentions to engage in adaptation behavior were associated with local concerns. Interestingly, though perceptions of change in water availability were associated with concern and intentions to engage in mitigation and adaptation actions, perceptions of change in temperature had no relationship to belief or concern about climate change.

Other studies have focused on more general belief in climate change. For example, Hamilton and Stampone (2013) surveyed participants over a 2.5-year period, and found that the belief that humans are changing the climate was related to temperature anomalies on the interview day and the day preceding it. That is, people tended to agree that humans are contributing to climate change more on warmer-than-usual days than on cooler days. Similarly, Li, Johnson, and Zaval (2011), found that when people perceived the weather to be warmer than usual, they believed in global warming more, were more concerned about the effects of global warming, and donated more money to a charity focused on taking action on global warming, compared to participants who perceived the weather to be cooler than usual. Borick and Rabe (2014) also found evidence that people nominate experiences with warmer temperatures as the main reason for their belief in global climate change.

In a study of Norwegians, Lujala, Lein, and Rød (2015) found that personal experience of climate change was an important predictor of public opinion on climate change. However, their results suggest a potential weakness of interventions that merely aim to make climate change feel closer. In their study, the personal experience of damage as a result of climate change was key to concern about climate change and the perception that climate change would affect people's local area. Living in at-risk areas but not having personally experienced damage associated with climate change impacts was not related to concern about climate change. Thus, although personal experience may be associated with public opinion shifts on climate change, interventions that attempt to make the issue appear closer in time and space in the absence of salient personal experience may not be a panacea for climate inaction. Reser and colleagues (2012) also highlight that people's *perceptions* of experience are key to any influence on attitudes, beliefs, and behaviors about climate change. After examining people's reactions to climate change and natural disasters in Australia, they found that *perceived* rather than objective exposure to climate change impacts was associated with increased belief in, and distress about, climate change. This indicates that regardless of how spatially or temporally close the effects of climate change are, if people do not attribute events to anthropogenic climate change there is unlikely to be an effect on public opinion.

Personal experience of climate variability is also related to broader indices of public opinion than just individual attitudes. Donner and McDaniels (2013) examined the relationship between opinion about climate change and temperature at the national level. Their study drew from public opinion polls and discursive analysis of opinion articles in newspapers, and correlated these indicators with a national air temperature database. The results revealed that belief in and worry about climate change expressed in polls were related to national mean temperature anomalies in the previous three to twelve months. Interestingly, their data revealed that the proportion of published newspaper opinion articles that supported the scientific consensus on anthropogenic climate change was also related to observed national temperature anomalies at both the seasonal and annual scale.

Some have questioned the directionality and causal nature of the observed associations between perceptions of personal experience of climate change and belief in climate change. That is, this represents a chicken-versus-egg scenario, in which it is not clear from much of the available data whether experiences cause change in belief in climate change or whether belief in climate change causes people to interpret their personal experiences in line with their belief. Myers, Maibach, Roser-Renouf, Akerlof, and Leiserowitz (2013) examined this question by looking at longitudinal data to observe the influence of perceived experience and belief certainty on each other over time. They found evidence for both processes, but, crucially, this depended on people's initial positions. Those who were already engaged with the issue of climate change tended to engage in motivated reasoning such that they interpreted experiences in line with their existing beliefs. Perhaps more encouragingly, for those who were less engaged with climate change, perceived experiences represented an opportunity for experiential learning, such that perceptions of climate change experience caused increases in certainty that climate change was really happening.

Relatedly, van der Linden (2014) examined the relationship between personal experience of climate change, affect, and risk perceptions. He found that although an initial model suggested that personal experience predicts climate risk perceptions and risk perceptions predict affect, there was also evidence of a feedback system, by which affect and risk perceptions reciprocally influence each other. This suggests that while climate experience heightens risk perceptions, which increase emotional reactions, these emotional reactions also increase perceptions of risk.

Rudman, McLean, and Bunzl (2013) demonstrated that such personal experiences have implications for voting behavior, as well as attitudes. In a study of New Jersey residents conducted before and after hurricanes Irene and Sandy, results revealed that implicit attitudes toward Green politicians reversed after the experience of these extreme weather events. That is, before the hurricanes, participants had negative implicit associations with Green politicians, yet these associations were positive among a group recruited from the same population after the hurricanes. In addition, those who had been significantly affected by the storms were most likely to prefer the Green politician, and implicit attitudes were the best predictor of voting behavior after the storms.

The effects of personal experience are not limited to weather fluctuations; they can also be simulated in laboratory environments. Researchers have found that priming people with concepts related to heat increases belief in climate change (Joireman, Truelove, & Duell, 2010). That is, in addition to the weather conditions influencing people's belief in climate change, making participants think about heat-related concepts also increased their belief in anthropogenic climate change. This finding is critical because it provides additional evidence to suggest that the relationship between personal experience and belief in climate change observed in this and other studies may be causal in nature. Thus, if we can influence the extent to which people are cognizant of climatic changes in their local area, belief in anthropogenic climate change and willingness to support climate action may increase.

The influence of personal experience is not equivalent for people on different sides of the political spectrum. For example, studies suggest that the effects of personal experience of climate change on belief and concern are stronger among political moderates or independents (Egan & Mullin, 2012). Other research (Hamilton & Stampone, 2013), in turn, suggests that such effects occur *uniquely* among political moderates or independents. This is not unexpected, given the relatively nonsevere nature of the experiences of climate impacts examined in these studies, compared to the severe outcomes predicted by some climate models. Presumably, for those who are opposed to the acceptance of anthropogenic climate

change along ideological lines (cf. Dunlap & McCright, 2008), only extremely serious and salient personal experience would have the potential to shift such strongly held views. Similarly, among those already strongly convinced about the existence of human-caused climate change, observations of weather fluctuations are unlikely to further bolster their levels of acceptance (Myers et al., 2013). Recent research also demonstrates that personal experience may have divergent effects for different types of climate change risk perceptions. Van der Linden (2015) found that while personal experience was a significant predictor of personal risk perceptions, when examining a range of other cognitive and sociocultural and demographic variables, personal experience did not predict societal perceptions of climate risk.

Thus, extrapolating from the literature on personal experience suggests that framing climate change as close to the self in space and time may be an effective strategy to encourage belief in anthropogenic climate change and support for mitigation and adaptation initiatives. However, these studies also reveal, at least for the type of climate impacts examined in these studies, proximity to climate change impacts may not be enough to trump the lack of acceptance of anthropogenic climate change among conservatives, and may not increase the already high levels of acceptance among liberals. Nonetheless, among those not convinced about climate change along ideological lines, there is reason to believe that increasing awareness of local climate impacts occurring now or in the near future will be associated with public opinion shifts in favor of belief in anthropogenic climate change and support for climate change action.

Changing Perceptions of Spatial and Temporal Distance

Belief in climate change and support for climate change action vary as a function of climate impacts being perceived as affecting locations near versus far in space and time. This suggests the potential for communicators to strategically communicate about localized climate impacts in order to shift public opinion. For example, Scannell and Gifford (2013) manipulated the description of a climate change impact to have either local or global effects, and found that people were more likely to engage with climate change when it was described as having local (i.e., spatially close), as opposed to global effects.

However, the effects of manipulating perceptions of psychological distance from climate change also vary as a function of other factors, such as political ideology. One study showed that U.S. Republicans are more supportive of climate action when victims are closer to them (in this case, fellow residents of upstate New York), whereas Democrats are more likely to support climate action when exposed to distal victims (living in the state of Georgia, or in France; Hart & Nisbet, 2012). Although this study was focused on the social distance of climate change victims (that is, people like me living in my area versus others living in distant and dissimilar places), the impacts of climate change also varied in terms of their geographic proximity; so, in this case, the relative importance of social and spatial distance cannot be disentangled on support for climate action.

Other work has also revealed nuanced effects of manipulating the geographical distance of climate change impacts. Spence and Pidgeon (2010) examined the effects of geographic distance on perceived severity of climate change and support for climate change mitigation. Their results revealed an interesting mismatch: when climate change was described as affecting distant locations, people perceived the problem to be more severe. However, they were more likely to support mitigation when impacts were described as occurring locally. These findings present a conundrum for those attempting to increase public engagement with climate change, since they suggest that people support action only when climate change is affecting them more directly, but they are less likely to accept that climate change is a serious issue when it is affecting their local area as opposed to distant locations.

Of course, these perceptions of severity do reflect actual predictions to some extent. The sample in this study was drawn from the United Kingdom, and while there are many ways in which climate change has and will affect the United Kingdom, more serious effects will likely occur in distal developing nations that have less infrastructure and resources to respond to such threats. That said, given the global nature of the causes of anthropogenic climate change, it is critically

important to encourage support for mitigation among those in Western, developed nations, even if the impacts in these locations may be less severe.

Hardisty and Weber (2009) examined the extent to which people discount environmental threats, that is, the extent to which future environmental gains are valued less than current gains. Their analysis revealed that when considering air pollution, participants discounted future gains in a similar manner to the way they typically discount future financial gains. That is, people will generally prefer to accept less money (or less improvement in air quality) if received now, than more money (or a greater improvement in air quality) received later. However, other evidence shows that typical patterns of discounting the future do not necessarily hold in the climate change domain. That is, there is a tendency to be less supportive of action when climate change outcomes are described as occurring further away in time, but this holds for only around half of participants (Nicolaj & Hendrickx, 2003). This finding suggests that framing climate impacts as occurring closer in time may have somewhat limited utility in influencing levels of support for climate action. Further research into what distinguishes those who do and do not discount future climate impacts is warranted, given the potential to target those for whom discounting occurs with interventions designed to make climate change impacts appear closer in time. For example, if proximizing climate change is found to be useful only among older people, communicators could target this demographic with messages designed to emphasize the effects of climate change that will occur locally and in the near future.

Recent research has also examined the effects of manipulating the psychological distance of climate change on multiple dimensions, and examining the perceptions that mediate these effects (Jones, Hine, & Marks, 2016). In this study, Australian participants were exposed to a multimedia message that emphasized current, close, and certain climate impacts (linking recent bushfires and floods in Australia to climate change) or spatially and temporally distal and uncertain climate impacts (discussing uncertain future trends and referencing bushfires in Greece and typhoon Haiyan in the Philippines). This framing impacted perceptions of social, geographic, and hypothetical (uncertainty) distance, but did not have a significant effect on perceptions of temporal distance. The authors found, in turn, that perceptions of uncertainty and social distance fully mediated the effects of the proximizing manipulation on concern about climate change and intentions to engage in mitigation actions. This indicates that by making climate change appear close, people's perception that climate change was more certain and that it would affect people like them was increased, and this subsequently increased their concern about climate change and their willingness to take action. However, a similar study conducted in the United Kingdom (Brügger, Morton, & Dessai, 2016), presented a more nuanced picture of the effects of proximizing interventions, demonstrating that for those who experience high fear in response to information about climate impacts, proximal climate impacts are associated with greater mitigation intentions, but for those who experience less fear, more distal impacts are associated with greater intentions to engage in mitigation behaviors.

While there were less strong effects on temporal and spatial distance perceptions in this study, it should also be noted that, using current approaches, it is somewhat difficult to disentangle the measurement of different dimensions of psychological distance. That is, in agreeing that climate change is affecting people like you, it is also likely that you are endorsing, to some extent, that climate change impacts will occur spatially near to you. Similarly, it is difficult to disentangle the effects of time from uncertainty; any event occurring in the future is inherently more uncertain than events occurring in the present, and thus the failure to find an effect on temporal distance in this study should not lead us to assume that perceptions of the temporal distance of climate change are unimportant in influencing decisions to act. Rather, these effects may have been captured in the measure of uncertainty or social likeness instead. Finally, in this study, the distal condition, though emphasizing events far from Australia, associated with uncertainty and future trends, did also mention events that had already occurred (e.g., Typhoon Haiyan), which may have hampered the effect of temporally distant framing in this particular case.

Temporal and Geographical Distance of Climate Change: Implications for Public Opinion

A range of studies suggests that, in Western, developed nations, the perception that climate change impacts will occur far away in space and time may be related to the relatively low levels of public support for and engagement in ameliorative action. However, the nuanced nature of the effects of psychological distance or proximity to climate change in these domains should also be noted. While the absence of distance (personal experience) is generally associated with greater willingness to take action on climate change, these effects depend on other factors, such as one's political orientation, which may take precedence over perceptions of climatic change in the highly politically polarized debate around climate change that is occurring in countries like Australia and the United States. In addition, studies attempting to manipulate people's perceptions of the proximity or distance of climate change also show some promise in encouraging shifts in public opinion and willingness to take action on climate change; however, the effects of such interventions are not uniformly positive.

Further, there is a difficult asymmetry between perceptions of risk or seriousness and willingness to take action. While perceptions of current, local effects tend to predict willingness to take action on climate change, perceptions of global or distal climate change are more closely linked to the perception that climate change is a serious issue. This asymmetry presents a challenge for communicators who may want to emphasize local impacts to encourage support for action, but may inadvertently convey the impression that climate change is a less serious issue in doing so. If such effects are driven by the desire to avoid the potentially threatening situation of considering severe climate impacts occurring in one's local area, then developing messages that highlight some level of proximity while maintaining some degree of distance will be most helpful. For Americans, highlighting impacts of climate change in nearby countries such as Mexico may prove more effective than focusing on the threat to distal nations such as India, or to their own home state. That is, if climate change can be framed as being close enough to care about, but far enough not to be a paralyzing threat, this may be a more successful framing for shifting public opinion toward support for large-scale mitigation and adaptation action.

Another potential solution appears in recent work by Evans, Milfont, and Lawrence (2014). They challenged the common notion that a focus on adapting to the effects of climate change will undermine attempts to mitigate the problem. Their results instead reveal that considering local adaptation initiatives may increase support for global mitigation. When people were assigned to first consider sea-level rise and local adaptation actions that could be taken, they were subsequently more willing to engage in global mitigation action than those who did not first consider local adaptation. This suggests that while some studies show people are willing to take action only if the effects of climate change are perceived as local, perhaps by emphasizing the need to adapt to effects at the local level, climate change communicators can in turn encourage engagement and support for broader-scale mitigation action.

Conclusion

There is considerable evidence that people often perceive climate change as distant in space and time, and removed from the self, at least in terms of its more serious consequences. These perceptions of distance in space and time tend to be associated with reduced concern about, and willingness to act on, climate change. The literature on personal experience suggests that, in most cases, removing the psychological distance of climate change should be helpful in promoting concern and action on the issue. However, given the relatively small number of studies testing the effects of proximizing interventions designed to make climate change feel closer in space and time, caution is warranted. Though some studies support the efficacy of the proximizing approach (e.g., Jones, Hine, & Marks, 2016), studies of temporal discounting suggest that proximizing may be effective for only about half of the population (Nicolaij & Hendrickx, 2003), and other studies suggest that it may be effective only among those who are more conservative (Hart & Nisbet, 2012). Further, while people may be more willing to act on climate change when it is framed as affecting their local area, they may be less likely to believe local climate impacts are a serious problem, compared to those affecting distant locations (Spence & Pidgeon, 2010). Though more research is required to identify the best strategies for framing the psychological distance of climate change to encourage concern and action, it is clear that perceptions of climate change as distant in both space and time have important implications for public opinion on climate change.

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