https://doi.org/10.24095/hpcdp.39.4.07

Original qualitative research

A narrative model for exploring climate change engagement among young community leaders

Rachel Malena-Chan, BA

This article has been peer reviewed.

Abstract

Introduction: Decades of widespread knowledge about climate change have not translated into adequate action to address impacts on population health and health equity in Canada. Research has shown that context-based perceptions and interpretations mediate engagement. Exploring climate change engagement involves inquiry into contextual experience.

Methods: This qualitative study has employed narrative methodology to interpret the meaning of climate change among community leaders in Saskatoon, Saskatchewan, Canada, age 20-40 (n = 10). Climate change narratives were explored both structurally and thematically.

Results: A model was developed to organize results and to describe concepts of fidelity and dissonance within participant narratives. Findings suggested that knowledge of climate change and personal motivation to act did not preclude narrative dissonance, which served as a barrier to a meaningful personal response. Dissonance can result where internal and external barriers mediate mobilization at moments in the plot: (1) moving from knowledge of the challenge to a sense of agency about it; (2) from agency to a sense of responsibility to choose to address it; (3) from responsibility to a sense of capacity to produce desirable outcomes despite contextual challenges; and (4) from capacity to a moral sense of activation in context. Without narrative fidelity, meaningful mobilization can be hindered.

Conclusions: A narrative model is useful for exploring climate change engagement and highlights opportunities for a population health approach to address the conditions that hinder meaningful mobilization. By framing climate change narratives with emotional and moral logic, population health framing could help young leaders overcome internal and external barriers to engagement.

Keywords: *climate change, engagement, narrative methods, public education*

Highlights

- Climate action requires engagement models that capture contextual and cultural barriers experienced by knowledgeable, motivated individuals.
- This qualitative study examined the narrative structure of meaning-making about climate change among community leaders, 20 to 40 years old (n = 10).
- Narrative dissonance could help to explain immobilization, particularly among those with enough knowledge of climate change.
- Modeling narrative dissonance highlights opportunities to frame the challenges, choices, and outcomes related to climate change in a way that mobilizes population health stakeholders.
- By addressing dissonance within public narratives about climate change in Canada, population health professionals can contribute to conditions for meaningful mobilization.

Introduction

Climate change is a serious threat to the health of populations, representing both a challenge and an opportunity for practitioners and researchers.[1-4] Impacts are not experienced uniformly, and existing health inequities will be further exacerbated without urgent action to mitigate greenhouse gas emissions and to enhance community resilience.[1-7] Currently, Canada is not on track to meet its commitments to the Paris Agreement,[8,9] and there is disagreement among stakeholders about the future of Canada's climate policies.[10] Systems-level action is necessary to address the risks of climate change in a meaningful way, but population health professionals may lack frameworks and models for overcoming the barriers to engagement.[3,7]

Professionals who employ an eco-social lens[11,12] to understand health problems have important roles to play in supporting and leading climate action at multiple levels,[3,7] but gaps in knowledge remain about the complex contexts that shape engagement.[13-15] Multi-scalar, multi-dimensional eco-social health problems, such as climate change, are experienced by populations in the structural and social realities of everyday life and, as Golden, McLeroy, Green et al.[16] discuss, it is not immediately clear how an individual might make sense

Author reference:

University of Saskatchewan, Saskatoon, Saskatchewan, Canada

Correspondence: Rachel Malena-Chan, c/o Rachel Engler-Stringer, Department of Community Health & Epidemiology, Rm 3247 - E wing - Health Sciences, 104 Clinic Place, Saskatoon, SK S7N 2Z4; Tel: 306-966-7839; Email: ram322@usask.ca

of their personal response without models to help navigate that which is outside of individual control.

Bridging the gap between knowledge and action involves engaging with the contextual and cultural barriers to action.[17] The goal of this study was to gain a deeper understanding of the experience of responding to climate change in context, particularly among those motivated by values of social and environmental justice. The objectives were to: (1) employ Ganz's theories[18] about public narrative, power, and collective action to interpret perceptions of climate change amongst knowledgeable, motivated community leaders in Saskatoon, Saskatchewan, Canada (age 20–40 years); and (2) to contribute a model for conceptualizing engagement narratively and for exploring the meaning of eco-social problems like climate change in the context of everyday life.

This article is based on the author's Master's thesis, submitted in partial fulfillment of the requirements for the M.Sc. degree in the Department of Community Health and Epidemiology at the University of Saskatchewan.[19]

Literature

Rather than attributing a lack of climate change action to a lack of public *understanding* about climate science, over the last decade, researchers have increasingly pointed to the importance of public *engagement* for explaining the apparent gap between knowledge and action.[14] In contrast to information-deficit models, which have emphasized increasing understanding, an engagement approach involves mental processes (cognition) as well as emotional and evaluative processes (affect) and processes of embodiment (behaviour).[14] Despite the limitations of the information-deficit model, population health professionals may lack alternative approaches to climate change engagement. For example, the 2017 *Lancet Countdown* argued that "insufficient understanding of climate change [was] one of the largest perceived barriers to individual engagement"[20] when climate change engagement literature has suggested that knowing the facts about climate change can *result* in barriers to engagement.[13-15,21-23] Public health frames may be helpful for relaying information about the risks of climate change in a clear way,[24] but questions have remained about the impact of that understanding in the context of everyday life.

Systematic reviews of literature about climate change engagement[14,15] have found that cultural and contextual factors have mediated interpretations of climate change. Emerging research has indicated a varied landscape of climate attitudes, despite a strong factual and moral basis for climate action.[13,21-23] The literature about climate change engagement has been widely accepting of the limits of the information-deficit model, and has recommended instead a focus on emotions, cultural values, and audience-specific framing.[13-15,21-23] Literature has also demonstrated that climate change can represent an existential threat to self-identity, [15,25-27] which could elicit emotional and social dynamics that hinder meaningful engagement.[18]

Some qualitative researchers have explored the psychological and sociological contexts in which facts about climate change are interpreted, deepening understanding and outlining theories about the preconditions for action. For example, Lertzman,[27] from a psychological perspective, argued that individual meaning-making about climate change is ripe with internal struggle, offering theory about how "environmental melancholia" impacts engagement. Lertzman argued that personal climate change stories are complex and she maintained that an individual might comprehend that what matters in life is being threatened while also distancing that threat to cope with it.[27] From a sociological perspective, Norgaard[25] found evidence of internal dilemma within groups of people who understand climate change and she explored how uncomfortable feelings are shut down to preserve social norms. Norgaard discussed "implicit denial" and concluded that both individuals and collectives look to public narratives to help them manage unwelcome emotions about climate change.[25] Thus, even those who are convinced and concerned about climate change could be hindered from mobilization by a lack of social structures and collective support to process resulting emotional and moral implications.

Questions have remained about the complex relationships between climate change knowledge, values, emotions, and actions, particularly among individuals who are knowledgeable about climate change and who have espoused pro-environmental values.[28,29] As population health professionals aim to mobilize systems-level change, models for engagement are needed which, in addition to improving general understanding about the health impacts of climate change, serve to equip communities to mobilize in a meaningful way. This study was aimed at contributing to research about the barriers to climate change engagement by exploring the lived experience of climate change among young community leaders.

Methods

Narrative approaches have been emerging more prominently in the climate change engagement literature in recent years because of their ability to capture experiences in context.[17,30-34] As Paschen and Ison[30] argued, for example, context-specific perspectives have been gaining momentum in the literature about climate change adaptation, and narrative approaches could play a critical role in closing knowledge gaps about building local capacity. Bushell et al.[17] described how strategic narratives could be used to give meaning to otherwise disconnected events to build buy-in and support. Moezzi et al.[33] argued that storytelling could influence and engage audiences, describing stories "as artefacts to be investigated in terms of content, actors, relationships, power, and structure…used to gather information, provide insight, and reframe evidence in ways that more science-ordered formats miss".[33, p1] In this study, a narrative methodology was employed to gather and analyze data.[35,36]

Humans draw on cultural values when narrating their personal and shared experiences, and the act of constructing self and group narratives is theorized to reveal the goals, motivations, pathways, and plans deemed rational in context.[37,38] Ganz maintained that personal narratives, or "stories of self", are nested in public narratives based in relationships and cultural context, or "stories of us and now".[18] Within "stories of us," the push-and-pull of the context and characters' agency is negotiated discursively as the storyteller draws on shared values, experiences, and frames to convey the meaning of the story.[18] By exploring individual perceptions through Ganz's framework for public narrative,[39] researchers can gain a deeper understanding about how barriers to engagement operate in context.

Study activities

Interpretive studies draw on insights from a homogenous sample to understand the experience of a particular group.[35] Ten individuals were recruited for the study in Saskatoon, Saskatchewan, each between 20 and 40 years old. At the time of their participation in the study, participants were leading diverse lives: some were starting families or businesses, some were students, and some worked in fields such as: health, arts, education, governance, and politics. All participants identified as community leaders embodying a commitment to social and environmental justice values. To broaden the transferability of the findings, recruitment continued until the sample included a mix of men and women (7 out of 10 were women) as well as 3 out of 10 individuals self-identifying as members of a First Nation. By looking at this particular "story of us,"[18] it was possible to gain a deeper understanding of the perspectives of people knowledgeable and motivated to act to address climate change but who live in contexts where many people do not accept the severity or cause of the problem.

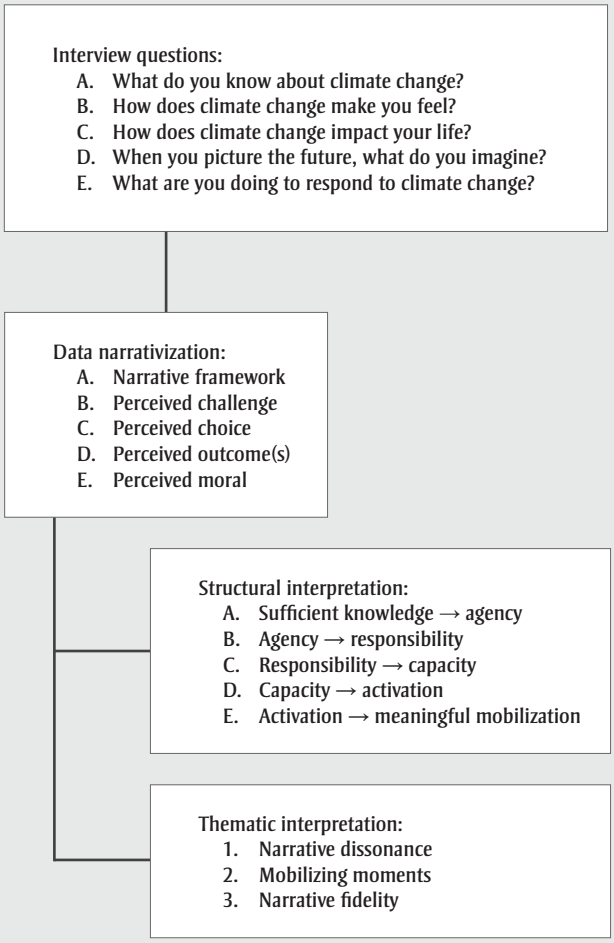
This study received ethics approval from the Behavioural Research Ethics Board at the University of Saskatchewan (Beh #17-19). Because this study involved storytelling about themes that may be outside the scope of public attention,[25] as well as themes that may elicit uncomfortable emotions[26] and internal dilemma,[27] participants were provided with the study rationale and the open-ended interview questions beforehand so that they could begin to tune into their perceptions of climate change. Semi-structured interviews were held in a location of the participant's choosing and lasted an average of 60 minutes. At the end of the interview, each participant was given a journal with the five research questions written inside, and they were invited to write about their experience and their story as thoughts emerged in the weeks following the interview. Participants were not asked to share the contents of their journal, but during follow-up contacts, they were invited to add thoughts or reflections to their story. This design allowed for an ongoing dialogue to be established so that as the interpretation of the results developed, participants felt comfortable making additions and changes to better reflect their experience.[35]

Structural interpretation

Structure is intrinsic to the meaning-making function of narrative. As Polkinghorne[38] argued, "[t]he question 'What does that mean?' asks how something is connected to something else…It is the connections and relationships among the events that is their meaning".[38,p6] For example, the beginning of a story has a relationship to the middle of a story, as does the middle of a story to the end of a story.[40] Ganz's plotline (Figure 1) consists of four sequential parts: challenge, choice, outcome, and moral.[18] Ganz argued that by framing information as a narrative, humans "share experiences with each other, counsel each other, comfort each other, and inspire each other to action".[18,p282] Participant narratives were coded according to this four-part structure using NVIVO to allow for comparison and analysis of key themes and patterns. By interpreting how participants framed the challenge, choice, outcome, and moral of their climate change story, the connection points between the parts of the whole could be explored.

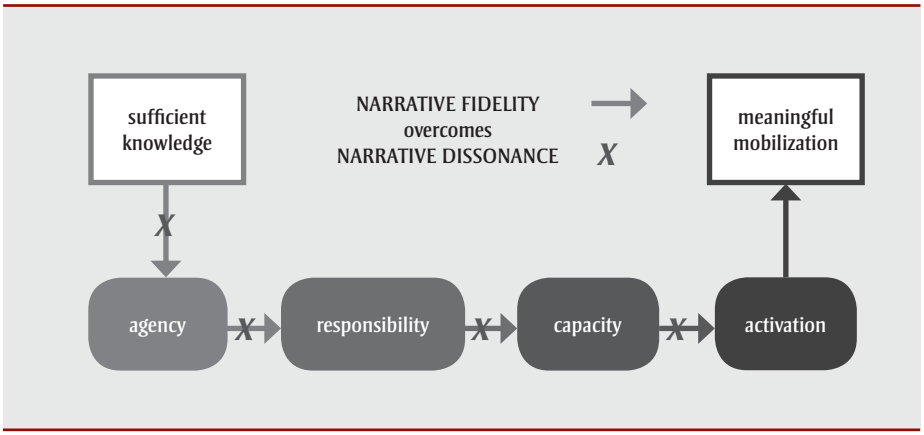
After coding each part of the plot, additional codes were applied to themes that facilitate or hinder engagement, indicating structural linkages between knowledge and action. Figure 2 visualizes a narrative model for engagement that was developed inductively throughout the study. The model was used to organize thematic data and to explore the meaning of climate change as perceived by study participants. "Mobilizing moments" in the narrative are identified where themes could contribute to narrative dissonance, shaping the transition points between (1) sufficient knowledge of the challenge of climate change and a sense of agency about it; (2) between a sense of agency and a sense of responsibility to act; (3) between a sense of responsibility and a sense of capacity to achieve a desired future; and (4) between a sense of capacity and a sense of activation in the context of everyday life. By structuring an exploration of connection

FIGURE 1
Interpretive schema



Source: Reprinted with permission from Malena-Chan R. Making climate change meaningful: narrative dissonance and the gap between knowledge and action [Master's thesis]. Saskatoon (SK): University of Saskatchewan; 2019. Available from: http://hdl.handle.net/10388/11948

FIGURE 2
A narrative model for engagement



Source: Reprinted with permission from Malena-Chan R. Making climate change meaningful: narrative dissonance and the gap between knowledge and action [Master's thesis]. Saskatoon (SK): University of Saskatchewan; 2019. Available from: http://hdl.handle.net/10388/11948

points within and between participant narratives, the model could contribute to the theory about why knowledgeable, motivated people feel immobilized about climate change.

Thematic interpretation

Narrative patterns and relationships between core themes within participant plots were the subsequent focus of the thematic analysis, with attention to those themes that connected the parts of the whole. Participant narratives were considered together and individually until interpretations about their perceptions emerged clearly. Using the model to explore participant narratives highlighted the concept of *narrative dissonance*, the structural breakdown of a given narrative because of emotional, moral, thematic, or conceptual contradictions within the story itself. According to Ganz, those who lack meaningful public narratives may experience immobilizing emotions such as inertia, apathy, isolation, fear, and self-doubt.[18] The term *narrative fidelity* was useful for conceptualizing an alternative interpretation, whereby dissonance is overcome or reframed. This interpretation could produce a more emotionally meaningful and mobilizing story that could elicit urgency, outrage, solidarity, hope, and a sense of efficacy.[18] Fisher[41] argued that narrative fidelity is experienced when a story "ring[s] true with the stories they know to be true in their lives".[41, p8] In applying the concept of narrative fidelity to climate change narratives, Marshall[42] argued that it is a key element in mobilizing action to address climate change, because only by offering a more compelling story will faulty interpretations of climate change be abandoned. Together, the study's thematic and structural analyses served as a heuristic tool for exploring perspectives in a given context and for understanding how stories facilitate or hinder engagement, and ultimately, action.

Results

Using a narrative model for engagement (Figure 2), *mobilizing moments* were identified at transition points in the interpretive process, representing key themes that bridge or encompass aspects of both dissonance and fidelity. These moments could represent opportunities for transforming knowledge into emotions that mobilize collective action.[18] When public narratives about eco-social problems like climate change lack fidelity, or when they are not apparent at all, the problems themselves may be perceived as meaningless in context, even by those who accept the facts. Manifestations of narrative dissonance and narrative fidelity within participant narratives are described below, organized along the trajectory of a storyline. Thus, a narrative model of engagement (Figure 2) has illuminated a pathway from knowledge to action, outlining stumbling blocks as well as strategies for overcoming them along the way.

Experiences of agency

In locating their personal relationship to climate change, participants demonstrated a sense of *agency*, not just "knowing about" the problem but perceiving it as culturally and personally relevant to their lives:

> … you know, that's not a thing that hits me in the heart, it's more like the impacts of climate change, not the science of climate change. That doesn't have the same kind of impact on me, personally. But as soon as you start talking about the impacts of climate change and how we might have to adapt to climate change, like this is where people can really understand that it's like "Ok, so we might need to change how we transport ourselves, how we feed ourselves"…

Participant experiences of agency helped illustrate why sufficient knowledge of climate change is not directly related to mobilization, as the process of interpreting the risks of climate change was linked by participants to feeling physically drained and emotionally overwhelmed: "I try to do what I can do, and I just sort of emotionally shut down about all that other stuff. But still stay aware, right?"

Table 1 provides further examples of the dissonance that can arise from knowing about climate change, and some participants spoke about minimizing overwhelming emotions by actively reducing the flow of information. They reported limits to the attention that can be directed towards climate change if mental and physical health is to be maintained. Rather than reflecting a lack of access to information, participant narratives suggested information abundance.[43] Participants perceived themselves to be living in a story in which climate change is a reality. However, while participants consistently expressed a sense of being *in* the story about climate change, the *type* of story being told and the type of *role* they play within it were not always clear.

Experiences of responsibility

The next stage of the model explores movement from agency about the challenge of climate change to a sense of *responsibility* about the choices implied. Participant narratives indicated that they understand how human actions and decisions impact climate change. However, if a meaningful role in the story about it was perceived as untenable, or non-existent, the narrative became dissonant. Rather than denying that the problem of climate change is real and important, examples in Table 1 demonstrate how dissonance may result from a lack of perceived power to

TABLE 1
Examples from participant narratives about climate change

Element of engagement	Narrative dissonance	Mobilizing moment	Narrative fidelity
Agency	… it definitely got really draining, and sometimes that led me to feel like "Ugh, I just need to not really think about this right now." I was just trying to not care.	But it's distant in some ways…It's definitely very apparent, but it doesn't, yeah, it's not like something close to home, I guess.	I know that humans are in a lot of trouble if it goes unchecked and if we continue on the path we're on… It's probably the most pressing problem in the world right now. And I don't like it.
	I've noticed that sometimes if I see a headline or a snippet of some depressing news about the climate and I'm having a bad day, I will consciously tell myself 'I can't afford to look at this right now' and I will skip past the news…I think my avoidance is part self-care but also part unhealthy willful ignorance…	Like we'll talk about something and be like, 'Oh yeah, plus, like, climate change on top of that.' …like 'And meanwhile we're all burning.' So that's sort of how I would characterize my climate change lens, I guess; it's constantly in the background of everything else that meanwhile everything is burning.	I feel like I need to challenge those emotions and like try to be more constructive about it instead of being so just about feelings, I don't know. I guess, be more rational – like what do I need to do? How do I get people's attention, how do I engage people back home?
Responsibility	It'd be one thing if people were complaining that they couldn't have an oil job when they had six other jobs…but no one does.	…when I internalize those feelings about climate change, in some ways it motivates me to keep not owning a car, and to keep being mindful of how I travel. I definitely feel guilty…	It's bigger than me, it's about a community…I see us as networks, not really as individuals, so again, it's not about me.
	I think one of the reasons that it can feel so paralyzing is that there's going to need to be so many people working together to work on it and people…we're not really good at coming together unless there's like a crisis where you have to, but by the time we get to that point, maybe, probably, it will be too late.	I know in my head- that people, individuals, can do whatever we want to try to make a difference, but if corporations and governments aren't similarly motivated, it can only go so far, and that feels very frustrating.	For Indigenous People, we always have this way of thinking…we're constantly thinking towards those generations more than our current one. And a lot of the things we make choices and decisions on usually reflect not only our connection to our ancestors, but also to the future.
Capacity	I don't know. I feel like it could go so many different ways, I didn't really – I don't know that I could predict.	But I do think that in my lifetime, and certainly in my children's lifetime, there – it will look radically different.	We're going to have to face things we're not prepared to face, for sure, but I guess when I'm feeling more hopeful, I'm like – but maybe we can do it, together, you know, we can make these changes. But I'm not sure. We'll see.
	It's very hard for me to think about…like "I will have a kid, and he will, he or she will have kids," like to think about generations down the line? I'm just like I just don't – it's going to be so different, who knows? Like maybe, I think maybe it has to be a coping mechanism, like I can't imagine – like you can't imagine apocalypse, really.	[I]t's almost like a looming doom, because even though I can experience certain aspects of climate change myself, it's not something that's affected me in a very intense way or acute way, where the issue is that I know it has for a lot of communities and in the future, will affect way, way more.	What if there is a wakeup call and we actually give power to the people who are the land and water protectors? That could be a really beautiful future. So yeah, there is progress being made in that direction, but it seems so distant from where we are, here.
Activation	Ok yeah, I've saved whatever greenhouse gas emissions myself but, like, it's still this tiny little miniscule drop in the global bucket and when I think about things like Trump, it's just like, ugh nothing I do matters…So there's also this immense feeling of being small, and insignificant, and it's sort of this hopeless cause, but you can't live in that space day to day, or you just totally fall apart right? You can't stay motivated.	…sometimes I feel like I'm not doing things that are very effective just because I'm not in the position to be. Like I'm not just the one, like, signing a paper or making a decision about something, but to an extent, I kind of feel like that's a poor excuse…So I don't know, I could be more effective I'm sure.	I try to do as much as I can in my daily life…but just sort of, you know, choosing a career path where everything I do in my 8-5 life pushes this climate change agenda, and like I'm really interested in - Ok, so let's say the politicians decide to do something, how do you actually get anything done from that?
	Definitely there are little steps, and it's like the small steps that eventually climb mountains, but there's no way that one person can emotionally deal with the backlash that follows with trying to change an unsustainable way of living.	I know that having a more significant impact means I need to be working with other people doing work, and also, that we need to be doing that work together, because, yeah, I don't think there's going to be any movement on climate change without tremendous public pressure, by our elected officials, like that type of movement, so yeah, unless we work together, it's not going to happen.	How do we actually deal with this problem in a way that also doesn't fall into a "lifestyle-ism" but actually tries to change the conditions… essentially, the fundamental point is – how do we engage in these struggles so that we actually can control the production, so that the conditions themselves are controlled?

Source: Reprinted with permission from Malena-Chan R. Making climate change meaningful: narrative dissonance and the gap between knowledge and action [Master's thesis]. Saskatoon (SK): University of Saskatchewan; 2019. Available from: http://hdl.handle.net/10388/11948

intervene meaningfully as through individual roles.

One participant pointed out that responsibility to make personal sacrifices in the face of climate challenges is often moralized, positioned as the "good" or "right" choice:

> …how do we actually deal with this problem in a way that also doesn't fall into a "lifestyle-ism" but actually tries to change the conditions because, we all can't really come from a place of not being totally educated about how to not make greenhouse gases, or being in the conditions we all need to use fossil fuels at different times, and then expect that everyone can just figure it out themselves and we'll be fine?

Personal, political, and economic contexts can limit the availability of pro-environmental choices. If moralizations backfire, individuals may be cut off from personal responsibility altogether, or may revert to a dissonant position and emphasize the limits of personal roles in contributing to climate change. From this perspective, economic conditions and transition timelines may shape how a sense of responsibility is experienced and interpreted.

As Table 1 exemplifies, several participants described choices they already made to address climate change through the reduction of their personal emissions, such as: through transportation, food choices, career paths, and household-level waste management and energy use. However, participants struggled to locate the *meaning* of these actions given the scale and scope of the challenge of climate change. Narrative fidelity about the story's choice-point occurred when an individual identified meaningful choices through a reflection upon their roles, values, self- and cultural identities, and upon the timeline within which their story takes place.

For example, First Nations participants described a sense of responsibility to address climate change intrinsically tied to culturally-based multi-generational thinking, which reflected a connection to ancestors and to a future life, shifting the stakes of the story: "…we're constantly thinking towards those generations more than our current one. And a lot of the things we make choices and decisions on usually reflect not only our connection to our ancestors, but also to the future." They were thinking about their responsibility through a multi-generational lens that is not only political but personal, including choices between life and not-life for participants and their communities. Because of this, participants perceived themselves to be bound to a social change agenda to ensure that their children and their communities can thrive on a livable planet.

Experiences of capacity

In this model, for a participant to experience narrative fidelity, the connection point between a sense of responsibility over the choice-point in the story correlated with a sense of *capacity* to realize a desirable future-state. As Table 1 illuminates, despite adequate knowledge and motivation, participants in this study struggled to make sense of the outcome of the story and their capacity to manifest a positive future. While many participants maintained a mix of pessimism and optimism, participants perceived a decreasing capacity to address climate change with each generation to come, paradoxically inverse to the responsibility to act to address climate change, which can only increase over time:

> I guess, yeah, the best way to put it is, it's like, it's almost like a looming doom, because even though I can experience certain aspects of climate change myself, it's not something that's affected me in a very intense way or acute way, where the issue is that I know it has for a lot of communities and in the future, will affect way, way more. So yeah, my general feeling is just a looming doom.

Thus, dissonance has taken root between responsibility and capacity: because the challenge of climate change is too great in scale and urgency, the role of this generation was perceived to be out of alignment with our capacity to manifest a livable future. The choice-point becomes meaningless, and action seemingly has become unnecessary because visions of a positive future have been blocked.

Accepting the reality of climate change and internalizing its meaning was represented in their stories as an act of courage for young leaders because it involved interpreting the discontinuity guaranteed within one's life course. Table 1 provides further examples of a mobilizing moment related to capacity over outcomes, where participants grappled with divergent visions of the future. Participants discussed coming to terms with the changes ahead, for their families and for families around the world. Feelings of despair and sadness emerged within participant narratives as they described potential outcomes of the story. However, participants also recognized the potential to improve conditions:

> …we need to do a better job of painting the future, of what a low-carbon world would look like. And so, when I think about that, I feel like I could picture that more clearly, I just don't know what will happen. Because it seems like there's, you know, lots of like, really good stuff that could happen.

In such stories, the choice-point has begun to revolve around planning for discontinuity at systems-level and capacity centers upon preparing for large-scale changes that are currently dependent upon collective decision-making. Future outcomes are, thus, dependent on collective resistance to the status quo, bringing into focus the role of power-holders undermining pathways toward crisis-aversion.

Experiences of activation

The final part of the model reflects the moral of the story, conceptualized as a sense of *activation*, defined as an ability to identify and rationalize what "action" looks like in context in a morally and emotionally-logical way. While many participants experienced narrative fidelity regarding the source of their capacity to confront climate change into the future, barriers still hindered their experiences of activation – their sense of being able to turn plans into reality – given the hostile contexts in which they embody their story. Despite ample motivation and willingness to create a more just society, dissonance related to activation was common among participants. They experienced uncertainty about the degree to which their embodied actions (their tactics) were meaningfully contributing to their goals. As one participant articulated, "sometimes, I feel like I'm not doing things that are very effective just because I'm not in the position to be." Across their efforts in government agencies, representing their communities, parenting children, teaching, writing, organizing, and performing, participants made efforts to increase their spheres of influence and yet they still experienced a lack of efficacy about their response to climate change.

Table 1 provides examples of how barriers to activation have hindered a meaningful moral of the story. As Table 1 demonstrates, participants perceived themselves to be but a "tiny little miniscule drop in the global bucket," which hinders the meaning of their personal actions. Instead of finding institutional leaders and organized efforts to join in with, participants who are actively responding to climate change may experience negative consequences from political, economic, and cultural forces or strain in their family and community relationships. As one participant explained,

> …there are little steps, and it's like the small steps that eventually climb mountains, but there's no way that one person can emotionally deal with the backlash that follows with trying to change an unsustainable way of living.

These themes contributed to dissonance about a sense of activation, leaving the story without a clear moral, blocking the path to meaningful mobilization.

Some participants drew connections between hostile conditions for meaningful actions and the colonial and capitalist context in which such actions take place. As one participant argued,

> this narrative of 'low taxes are inherently better, small government is inherently better' is incredibly detrimental to being able to do anything about the environment. To me, that's the biggest barrier.

Another participant explained:

> I just feel like decolonizing will at least help toward making better informed choices, and taking actions, like you know stopping the mining companies, stopping the pipelines. Not being afraid of… the consequences of like chaining ourselves to pipelines and doing road blockades, you know what I mean? We're so fearful and I just feel like it would be a lot different if we were decolonized, I guess.

Participants often defined effectiveness in terms of their ability to contribute to social movements building up capacity to confront structures of power that have perpetuated climate change:

> I feel hopeful when I read about people mobilizing and doing things to change, and working on climate change, because like, when I just read about it by myself, and I do feel very paralyzed, I would say. Because it's such a huge problem with so – there isn't, there will never be, like, one thing you can do to fight it. It's in so many different areas and on so many different levels.

Participants readily admitted that they are stronger in collaboration with others, and they aimed to focus on aspects of the problem over which they could make a difference, with one participant saying,

> there's also this immense feeling of being small, and insignificant, and it's sort of this hopeless cause, but you can't live in that space day-to-day, or you just totally fall apart right? You can't stay motivated.

Despite accepting climate change as a complex eco-social problem, participants who experienced fidelity about the scale and scope of climate change could overcome narrative dissonance and position themselves meaningfully in relationship to climate change.

Discussion

This study has demonstrated how internal and external barriers manifest within the narratives of people who have accepted climate science and who care about making the world a better place. Findings have suggested that simply raising awareness of climate change may not be an adequate strategy for increasing community capacity. Local-level leaders may experience narrative dissonance, and despite their knowledge and motivation, they may confront barriers to meaningful mobilization. Sharing stories could be a means of bringing difficult emotions about climate change to the surface and could elicit feelings of solidarity, which according to Ganz, helps to overcome experiences of isolation.[18]

Narrative dissonance, as it is conceptualized here, relates to similar concepts within climate change engagement literature, such as implicit denial,[25] environmental melancholia,[27] and unspoken loss.[26] As such, the model outlined above could serve as a tool for exploring alignments across engagement research. Participants also confirmed that, through the lens of justice, climate change narratives moralize resistance to the status quo in political, economic, social, and cultural terms. These intersections were inextricable from participant experiences of climate change, and as such, findings have suggested alignments between meaningful mobilization and contextual barriers such as settler futurity,[44] socially organized denial,[25] and predatory delay.[45] Participant narratives helped to contextualize these theories about complex personal and social experiences of climate change.

Modeling a population health response to climate change narratively

In a Canadian context, where inadequate policies to mitigate greenhouse gas emissions[8] have threatened to undermine public health gains made in the last 50 years,[1] population health professionals arguably have a responsibility to address the conditions that contribute to narrative dissonance among knowledgeable, motivated stakeholders like those interviewed for this study. Such individuals may be perceiving public inattention to climate change and could benefit from strategies for coping with dissonance and for working through mobilizing moments. As Table 2 demonstrates, using the model developed during this study, population health responses to climate change can be analyzed for narrative dissonance. By reflecting on the mobilizing moments related to the challenge, choice, outcome, and moral of climate change, a "story" could emerge about the meaning of climate change to the Canadian public and the health system at large. Rather than a formula for mobilization, a narrative model for engagement with climate change can serve as a guide for framing the problem in a mobilizing way, exposing moments in the story where barriers to action could be taking root, even among those who know about climate change and who are motivated to act.

The model could be used as a tool to explore how addressing climate change aligns with existing population health frameworks, such as the Truth and Reconciliation Commission *Calls to Action*.[46] Many participants in this study referenced in their narratives a desire for greater control over lands and decision-making by First Nations, Métis, and Inuit peoples. For example, drawing on environmental justice frameworks like that described by Tuck, McKenzie, and McCoy,[44] participant narratives suggested "a refusal of settler futurity", as sustainable relationships between peoples and lands cannot occur "when those activities are accountable to a futurity in which settlers continue to dominate and occupy stolen Indigenous land".[44,p17] In framing climate change as an environmental justice issue,[7] population health professionals could contextualize

TABLE 2
Reflection questions for population health professionals

Agency	Responsibility	Capacity	Activation
Do population health measures and frameworks reflect the importance of mitigating and adapting to climate change?	Are population health professionals equipped with the competencies and skills needed to play their role in addressing climate change?	Do population health plans and models for the future account for social and ecological discontinuity from the past and the present?	Can population health professionals meaningfully contribute to change through tangible actions in the context of everyday life?
How do population health stakeholders and communities know that climate change matters to population health professionals?	How do population health stakeholders and communities know that addressing climate change meaningfully is part of population health roles and responsibilities?	How do population health stakeholders and communities know population health is strategically mitigating catastrophe and preparing for the future?	How do population health stakeholders and communities know that population health professionals are moving significantly toward shared goals?

Source: Reprinted with permission from Malena-Chan R. Making climate change meaningful: narrative dissonance and the gap between knowledge and action [Master's thesis]. Saskatoon (SK): University of Saskatchewan; 2019. Available from: http://hdl.handle.net/10388/11948

action in terms of reconciliation and the historical context of colonization.[44] Other framework alignments between population health and climate change could include gender and reproductive rights,[47] mental health,[26] or One Health.[48]

Ultimately, this study's findings have suggested that continuing with an information-deficit approach to climate change engagement may not translate into strategic, well-resourced plans for urgent and disruptive systems change. As Steffen[45] implores, "We are about to begin the last decade. The time has come to become the people who can first re-imagine and then remake the world in the time we have left". Despite the importance of this window of time for meaningfully altering the trajectory of planet-wide population health, community leaders may struggle to overcome narrative dissonance about climate change. New models for addressing contextual and cultural barriers to action could be useful even for those who are knowledgeable and who are motivated to act.

Strengths and limitations

This study has demonstrated that narrative methodology can be useful for exploring the barriers to climate change engagement in context. Narrative models for engagement could help in describing, evaluating, and intervening upon the conditions for meaningful mobilization. Tools for engagement and communication about climate change cannot be reduced to a formula for social change, but narrative models could help to illuminate the contextual and cultural dimensions of engagement.

Importantly, this study and its findings must be considered in context. Theoretical findings about engaging with climate change are specific to the study but may be transferrable to other contexts. Notably, the study design included a small sample and recruited only those individuals with adequate time and interest in the study. Conceptual results are exploratory, and the structures and themes outlined here can be built upon by other researchers to deepen understanding about climate change narratives, population health frameworks, and the barriers to engagement.

Conclusion

By employing a narrative framework, this study has provided a visual tool for exploring the interplay of dissonance and fidelity, and the mobilizing moments that could shape interpretations about climate change. Given that most individuals in Canada believe that climate change is happening,[49] it is worth exploring the engagement barriers experienced by knowledgeable, motivated people, and a narrative lens captures the complexities surrounding personal and public realms, the nuance of emotional and moral reasoning, and the contingencies that characterize the context in which mobilization occurs. While the model represented in this article is exploratory, it has affirmed literature about the contextual dimensions of interpretation[13-15,21-34]. Without strategic efforts to foster narrative fidelity, population health professionals may fail to translate knowledge about climate change into meaningful action.

Acknowledgements

This study was funded by the College of Medicine Graduate Students Award through the University of Saskatchewan, and it was made possible through the guidance of my supervisor, Dr. Rachel Engler-Stringer, and my committee members, Dr. Sylvia Abonyi, Dr. Lori Hanson, and Dr. Marcia McKenzie. I would also like to acknowledge my participants and my colleague Lise Kossick-Kouri for their insights and support with data collection and analysis.

Conflicts of interest

None to declare.

Statement

The content and views expressed in this article are those of the authors and do not necessarily reflect those of the Government of Canada.

References

1. Watts N, Amann M, Ayeb-Karlsson S, et al. The Lancet Countdown on health and climate change: from 25 years of inaction to a global transformation for public health. Lancet. 2018;391(10120):581-630.

2. Intergovernmental Panel on Climate Change (IPCC). Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Internet]. Geneva (Switzerland): World Meteorological Organization; 2018 [cited 2018 Dec 16]. Available from: http://www.ipcc.ch/report/sr15/

3. Patrick R, Capetola T, Townsend M, Nuttman S. Health promotion and climate change: exploring the core competencies required for action. Health Promot Int. 2012;27(4):475-85.

4. Howard C, Rose C, Rivers N. The Lancet Countdown report: briefing for Canadian Policymakers [Internet]. Ottawa (ON): Canadian Public Health Association; 2018 [cited 2018 Dec 16]. Available from: https://www.cpha.ca/sites/default/files/uploads/advocacy/2017_lancet_canada_brief.pdf

5. Levy BS, Patz JA. Climate change, human rights, and social justice. Annals of Global Health. 2015;81(3):310-22.

6. Schor J. Climate, inequality, and the need for reframing climate policy. Rev Radic Polit Econ. 2015;47(4):525-36.

7. Masuda JR, Poland B, Baxter J. Reaching for environmental health justice: Canadian experiences for a comprehensive research, policy and advocacy agenda in health promotion. Health Promot Int. 2010;25(4):453-63.

8. Office of the Auditor General of Canada. Perspectives on climate change action in Canada—a collaborative report from Auditors General [Internet]. Ottawa (ON): Office of the Auditor General of Canada; 2018 [cited 2018 Dec 16]. Available from: http://www.oag-bvg.gc.ca/internet/English/parl_otp_201803_e_42883.html

9. Climate Action Tracker. Canada: country summary [Internet]. 2018 [cited 2018 Dec 16]. Available from: https://climateactiontracker.org/countries/canada/

10. Henstra D. Climate adaptation in Canada: governing a complex policy regime. Rev Policy Res. 2017;34(3):378-99.

11. Krieger N. Theories for social epidemiology in the 21st century: an eco-social perspective. Int J Epidemiol. 2001;30:668-77.

12. Hancock T. Population health promotion 2.0: an eco-social approach to public health in the Anthropocene. Can J Public Heal. 2015;106(4):e252-5.

13. Luís S, Lima ML, Roseta-Palma C, et al. Psychosocial drivers for change: understanding and promoting stakeholder engagement in local adaptation to climate change in three European Mediterranean case studies. J Environ Manage. 2018;223(2017):165-74.

14. Wibeck V. Enhancing learning, communication and public engagement about climate change - some lessons from recent literature. Environ Educ Res. 2014;20(3):387-411.

15. Moser SC. Communicating adaptation to climate change: the art and science of public engagement when climate change comes home. Wiley Interdisciplinary Reviews: Climate Change. 2014;5:337-58.

16. Golden SD, McLeroy KR, Green LW, Earp JAL, Lieberman LD. Upending the social ecological model to guide health promotion efforts toward policy and environmental change. Heal Educ Behav. 2015;42(1_suppl):8S–14S. doi: 10.1177/1090198115575098.

17. Bushell S, Colley T, Workman M. A unified narrative for climate change. Nat Clim Chang. 2015;5(11):971-3.

18. Ganz M. Public narrative, collective action, and power. In: Odugbemi S, Lee T, editors. Accountability through public opinion: from inertia to public action [Internet]. The World Bank; 2011 [cited 2018 Dec 16]. p. 273–90. Available from: https://dash.harvard.edu/bitstream/handle/1/29314925/Public_Narrative_Collective_Action_and_Power.pdf?sequence = 1

19. Malena-Chan R. Making climate change meaningful: narrative dissonance and the gap between knowledge and action [Master's thesis]. Saskatoon (SK): University of Saskatchewan; 2019. Available from: http://hdl.handle.net/10388/11948

20. Watts N, Adger WN, Ayeb-Karlsson S, et al. The Lancet Countdown: tracking progress on health and climate change. Lancet. 2017;389(10074):1151-64.

21. Leiserowitz A, Maibach E, Roser-Renouf C, Rosenthal S, Cutler M, Kotcher J. Climate Change in the American Mind. 2017:1-60.

22. Vulturius G, David M, Bharwani S. Building bridges and changing minds: insights from climate communication research and practice. Discussion brief. Stockholm: Stockholm Environment Institute; 2016.

23. Hine DW, Phillips WJ, Cooksey R, et al. Preaching to different choirs: how to motivate dismissive, uncommitted, and alarmed audiences to adapt to climate change? Glob Environ Chang. 2016;36:1-11. doi: 10.1016/j.gloenvcha.2015.11.002.

24. Maibach EW, Nisbet M, Baldwin P, Akerlof K, Diao G. Reframing climate change as a public health issue: an exploratory study of public reactions. BMC Public Health. 2010;10:299.

25. Norgaard KM. Living in denial. Cambridge, Massachusetts and London, England: The MIT Press; 2011.

26. Randall R. Loss and climate change: the cost of parallel narratives. Ecopsychology. 2009;1(3):118-29.

27. Lertzman R. The myth of apathy: Psychoanalytic exploration. In: Weintrobe S, editor. Engaging with climate change: psychoanalytic and interdisciplinary perspectives. New York: Routledge; 2013. p. 117-33.

28. Roser-Renouf C, Maibach EW, Leiserowitz A, Zhao X. The genesis of climate change activism: from key beliefs to political action. Clim Change. 2014;125:163-78.

29. Doherty KL, Webler TN. Social norms and efficacy beliefs drive the Alarmed segment's public-sphere climate actions. Nat Clim Chang. 2016;6(9):879-84.

30. Paschen JA, Ison R. Narrative research in climate change adaptation - exploring a complementary paradigm for research and governance. Res Policy. 2014;43:1083-92.

31. Fløttum K, Gjerstad Ø. Narratives in climate change discourse. Wiley Interdisciplinary Reviews: Climate Change. 2017;8:e429. doi: 10.1002/wcc.429.

32. Gjerstad Ø, Fløttum K. Stories about climate change in political and survey discourse 1. Remain Relev – Mod Lang Stud Today. 2017;7:21-38.

33. Moezzi M, Janda KB, Rotmann S. Using stories, narratives, and storytelling in energy and climate change research. Energy Res Soc Sci. 2017; 31(Aug):1-10.

34. Jones MD, Song G. Making sense of climate change: how story frames shape cognition. Polit Psychol. 2014; 35(4):447-76.

35. Crist JD, Tanner CA. Interpretation/analysis methods in hermeneutic interpretive phenomenology. Nurs Res. 2003;52(3):202-5.

36. Riessman CK. Narrative methods for the human sciences. Thousand Oaks (CA): SAGE Publications; 2008.

37. Connelly FM, Clandinin DJ. Stories of experience and narrative inquiry. Educ Res. 1990;19(5):2-14.

38. Polkinghorne D. Narrative knowing and the human sciences. Albany (NY): State University of New York Press; 1988.

39. Kouri L, Guertin T, Shingoose A. Engaging student mothers creatively: animated stories of navigating university, inner city, and home worlds. Engaged Scholar Journal: Community-Engaged Research, Teaching, and Learning. 2016;2(2):103-14. doi: 10.15402/esj.v2i2.172.

40. Mishler E. Models of narrative analysis: a typology. J Narrat Life Hist. 1995;5(2):87-123.

41. Fisher WR. Narration as a human communication paradigm: the case of public moral argument. Commun Monogr. 1984;51:1-22.

42. Marshall G. Don't even think about it: why our brains are wired to ignore climate change. New York and London: Bloomsbury USA; 2014.

43. Bernauer T, McGrath LF. Simple reframing unlikely to boost public support for climate policy. Nat Clim Chang. 2016;6(7):680-3.

44. Tuck E, McKenzie M, McCoy K. Land education: Indigenous, post-colonial, and decolonizing perspectives on place and environmental education research. Environ Educ Res. 2014; 20(1):1-23. doi: 10.1080/13504622.2013.877708.

45. Steffen A. The last decade and you [Internet]. 2017 [cited 2018 Dec 16]. Available from: https://thenearlynow.com/the-last-decade-and-you-489a5375fbe8

46. Truth and Reconciliation Commission of Canada. Truth and Reconciliation Commission of Canada: Calls to Action [Internet]. 2015 [cited 2018 Dec 16]. Available from: https://nctr.ca/assets/reports/Calls_to_Action_English2.pdf

47. Gaard G. Ecofeminism and climate change. Womens Stud Int Forum. 2015;49:20-33.

48. Zinsstag J, Crump L, Schelling E, et al. Climate change and One Health. FEMS Microbiol Lett. 2018;365(11): 1-9.

49. Mildenberger M, Howe P, Lachapelle E, Stokes L, Marlon J, Gravelle T. The distribution of climate change public opinion in Canada. PLOS One. 2016; 11(8):e0159774. doi: 10.1371/journal.pone.0159774.