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Views on a Culturally Safe Psychotherapeutic Treatment by Inuit in Quebec: Co-Design of Cognitive Behavioral Therapy Manual and Virtual Exposure Environments

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Cognitive-behavioral psychotherapy (CBT) can be combined with virtual reality (VR) to provide culturally safe and remotely delivered emotion regulation interventions. We conducted a co-design process of a CBT treatment manual and complementary VR environments for the Inuit populations from Nunavik. Here, we describe the knowledge gained during the adaptation process on the approach to mental well-being and psychotherapy. We followed qualitative, participatory, and research co-design methods. After an initial concept of VR-CBT, an advisory group made up of 7 adults identifying as or working with Inuit participated in 4 focus group meetings. A thematic analysis of the discussions was carried out. A non-symptom-focused approach with the therapist guiding the individual in empowerment and emotion management was accepted in the advisory group, replacing a symptom-focus. Several CBT in- and between-session techniques were seen critically or rejected, and time for working on a certain theme was increased. Some elements in the proposed landscape were rejected as unsafe, other elements added as culture-specific to increase safety. Future work should confirm broader acceptance and utility. Culturally specific factors play an essential role in acceptance of concepts and approaches used in psychotherapy. Accordingly, they can have an impact on acceptance and attendance in therapy.

Access to Mental Health Services Among Inuit in Quebec

Inuit are Indigenous people traditionally inhabiting Arctic and subarctic regions of the USA (Alaska), Canada and other countries (e.g., Greenland); the original Inuit nation of Quebec lived in 14 villages in Nunavik, Québec, Canada, and in 2022, included 12,590 individuals (NRBHSS, 2023; Statistics Canada, 2022). Today, the villages are connected by flight, but the specialized medical services are provided in Montreal. Even when professionals trained in mental health have periodically been available in Nunavik, they cannot speak Inuktitut, the first language of community. In 2017–2020, 56.5% of Inuit across Canada reported being without a regular health care provider, compared with 14.5% of their non-Indigenous counterparts (Yangzom et al., 2023).

Inuit have been exposed to multiple historical, intergenerational, and repeated traumatic risk factors: the colonization, religious missions, and residential schools have been associated with physical, psychological, and sexual abuse (Anderson, 2016; Government of Canada, 2015; Greenwood et al., 2022; Hayward et al., 2020; ITK, 2007; Kisely et al., 2017; Parnasimautik, 2014). These exposures have resulted in a profound traumatogenic impact on Inuit culture and various

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Keywords: Inuit; participatory co-design; emotion regulation; virtual reality; cognitive behavioral therapy; cultural adaptation; cultural safety

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adverse health outcomes (Government of Canada, 2015; Hayward et al., 2020; Social Determinants of Inuit Health in Canada, 2014).

In one study of residential-school attendees, 64.2% of the sample met criteria for posttraumatic stress disorder (PTSD) (Söchting et al., 2007). For decades, Inuit children were separated from their parents and their home communities for years, sometimes losing connection (Government of Canada, 2015). Native languages and cultures, including skills in maintenance of mental well-being and good health, were suppressed. Children were exposed to neglect, sexual and physical abuse, and even medical experiments (Government of Canada, 2015).

The multiple levels of trauma exposure have led to multigenerational trauma. Skills of parenting and building mental well-being and resilience were impacted by traumatic experiences and loss of contact with family and community members. Individual traumatic experiences have been combined with economic and political marginalization, which have placed heavy burdens on Inuit communities (Anderson, 2016; Fraser et al., 2015; Greenwood et al., 2022; ITK, 2007; Parnasimautik, 2014).

Cultural Safety and Trauma Sensitivity as a Basis for Trust

Cultural safety refers to an environment, here, also a treatment, that is emotionally, physically, and spiritually safe for people (Belaid et al., 2022; Brascoupé & Waters, 2009; Darroch et al., 2017). Safety includes that there is no assault or denial of individual identity and needs, and takes into account the need for a sensitive approach to culture but also the historical trauma (Yaphe et al., 2019). Compromised safety limits approval of and attendance to high-quality health care of Inuit and other Indigenous populations (Fraser et al., 2021; RCAAQ, 2008; Yaphe et al., 2019). Today, a rapidly increasing proportion of Inuit in Quebec live in urban centers (Statistics Canada, 2022). Even urban Inuit have faced obstacles in access to services: use of colonializers' language and structural barriers have hindered access to good quality mental health and social services (RCAAQ, 2008; Yaphe et al., 2019). No reliable recent estimate about the need for and provision of health services among Inuit in Quebec is available.

Despite the adversities experienced by this population, Inuit have maintained the knowledge of their own longstanding traditions of resilience (FNMWC, 2015; ITK, 2007). The resilience stems from the strengths that emerge from relations between individuals and communities, the revitalization of culture and language as sources of narratives of self-identity and healing, a balance between the different forces external to the individual, and resources internal to the person (Kirmayer & Valaskakis, 2009). It is increasingly recognized that a treatment approach oriented toward individuals and symptoms does not correspond to the Inuit view of health and values (Gomez Cardona, Brown, McComber, Parent-Racine, et al., 2021). Rather, strengthening connection to culture, land, and community is seen as key to empowerment.

Rationale for the Project

In this project, we target three components that limit access to psychotherapy among Inuit in Quebec: *geographic location and limited access* to high-quality care and specialized services will be targeted by using digital treatment with a remote therapist contact, limited *cultural safety* and resulting lower acceptance of and attendance in therapy by using a culturally adapted therapy and advisory group co-design for the content and manual, and *lack of Inuk therapists* by stressing the role of virtual environments, visual cultural elements for safety, and utilizing inoculation theory and guided mastery approach (Meichenbaum, 1985).

Cognitive behavior therapy (CBT) is widely used to improve emotion regulation (see Hien et al., 2017; Muñoz-Navarro et al., 2022). Specific techniques can be used to strengthen emotion regulation skills and, accordingly, to increase well-being and resilience while decreasing maladaptive coping and symptoms.

Generally, exposure to trauma triggers is considered a key core element of treatment of trauma symptoms (Cusack et al., 2016; Ehlers et al., 2013; Eshuis et al., 2021; Heo & Park, 2022; O'Doherty et al., 2023; Stein & Rothbaum, 2018). However, this might not be psychologically and culturally safe for Indigenous populations such as Inuit. Methods with less exposure, such as Stress Inoculation Training (Meichenbaum, 1985), have been documented as a potentially efficacious treatment for PTSD (Cusack et al., 2016; Foa et al., 2005). VR exposure paradigms, especially with individually graded exposure, have proved successful in complementing exposure to stimuli that provoke emotions (Eshuis et al., 2021; Heo & Park, 2022); with the support of the therapist, emotion regulation skills can be practiced in a safe environment and generalize to everyday life.

Confirming cultural safety can help to create an atmosphere of security and trust and should be a key component in improving access and quality of health services for Indigenous people (Brascoupé & Waters, 2009; Darroch et al., 2017; Lau, 2006). The need to confirm cultural safety of services for Inuit populations was acknowledged years ago (Fraser et al., 2015; Kirmayer & Valaskakis, 2009; Nickels et al., 2006;

Parnasimautik, 2014) and has been the target in the mental health services also in Quebec (Yaphe et al., 2019).

Research co-design methods consist of an active participation of people other than members of the research team in the planning of the research project. These methods are consistent with the ethical principles that frame research with Indigenous communities (AIATSIS, 2020; Government of Canada, 2022; NHMRC, 2018). Our project utilized a co-design or cultural adaptation of psychological interventions with community members, a method that can improve cultural safety and effectiveness of psychological treatments (Anik et al., 2021; Dossa & Hatem, 2012; Hall et al., 2016), and has been sought by Inuit community (Parnasimautik, 2014; RCAAQ, 2008).

Objective of This Report

In our previous work, we have seen that scientifically reporting the process of cultural adaptation of a psychometric measure or an intervention made it possible to evaluate culturally specific factors that promote or threaten mental health and culture-specific resilience, or confirm culturally safe treatment (Gomez Cardona, Brown, McComber, Outerbridge, et al., 2021; Gomez Cardona, Brown, McComber, Parent-Racine, et al., 2021; Gomez Cardona et al., 2023; Yang et al., 2023). The goal of this report was to document Inuit views and comments while processing a VR-CBT treatment manual and complementary VR environments. This co-design process has been done in collaboration with individuals who are Inuit and originate from Nunavik, and/or work closely with the Inuit from Nunavik. The main interest here is to describe discussions where the advisory group expressed their views on essential resilience factors in their culture and CBT strategies that they considered as culturally inappropriate. This will be discussed for a more general clinical use to improve cultural safety among psychotherapeutic treatment of this population, and to provide insight that informs planning of psychotherapy for other similar populations.

Research Methods

This project follows research co-design, participatory, and collaborative methods (Denzin et al., 2023; Marsh et al., 2015; Robertson & Simonsen, 2012; Wright et al., 2019). This project and the cultural adaptation of the treatment manual and VR environments have been planned and made with the project collaborators, an advisory group made up of people from the Inuit community and/or working in organizations that serve the Inuit of Quebec. Our methodology of participatory co-design comprised continuous evaluation and feedback (Robertson & Simonsen, 2012) from the collaborators on the psychotherapy manual and VR landscape. With this methodology, our aim was to minimize the potential barriers to participate in the intervention by the target population by increasing its cultural safety.

Previous Pilot Data

Prior to the cultural adaptation of a CBT treatment, we have collaborated with an advisory group in the selection of a measure of depression and in the cultural adaptation of an assessment and empowerment tool (Gomez Cardona, Brown, McComber, Parent-Racine, et al., 2021). This previous work facilitated working alliance between members of the advisory group and the research team.

Data Collection

The research team worked in collaboration with an advisory group made up of seven people. Five members of the advisory group self-identified as Inuit, and all seven had years of experience in working with Inuit in health, welfare, or community services serving Inuit. The advisory group members were chosen by convenience since we had previously worked together in participatory research, and had a relationship of trust and collaboration already established with most of them. The size of the group was limited by the limited number of Inuit from Nunavik who would have suitable experience related to mental health. The advisory group had clear visions about the need for treatment and factors affecting feasibility of treatment. They worked closely with the research team, which included senior researchers with expertise in psychiatry, CBT, cyberpsychology and medical anthropology. All group members were offered possibility to act as coauthors and were included if consenting.

Since the pandemic prevented in-person meetings, we conducted four remote team meetings (via Microsoft Teams platform) between August 2020 and January 2021 involving the research team and the advisory group. Each group meeting lasted approximately 2 hours and was recorded in digital format. During these meetings, we discussed with the members of the advisory group the development of a CBT manual for psychotherapists; the content of the treatment manual; the most appropriate and safe VR environments for Inuit; and the building of the therapeutic relationship with non-Inuit therapists. Each member of the advisory group commented on these elements during group meetings, and via email.

Data Analysis

Our data comprised recordings from four meetings with the advisory group. In these meetings, members commented on the proposed principles and, later, actual text of the therapy manual, and elements for the co-design of the VR environments, including videos of beta versions. Between the meetings, under lead of SB, the research team processed the therapy manual and created or modified the VR environments.

We conducted a thematic analysis in order to organize, identify, and report the themes collected with group meetings (Denzin et al., 2023). The transcripts were made by a student and confirmed by the senior researcher, who also extracted the data and ran the thematic analysis. We followed phases of the thematic analysis (Braun & Clarke, 2006) (Supplementary Table 1). Overall, this thematic analysis allowed us to identify the different perspectives and opinions of people regarding the research protocol, the treatment manual, and the content of the VR. We examined whether these different elements were culturally safe as well as identified the necessary adjustments to the VR-CBT for making it more appropriate with Inuit users' meanings and values. To ensure our data's rigor and trustworthiness, the notes taken by the different participants in the meetings were compared and combined into the interpretation of the thematic analysis. We also shared a report of each group meeting with all participants for their validation by email, and the most important conclusions and decisions were discussed in the next meeting (Marsh et al., 2015; Nowell et al., 2017).

Ethical Aspects

We received ethical acceptance to conduct this project from the Research Ethics Board of the Douglas Mental Health Institute affiliated with McGill university (IUSMD # 19-24). Members of the advisory group participated on a voluntary basis but were compensated for each session. We conducted the project according to the Tri-Council Policy on Ethical Conduct for Research Involving First Nations, Inuit, and Metis in Canada (Government of Canada, 2022; INSPQ, 2023). We have respected the ethical regulations to conduct research among Indigenous peoples (AIATSIS, 2020; NHMRC, 2018) and the First Nations Principles of Ownership, Control, Access, and Possession (OCAP®). Our research protocol incorporated Inuit perspectives of research ethics and participation of community as informed by guided documents produced by Inuit organizations (Belaid et al., 2022; ITK, 2007; Nickels et al., 2006). The research team has no commercial interests. All data collected is accessible and owned by the Inuit community in Quebec.

Results

What Are the Changes Required to Make the Treatment Appropriate for Inuit?

The content of the psychotherapy manual was amply discussed in the focus group meetings. At the first meeting, no formal CBT manual was proposed. At the second meeting, a revised version of the Stress Inoculation Training manual for PTSD (Meichenbaum, 1985) was proposed to reduce the focus on PTSD, as requested by the advisory committee. At the last two meetings, the modified treatment manual was proposed.

Thereafter, we present relevant authentic verbatims of the advisory group; these quotes are not attributed to specific participants but rather presented as the different voices of the advisory group. The implications for the modification of the CBT treatment are detailed in the Discussion section.

First, the specific therapeutic elements were examined. Overall, the use of CBT was considered acceptable and a suitable intervention for the advisory group. However, everyone agreed on the risks of focusing treatment on trauma or PTSD:

> "*I do think CBT bases a good intervention in general (. . .) I do have some concerns (. . .) many of the stressors will be retraumatizing because you're working with a very complex traumatized population.*"

> "*One of the issues for younger generations is that we are raised in this environment with parents who have gone through these traumatic experiences, like for example for myself my mom went to residential schools (. . .) I think for younger generations (. . .) we have a big tolerance for abusive behavior because we have raised in an environment where that is normal (. . .) and older generations are coping with very traumatic events, and I think what many of them do to try to cope with is just to bury it and I think it will take a lot of time to try to uncover that and prevent, to open up and address that.*"

Along the same lines, and to be culturally safe, participants of therapy should not be diagnosed as having PTSD or having been exposed to a traumatic event. The advisory group recommended ethnic origin (Inuit) and the subjective motivation of having better mental health as criteria for inclusion rather than people receiving formal diagnosis of PTSD. The option of working on *emotional regulation* was considered more appropriate than a symptom-focused approach on PTSD. Despite these challenges, emotion regulation was considered a beneficial ability to be developed by Inuit.

Second, different in-session techniques were evaluated by the advisory group. Whereas the meditation exercises were accepted, *putting thoughts into perspective* and *cognitive restructuring* were subject to some concerns. These strategies were considered potentially culturally unsafe and colonialists; the issue here would be to ensure that the individuals do not feel devalued and invalidated in their thoughts/ experiences. So, this question should be approached and conducted carefully:

> "*Putting thoughts and ideas in perspective, testing alternative thoughts, I think it can be culturally harmful because it is invalidating the person's experience and where they come from, and there is a reason why they are having these experiences, there is a reason why they are having these coping strategies, and it need to be validated.*"
>
> "*The cognitive restructuring, I do think that it would be important. But maybe the approach should be different (. . .) Like the coping strategies did help you survive, the anxiety and the symptoms you are generating in response to the stressors are normal, it means that you've survived what you've survived in the past and you're strong (. . .) maybe just focusing more on the grounding techniques and validating that rather than saying 'your thoughts are not your reality' (. . .) maybe having a more strengths-based approach.*"

Using *problem-solving techniques* was considered appropriate to use with the target population and a strength of the therapy:

> "*The problem-solving skills can be a strength, even maladaptive coping strategies are problem solving, they are still trying to find solutions, it cannot be the best, but it can be the best in the moment, so that is the hope with resiliency.*"

The advisory group insisted on the key importance of emphasizing engaging in actions rather than verbalization during the psychotherapy. The Inuit are more likely to integrate learning and new knowledge by doing things together and then talking while doing these things, rather than through seated discussion during therapy sessions: "*Inuit process thoughts and feelings while doing something (. . .) Inuit learn from doing.*"

Regarding the *inner dialogue training*, the advisory group expressed the need to spend more time on this aspect than the 15 minutes that were initially proposed in the therapy manual:

> "*If they've internalized a lot of violence or trauma, they might not have that positive biofeedback, that positive self-esteem or even like have examples of that (. . .) that's going to take years (. . .) My concern is that if you try to do it too fast, they're not going to pick up on it (. . .) the therapy is not going to work.*"

Asking to practice exercises between CBT sessions (i.e., homework) was also considered by the advisory group. They thought that the information to be completed should be reduced; it would be more efficient and effective to focus on few questions and/or exercises or even not leaving written homework.

At the end of the therapy manual, there was a section called *relapse prevention* to wrap up what they had learned during the treatment, distinguish lapses from relapse, and establish a plan in case emotion regulation becomes more difficult. The advisory group was asked how participants could synthesize what they went through and keep it with them in a way that would be more relevant to Inuit than writing up a letter or a document. Addressing relapse prevention was considered:

> "*I really don't like the language of 'what you learnt' because you're almost expecting the participant to give something back to you. This might put additional stress on people (. . .) Normally, when we work with individuals, we ask what they are taking with them at the end and what was important to them*"*(. . .)* "*Talking about relapse prevention is like assuming people are alcohol or drug addicts and you say this treatment is not about addictions.*"

Second, the advisory group believed that everyone should be given the opportunity to express what they've learnt in ways that makes the most sense to them. Several alternatives to writing a personal letter were considered relevant when working with the Inuit, such as a puzzle, a bracelet, drawings, a game, graphic arts, or plastic arts. Everyone must decide how to express what they integrated from the therapy:

> "*We love complex games. We're very technical in those situations (. . .) Describing your life into pieces and putting it together. There are blank puzzle pieces where you can draw on them. You can stencil.*"
>
> "*I was also thinking about a bracelet; with different beads of different sizes that they could choose as they progress so that by the end, they have a full bracelet (. . .) this would be a good option (. . .) It would also be on their bodies all the time so they could just look down and see their wrist.*"
>
> "*Carving is very big among the Inuit; it's beautiful. Also, painting (. . .) I have lots of pieces from Inuit patients who draw (. . .) Their drawings are representative of themselves and the North.*"

Moreover, the Inuit were reported not to feel comfortable with *verbal expression* in therapy. Trust between the individuals and the psychotherapist was stressed as a crucial and challenging aspect of the therapy. The members of the research team were called upon to take this characteristic into account to better adapt the

treatment for the purpose of efficiency and cultural safety: "*It takes time to Inuit to trust you (. . .) It is difficult to make Inuit speak.*"

> "*(. . .) a lot of clients you will have has trauma (. . .) and they do not open up, so we cannot expect that they will open up so fast to point their trigger (. . .) people won't open up just because you had a good discussion with them, people need to build the trust and 10 sessions is a little short for me (. . .) I have seen a lot of mental health clients who do not discuss very much more than rather express in a different way (. . .) people communicate other than verbally.*"

Other modifications were also recommended by the advisory group, such as reducing the total number of sessions, being tolerant about missed appointments, being flexible about the frequency of recurring appointments, or not providing written handout.

Which Virtual Environments Would Be Relevant for Inuit?

VR was initially considered to be used to conduct exposure to PTSD triggers and psychophysiological measures used to help gauge exposure intensity, in the context of a CBT treatment delivered remotely via telepsychotherapy. As documented above, the previous work with the advisory group revealed the necessity to revise this plan to work on emotion regulation in general instead of using trauma-focused interventions. The first advisory group meeting led the research team to focus more on mastery experiences and in-session action instead of sustained verbal exchanges. VR became an opportunity to immerse Inuit in contexts allowing to practice emotion regulation skills with the psychotherapist focusing attention away from face-to-face discussions and more on actions done during immersions, including applying biofeedback. Biofeedback also allowed to position emotion regulation in the context of a flow of interactions between the body, the mind, and the environment. Given financial constraints, only two VR environments were proposed: one without stressors to introduce emotion regulation skills and one with stressors to practice emotion regulation skills in more challenging situations.

For the advisory group, the environment where *the practice of relaxation* would be easier should represent a place typical of the nature in Nunavik. The proximity to their land of origin as well as the view of the sea and the northern landscapes were most appreciated; they are considered calming elements:

> "*Inuit spend time in land (. . .) It is relaxing to smell the air, to go to the water, and to see open sea (. . .) Forest is not relevant; Inuit don't feel comfortable with. (. . .) Caribous are also important for us (. . .) They represent hunting, which is central in our culture.*"

As for the audio, the advisory group thought that it would be desirable to hear natural sounds common in this type of environment:

> "*I think just the sound of the water and the sound of the wind will be really good for the audio for being on the land (. . .) we don't always hear all the other wildlife (. . .) Less seagull sounds and more sounds of the water (. . .) When it is peaceful it is actually very quiet maybe the sound that you will hear is the sound of your footsteps crunching on the snow walking around.*"

Biofeedback was designed to be displayed through changes in the environment, as opposed to a stress meter or a beating heart. The co-creation process led to selecting a snowstorm, a blizzard, that would gradually build in intensity as stress increases, with more wind, snowflakes, and loss of visibility:

> "*Maybe a better representation of stress is weather (. . .) maybe there is a storm, and the environment is less visible, so maybe when you relax the environment is very clear and they can see, but when they are more stressed it becomes less visible.*"
> "*I definitely agree with that because the snowstorms that you can have in the north basically are the worst stress that you could have in Montréal (. . .) you are in survival mode, it triggers a lot by seeing it is coming to, especially if you are going to be in the land.*"

A few iterations and comments at advisory group meeting led to the creation of The Snowy Place (see also video material: https://vimeo.com/716808588 and https://vimeo.com/716808829).

The development of a more stressful VR environment presented significantly more conceptual, artistic design, costs, computer programming, and animation challenges. The initial plan was to create an enclosed space where programmed stressors could be triggered by the psychotherapist operating the VR system. After considering several options (e.g., a bar, a gathering place, a house), it was impossible to find only one place where a sufficiently large number of different stressors could occur.

> "*I was against you using a bar because it's not realistic to the North. There are only two communities that sell alcohol; the rest of the communities are dry. In terms of people drinking alcohol, this is a trigger for someone who's grown up in a home with alcoholics. Or, for someone who has struggled with dependencies. And, if you keep saying that you don't want to use things that are going to induce trauma, I don't understand how using alcohol doesn't induce trauma.*"
> "*The best thing to do is to remove substances because it goes beyond just stress. We're moving into trauma and if we're*

not prepared to help people with their trauma and we're only doing emotional regulation, you may have someone who just ends up breaking down. A lot of us have grown up with an alcoholic in the house. It could bring back a lot of difficult memories (. . .) To be honest, if some of these memories are triggered, I wouldn't do a follow-up. I would quit."

Most suggestions led either to specific stressful scenarios that would be costly to create in sufficient number, not sufficiently generic to reach most Inuit, and hard to coherently integrate in one VR location (see Table 1).

"*I think the cops take a more colonial stand when they establish their presence. (. . .) It's more of a physical, a person standing at the door ready to say something. Often, that causes stress*".

"*The most common stressor we have is family confrontation specially because we are overcrowding in housing situations.*"

"*It is confrontations that create stress, for young generations it will be schools (. . .) knowing there is someone there who bullies me, even just at a distance just to see the person it creates a lot of stressful environments.*"

"*For older generations, a major stressor is having being ripped from their land (. . .) Being forced to attend residential school and deprive of their culture*".

After five iterations, a new approach was proposed to the advisory group. A symbolic place was proposed as "a place that does not exist for real," enabling one to creatively practice emotion regulation skills without the constraints of realism of the virtual environment. To work on interpersonal stressors, half of the virtual space was occupied by a group of Inuit seated together and one chair was available for sitting, if desired. The gathering of Inuit does not represent a Talk Circle (Mehl-Madrona & Mainguy, 2014) but a group where people could practice emotion regulation while talking to others or share experiences. One man in the room, standing up outside the circle, also offers an opportunity to represent a source of stress. The other half of the virtual space is devoid of people, made of windows allowing to see the nature outside and only host a stylized easel where images could be uploaded and displayed to work on personal stressors. People can bring their own pictures or therapists could pick images from the internet, depending on what would represent a relevant stressor to work on. It then became possible to include all stressors proposed by the advisory group without having to recreate them with animated 3D stimuli. Everywhere in this practice place, biofeedback would be displayed to continue mastering emotion regulation skills while engaged in action. Images of The Practice Place virtual environment are presented in Figure 1.

Table 1
List of Potential Stressors Proposed During Advisory Group Meetings and Considered up to Version 5 of the Treatment Manual

Interpersonal stressors	Stressors occurring outside
• One person yelling at another person	• Polar bear with cubs
• One person yelling at the user	• Skidoos far away
• Two people arguing strongly	• Tilted homes (because permafrost melted)
• Two people fighting	• Climate change and floating ice
• Presence or absence of children	• Dogs barking for unknown reasons
• Adult crying	• Police arrest outside
• Children crying	
• Hearing knocking at the door	
• A virtual character bullying the user	
• Homeless sleeping on the floor	

The biofeedback had to be spiritual or culturally significant for the Inuit. An Inukshuk was initially proposed by the research team, but was dismissed by the advisory group because its meaning can be varied and it has become a mass-produced item. The idea of using the "Qulliq" was retained. The Qulliq is the traditional oil lamp used by the Inuit and other Arctic peoples (in the middle of the image at the center of Figure 1); it has been used for different purposes in the Inuit culture (e.g., to cook, to provide warmth and light in the house, symbolic and spiritual meaning, before ceremonial events). For the advisory group, the flame of the Qulliq could symbolize a good path to guide people during the therapy:

"*Perhaps a Qulliq, an oil-lamp, I find it calming (. . .) now it's used at the beginning of meetings and sessions to signify a good path and to have a good meeting. The Qulliq should burn throughout your meeting. And it helps to guide individuals and keep them united and keep them together.*"

The warmth and intensity of the Qulliq lamp illustrates the intensity of the stress response. As the person feels *more* stress, the flame of the Qulliq lamp *decreases* in intensity. The stress response is also expressed by the intensity of the outside blizzard. The client will be encouraged and supported in relaxing by boosting the Qulliq lamp and reducing the intensity of the blizzard.

Figure 1. Images of The Practice Place virtual environment from the outside (left), with the easel to display personalized images (center) and with the gathering of Inuit (right).

Discussion

Views and knowledge gained during the co-design process provide important insight into the necessity of understanding cultural, historical, and societal aspects that impact views of psychotherapy. The development of a CBT program with and for Inuit populations required considering how trauma and its effects are understood in their socio-cultural context before focusing on the provision of support for resilience, healing, or treatment of trauma symptoms (Kirmayer & Valaskakis, 2009; Marsh et al., 2015; Wright et al., 2019). This aspect is decisive for the acceptance and engagement of the population in the treatment; it also has direct implications for the content of the treatment program (Naeem et al., 2014; Rathod et al., 2018).

Cultural Adaptation of the VR-CBT Treatment Manual

Where existing psychotherapy is not experienced as culturally safe, relevant options for improvement include a cultural adaptation of therapy manual or some elements, or methods of co-design of a new treatment or some elements of treatment (Hall et al., 2016; Heim & Kohrt, 2019; Lau, 2006). Cultural adaptation is the systematic modification of a treatment manual or of an evidence-based intervention that seeks to consider the culture, and the context of the users in such a way that it is appropriate for their socio-cultural meanings and values (Bernal & Domenech Rodríguez, 2012; Heim et al., 2019; Heim & Kohrt, 2019). Several studies have shown that interventions that have been culturally adapted are better than those that are not adapted when used with socio-culturally diverse populations. A systematic review examined 11 meta-analyses that assessed the effectiveness of culturally adapted interventions vs. nonadapted interventions (Hall et al., 2016). Other meta-analytic evidence on in-person interventions indicated that culturally appropriate treatments are more effective than noncultural ones, and that their effectiveness increases with the number of adapted elements (Benish et al., 2011; Hall et al., 2016; Heim et al., 2019; Smith, 2005). Cultural adaptation may include modification of treatment components such as: (1) cultural concepts of distress (e.g., idioms of distress), (2) treatment components (e.g., in-session techniques), or (3) treatment delivery (e.g., delivery format) (Chu & Leino, 2017; Heim & Kohrt, 2019).

An advisory group consisting of and/or working with Inuit considered the conventional CBT protocol for PTSD to be culturally unsafe. Instead, a non-symptom-focused approach with the therapist guiding the individual in empowerment and emotion management was adapted following recommendations by the advisory group. Some of traditional CBT techniques were seen critically or rejected, and time allocated to the different strategies was revised. Consequently, an important challenge was to adapt an evidence-based CBT program for PTSD, without targeting PTSD directly. The adversity and rates of PTSD in this population are so high (Affleck et al., 2020; Fuller-Thomson et al., 2020; Kisely et al., 2017) that the advisory group considered a subjective need to be sufficient.

VR-CBT with trauma exposure has been used with success even when delivered in telepsychotherapy (Marchand et al., 2011), while psychotherapists are often reluctant to use it (Clark, 2013; Pittig et al., 2019). Nevertheless, the team had concerns about applying telepsychotherapy including exposure in such an innovative context. It is not feasible to implement exposure for PTSD without mentioning PTSD in the treatment plan, case formulation, identification of avoidance cues and behaviors, exposure rational and exposure scenarios. Most important, our mandate was to co-design a treatment that would be culturally acceptable. Thus, it was decided we would not include a PTSD exposure component. Biofeedback visible also to the therapist was added partly to allow interrupting any exposure and, accordingly, increase safety.

The proposed solution for the focus of therapy was to adapt Stress Inoculation Training (Meichenbaum,

1985), which has been documented as a potentially efficacious treatment for PTSD (Cusack et al., 2016; Foa et al., 2005). We used the guided mastery (Bandura et al., 1999) approach to encourage psychotherapists getting actively involved and collaboratively sharing experiences when working on emotion regulation skills. VR was given a central role to practice skills in session and take the focus away from classical "talk therapies."

Adaptation to Inuit culture included reducing the emphasis on discussing emotions, thoughts, and behaviors, all common in Western cultures and CBT (Hinton et al., 2012). The philosophy of the program is more rooted in action done in VR with the therapist to build inner-person strength. Dysfunctional thoughts, behaviors, and emotions will be addressed as the psychotherapist and patient perform actions in VR to master the emotion-regulation skills that are central to Stress Inoculation Therapy. The CBT framework was considered by advisory group members as beneficial to work on the complex issues that affect Inuit; it is rooted in the here-and-now principle, and focuses on what maintains problems rather than what initially caused them (Howells, 2018). Relaxation is not a very efficient strategy to treat PTSD (Cusack et al., 2016), and thus, the treatment protocol did not emphasize its use as a coping strategy but as an illustration via biofeedback of the impact of the various emotion-regulation strategies, and as an activity to engage in while discussing other emotion-regulation strategies with the psychotherapist.

Some concerns from the advisory group toward cognitive restructuring could be related to misconceptions about how to apply the technique (e.g., nonjudgmental collaborative empiricism). Nevertheless, the fact remains that we would not be able to hire Inuit who have been trained as psychotherapists in Quebec. Cognitive restructuring was adapted to reduce the risks of misunderstandings and renamed "Putting thoughts in perspective." Fostering behavior change by regular practice of therapeutic skills between sessions plays a key role in traditional CBT; however, cultural adaptation required not to set homework but only encourage people at the end of the session to practice and share their knowledge, and follow-up at the start of every session about positive experiences with the skills. Internal dialogue techniques were phrased in the treatment manual as much as possible to focus on positive thinking and insist on strengths and resilience. Relapse prevention was renamed "Putting it all in practice" and references to relapse were removed due to their implicit association with substance abuse.

As a specific technique, two problem-solving sessions were removed and problem solving will be approached informally during the entire program. First, it was considered superficial to engage in problem solving when Inuit are facing systemic inequalities and major adversity. Second, cultural adaptation required to reduce the number of therapeutic strategies and minimize the number of sessions to 10 (which is considered a short duration for PTSD; Cusack et al., 2016). What was appreciated by the advisory group in problem solving was the focus on finding solutions, which has been applied to the entire treatment manual according to their recommendation. Finally, among the Inuit, culture-specific activities that could be integrated into psychotherapy, and have been identified previously as well as in our data, may include carving, tattooing, throat singing, hunting, elaboration of bracelets, or drawing, among others (Barker et al., 2021).

Scope of Therapy

Views of the advisory group to therapy are not specific to the context of Inuit. It is likely that other Indigenous populations could express the same position, as strengths-focused approaches are increasingly encouraged and claimed when working with these peoples (Belaid et al., 2022; Heim et al., 2019; Marsh et al., 2015; Morton Ninomiya et al., 2020; Wright et al., 2019). Several researchers have pointed out limitations of the Western notion of person as a self-reflective individual who can easily express their inner mental states, and stressed the impact of cultural values on expression of internal states (Heim et al., 2019); this view was confirmed in comments from the advisory group. Such modes of self-interpretation and expression are not necessarily the norm for members of several cultures (Heim et al., 2019)—in fact, gender differences in verbal processing have also been reported. Traumatic experiences, in general, increase the time necessary to build trust and the need to complement verbal approaches in therapy; therefore, the universality and clinical use of verbal processing as the main approach must be pondered (Maercker et al., 2019). Furthermore, respecting both personal values and cultural values should optimally be an element in adapting treatment of common mental disorders (Heim et al., 2019).

Several organizations and researchers have expressed a need to comprehend the resilience strategies in Indigenous communities (Bellamy & Hardy, 2015; Fraser et al., 2021; Kranzler et al., 2014; Wexler et al., 2017); the advisory group members in the study also expressed the same need. A previous systematic review summarized protective elements and mechanisms that promote mental health in Indigenous youth

in the northern circumpolar region (MacDonald et al., 2013); they identified more than 40 protective factors. The advisory group in the current study recognized many of these factors and added detailed descriptions of the tangible elements that compose them and promote/hinder resilience.

Strengths and Limitations

Although several cultural adaptations of CBTs for PTSD have been made (Chu & Leino, 2017; Ehlers et al., 2013; Hall et al., 2016), none have been made with Inuit populations; we are aware of one smoking cessation intervention that was culturally adapted for Inuit in Ontario (Barker et al., 2021). The main strength of the current study was an advisory group including people from different community services, a licensed social worker, and an experienced nurse practicing with Inuit community. All had experience with providing mental health services to Inuit and most identified as Inuit. Proposed adaptations of CBT were not only motivated by cultural factors but also done in interaction with clinical experience. Moreover, the Inuit worldview, which contains elements relevant to mental health such as nature (Gomez Cardona, Brown, McComber, Parent-Racine, et al., 2021; Kirmayer & Valaskakis, 2009), were taken into consideration during this cultural adaptation process. The interconnectedness of mind and body, pedagogy in action, absence of written between-session exercises, and expressions other than verbal are notable features of cultural adaptations to the Inuit socio-cultural context.

Our approach has some disadvantages, particularly constraints of a process that is time-consuming and necessitates resources. This made co-design process somehow asymmetrical, in the sense that the research team was proposing CBT and VR options to the advisory group, to work on iterations based on their comments, as opposed to contributing equally to the creation of each and every step. It was sometimes challenging and counterintuitive for CBT experts in the research team to accept modifying elements that are at the core of effective CBT for PTSD, such as abandoning between sessions-exercises, limiting the use of exposure, and reducing the number of sessions. Accordingly, the utility should be confirmed in future work as proposed. However, we have collected rich material to continue co-design towards a culturally safe intervention for this population, as well as data that can inform the therapeutic process and relationship with Inuit outside the specific therapy program. Our program is intended to be ultimately implemented remotely in videoconference for the Inuit population of Nunavik. It remains to be evaluated whether this therapy will be acceptable and effective for the larger target population living in the northern regions of the province of Québec, for Inuit from other provinces, or other populations. As such, the treatment manual will not be suitable for all Indigenous populations, but we believe that the same approach of qualitative, participatory, and co-design research methods could be useful for work with other Indigenous communities and minority groups.

Conclusions

Our study confirms that culturally specific factors play an essential role in acceptance of concepts and approaches used in psychotherapy. Accordingly, they can have an impact on acceptance and attendance in therapy. Knowledge about cultural factors that are considered within the community to promote or threaten mental health and about culture-specific resilience can be used in an attempt to confirm culturally safe treatment and mental health services. Engagement of Indigenous peoples and co-design of treatment are methods to ensuring the cultural relevance and safety of health interventions and services. The next step will be to confirm the acceptance and effectiveness of the therapy.

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