




A Social-Media Study of the Older Adults Coping with the COVID-19 Stress by Information and Communication Technologies

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Abstract. In this paper, we convey the results of our digital fieldwork within the current mediascape (English) by examining online reactions to an important source of cultural influence: the news media's depiction of older adult's stress, the proposals offered to older adults to assist them in coping with the stress of living in the COVID-19 pandemic, and finally, the responses of online commentators to these proposals. A quasi-automated social network analysis of 3390 valid comments in seven major international news outlets (Jan-June 2020), revealed how older adults were generally resourceful and able to cope with COVID-19 stress. For many in this technology-using sample, information and communication technologies (ICTs) were important for staying informed, busy, and connected, but they were not the primary resources for coping. Although teleconferencing tools were praised for facilitating new forms of intergenerational connection during the lockdowns, they were considered temporary and inadequate substitutes for connection to family. Importantly, older adults objected to uncritical and patronizing assumptions about their ability to deal with stress, and to the promotion of ICTs as *the* most important coping strategy. Our findings underline the necessity of a critical and media-ecological approach to studying the affordances of new ICTs for older adults, which considers changing needs and contextual preferences of aging populations in adoption of de-stressing technologies.

Keywords: Older adults · Social media · COVID-19 · Social isolation · Stress · Coping · ICT · Communication · News media · Ageism

1 Introduction

1.1 Background

Being the first to experience the hazards of COVID-19 (Corona Virus Disease, 2019) in terms of contagion vulnerability and social isolation, older adults became the subject

of many inquiries into how to reduce their stress by increasing their access to the safest tool for staying connected: information and communication technologies (ICTs).

Often, technological innovations are promoted to reduce the stresses of living in an unpredictable natural world by increasing the ability of humans to control this world and by extending the capacity for prediction, prevention, and intervention against harm. However, in doing so, all new technologies impact the lives of those who must negotiate their use. This negotiation is not only related to how physical aspects of life are affected by ICTs, but also to their psychological and cultural effects [1].

A host of discourses and debates on the conflicting social impacts of ICTs have been raised in the academic literature: they have been promoted as a means for providing tele-health or social connectedness, but there is fear of ICTs becoming used for surveillance [2], reducing the complexity of human experience to machine learned data [3], propagating mis-information [4] and promoting stigma [5, 6].

Even when technologies are not perceived negatively, they are not necessarily effective. A pre-pandemic feasibility study by Apple *et al.* (2019) illustrated that introducing VR (360 videos of nature) to 66 individuals in their 80s was successful and feasible; yet after trying the VR systems, participants felt less rested, less curious, and significantly more lonely [7]. While on the one hand, social media seem to provide a relief from the stresses related to COVID-19, they may become emotionally overwhelming, stressful and a source of false information and negative messaging [8].

An important factor in the mediation of cultural and psychological stresses of new technologies is that the media-created stereotype of age-related deficits. For example, by paying significant attention to age-related limitations in cognitive and physical abilities of older adults, perceptual limitations or corrective benefits of ICTs, there is often an implicit equation of aging with quantifiable and deterministic forms of disability. However, research indicates that age alone is not a predictive factor in determining usage or non-usage of ICTs [9–11]. It has also been shown that older adults deviate and tailor ICTs to their own needs, irrespective of the purpose for which they are promoted [12].

The trend towards mediatization of aging, in which media plays an important role in creating social, political and institutional cultures that are created from the omnipresence of media (or ICTs) in today's world, could become detrimental when age becomes equated with deficit and exclusion [13]. In their examination of discourses within a Canadian newspaper (The Globe and Mail) Fraser *et al.* (2016) found that the majority of articles created negative stereotypes of aging that reduced the willingness of older adults to seek help when needed [14]. In the context of COVID-19, Morgan *et al.* [15] conducted a similar study, examining 91 articles that referred to older adults and COVID-19. They found that the news coverage typically referred to older adults as a nameless, homogeneous 'other' group who were overwhelmingly framed as being at risk and passive, thus stigmatising older adults as inherently vulnerable, rather than as situationally at risk. A study of the Chinese news media yielded similar results, finding that an overemphasis on age framed as a biomedical disability and as risk factor, led to less attention being paid to the socioeconomic circumstances that would alter the quality of older people's lives at any age [16]. Messaging about the vulnerability of older adults during COVID-19 led to strict measures to reduce risk, but that subsequently increased their isolation [17].

Media creates messages not only by its content, but also by creating public reactions to itself which deserve attention. A qualitative analysis of 18,000 tweets containing the keywords “elderly,” “older,” and/or “boomer” plus the hashtags “#COVID19” and/or “#coronavirus” in March 2020, demonstrated that almost a quarter of tweets downplayed the importance of COVID-19 because it was ‘only’ deadlier among older individuals, and that 14% contained offensive content or jokes disparaging older adults [18]. Expanding the same search to more than 82,000 tweets using automated methods, another group found more concerning results: almost 73% of jokes ridiculed older adults, half of which were death jokes [19]. Interestingly, performing a thematic analysis of the Weibo (the Chinese equivalent of twitter), revealed a different pattern of representation: “older adults contributing to community” [20].

As such, the aim of this study is to examine the mediated discourses on being old (or senior), COVID-related stress, and ICTs (published in news media articles), against the on-line responses of the older readers of those articles, expressed in comments on the websites, Facebook and Reddit feeds of those articles.

1.2 Research Objective and Approach

This study deploys a novel methodological framework at the intersection of Lazarus’ Transactional Theory of Stress [21] and McLuhan’s ecological Media Theory [22]. We have provided examples of this interdisciplinary mixed-methodological approach elsewhere [8, 23, 24]. Briefly, media ecology argues that while technological innovations aim to extend our body’s capacity for surviving more easily and comfortably, they affect both physical and cultural (thus psychological) aspects of our lives [1, 22]. In Richard Lazarus’ Transactional Theory of Appraisal and Coping, stress is understood as an adaptive mechanism that is tied to a host of perceptual and behavioral variables that vary with an individual’s appraisal of the significance of the stressor, and its potential impact on one’s life [21]. As early as in 1960s, it has been shown that different perceptions of the same media-experience would induce different bodily stress responses [25].

The unique context of the COVID pandemic allowed for an examination of the interactions between a stressful event, the diffusion of ICTs among those who are presumed to be vulnerable to physical and mental harm, and the potential beneficiaries of ICTs that mitigate these harms: older adults.

Our methodological approach is informed by an early study of the affordances of mobile phones by ‘seniors’ (those over the age of 65), where Sawchuk and Crow [26] asserted that to engage in an open discussion about use and non-use of technology outside the standard frameworks for quantitative research (e.g., surveys. or usage monitoring) or qualitative inquiries (e.g., structured interviews or focus groups) might better reveal the complexities created by the specificity of context, thus painting a nuanced picture of why and how older adults adopt or resist these technologies.

To understand the appraisal of COVID-related stress and ICTs use among older adults, we explored the following questions:

1. What stressors and resources are identified and become dominant in the discussions of the stress of COVID-19 from the perspective of age?

2. How are ICTs implicated in the discussions of older adults coping with stress during COVID-19?
3. What themes emerge from older adults' discussions of the topic of COVID-related stress, ICTs and coping?

2 Materials and Methods

To conduct our research, we used a mixed-methods recursive data-mining approach that included a quantitative analysis of frequent topics, followed by a qualitative textual analysis of emerging themes [27], followed by a quantitative network analysis of overlapping themes [28] and a final reflective analysis. This recursive approach allowed us to map dominant patterns of discursive correlation between the themes (stress, resources, ICTs and age) that were co-present in online discussions.

2.1 Data Sources

Between March 2020 and September 2020, we searched 20 major Anglo-American news media outlets with a global readership (*The Guardian*, *The Wall Street Journal*, *New York Times*, *The Washington Post*, *CNN*, and *Fox News*), as well as Canadian (*The Toronto Star* and *CBC*), and Montreal (local) newspapers (*Le Devoir*, *Le Soleil*, and *The Montreal Gazette*); using the following keywords: “Senior” OR “Older Adults” OR “Elderly” AND “Technology” AND “Coping” AND “Covid19” AND “<the name of the media outlet> “. Articles that did not have any social media engagement were excluded. In the remaining 7 articles, we used a web-scraping technique to gather data from three sources of public engagement with the articles including: a) the comments left on the Facebook pages of each media outlet examined (using FacePager <https://github.com/strohne/Facepager>), b) the comments on the articles on Reddit were extracted by Simple Scraper (<https://simplescraper.io>), and c) the comments on the permanent websites of the news organizations where the articles initially appeared were copy-pasted manually. Two members of the team, SE and MKM, examined all comments and cleaned the data to exclude irrelevant content, such as single response words, advertisements, or emoticons. We then performed a thematic analysis on the remaining valid 3390 comments cases, following a procedure detailed below.

2.2 Content Analysis and Visualization

Using NVivo for Mac (2020, QSR Inc.) we conducted a semi-structured thematic analysis of the content using the following procedures:

Step1: Exploratory Word-Frequency Analysis. All articles (referred to as Source) and comments (referred to as Response) were aggregated. Using NVivo, we computed a word cloud for each to identify the most prevalent words. This practice allowed us to gain a visual perspective on the prevalence and frequency of specific words, related to coping, aging and technology, in Source and in Responses. Counting the word frequency in all Sources and all Responses showed that the words “Older” and “Help” were the most

frequently used terms in the Source articles, while the words “Living” and “Reading” were the most frequently used words in Responses. Neither the word “Stress”, nor “Media” or “Technology” were dominant in the Responses (Fig. 1).

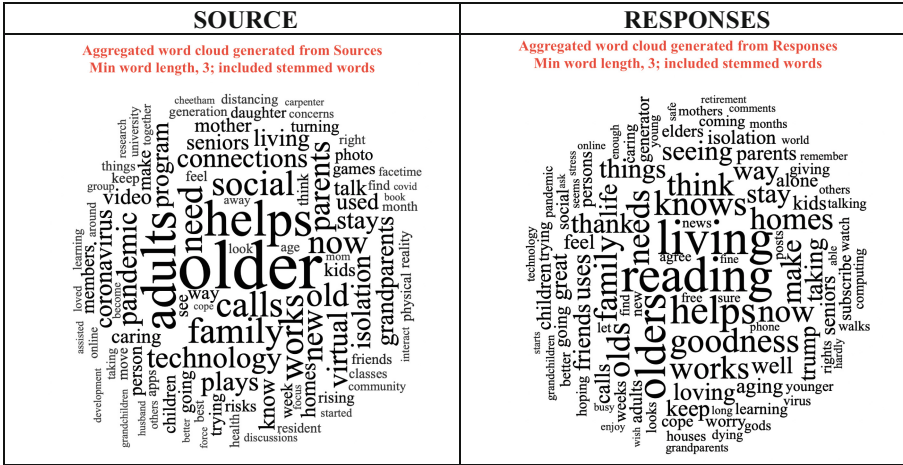


Fig. 1. Word clouds created from aggregated text from all news articles (Source, Left) and all comments (Response, Right)

Step 2: Coding Comments Under Primary Categories. We then coded each comment under four general thematic categories:

Age: Any Responses that explicitly referred to age (e.g., by stating the responder’s age, age of parents, or identification of oneself or others with phrases including old, older, senior, grandparent, age, aging). When the commentators referred to themselves as a target of the article as a ‘senior’, they were coded under *Older*; and if they referred to examples of a senior person in their life or in their care, they were coded under *Younger*.

Resources: Any Responses that referred to one or other forms of coping strategies. These included practical strategies including specific activities, such as reading, or support networks, as well as conceptual mechanisms such as experience.

Stressors: Any Responses that expressed an anxious or worrying opinion about the ramifications of the COVID-19 pandemic, such as not seeing friends or family, were coded under this theme.

Technology: Any Responses that explicitly referred to usage of ICTs, such as the Internet, phone, or the computer were coded as technology.

Step 3: Identifying Sub-themes. Table 1 provides the actual titles of the articles and the differences in distribution of the categories (% of coverage) that emerged from the comments. As can be seen, the highest number of comments were about available resources.

To obtain a more granular picture of different topics within each primary theme, we coded each comment inductively. For example, a comment like “*We’re vulnerable seniors [Age: Older], and we’ve been socially isolated [Stress: Social Isolation] for more than two months. Our groceries are delivered, and we don’t go out except to exercise and wave and smile at neighbors [Resource: People]. We both Text and email quite a bit and are on Facebook a lot. I’m also on twitter and the comments sections of various web sites. [Resource: Communication; Technology: email, Facebook, SMS, Internet, Positive View of Technology]. We don’t have kids or pets, but we’re used to being together and are adapting to the new situation.*” [Resource: Coping strategy, People, Family.] This hierarchical re-coding of the primary thematic categories revealed a total of 71 specific but nested sub-themes.

Table 1. Primary Thematic code, and the percentages of coverage per Source

Code	Age		Resources		Stressors		Technology	
	Count	%	Count	%	Count	%	Count	%
<i>Ways Older Adults Can Cope With the Stress of Coronavirus</i>								
	514	22.5	872	26.3	783	29.1	239	12.0
<i>For isolated older people, pandemic is ‘a cruel event at this time in our lives’</i>								
	152	40.2	213	34.9	280	54.0	35	7.5
<i>Ok Zoomer: how seniors are learning to lead more digital lives</i>								
	138	45.4	217	47.4	109	40.1	185	53.4
<i>The Grandparents Who Dropped Everything to Help Out During COVID</i>								
	120	50.2	260	66.0	114	45.5	9	5.21
<i>It’s Grandparents to the Rescue for Stressed Working-From-Home Parents</i>								
	24	12.6	40	14.7	9	6.3	6	2.4
<i>Just What Older People Didn’t Need: More Isolation</i>								
	44	40.7	144	65.1	131	61.6	31	13.1
<i>These seniors are turning to cutting edge technology to stay connected during the pandemic</i>								
	7	3.7	20	7.4	31	20.0	4	2.2
Total	999		1766		1457		509	

Step 4: Network Analysis. Using the matrix coding query function in NVivo, we created a matrix whose cells indicated the number of times that any two sub-themes (codes) were expressed in the same comment. This matrix can be understood as a correlation matrix, which can be represented as a network, with the weight of an edge corresponding to the number of co-occurrences of any two codes. We then used the software Gephi 0.9.2 to compute the components that were more likely to form a community, or network, of interconnected sub-themes (network modularity), using edge weights and a 0.8 resolution, resulting in 6 networked communities [29, 30]. The sub-themes that were

most connected across different thematic communities were determined using a computational function known as eigenvector centrality, which indicates the network hubs that have the largest number of connections to other important hubs in the network. Network communities were organized by colour, and filtered by edge weight, to illustrate any edges that weighed more than 50. The thickness of the edges relates to the weight of connections between subthemes.

Step 5: Reflective Analysis and Validation. Having identified the network hubs and major edges, we then re-examined each comment to guide our interpretation and the ensuing discussion of our findings.

3 Results

3.1 Mapping the Pattern of Co-occurring Discussions

Figure 2 provides a visual representation of the centrality of themes and correlation between sub-themes. Consistent with initial coding, we found 4 large clusters (identified by colour and named reflectively) and a small additional cluster related to political skepticism (Yellow).

The size of letters in each cluster indicates high eigenvector centrality, meaning that the theme was important in the collective discourse emerging from the data. The highest centrality values were found in nodes *Older* and *Coping Strategy* ($EC = 1$, both in the same green cluster), followed by *People and Socialization Strategy* ($EC = .993$; both in the magenta cluster), *Covid-Specific stress* and *Social Stress* ($EC = 1$, and 0.98 , respectively; both in the orange cluster) and *Media, Information and Entertainment* ($EC = 0.953$ and 0.950 , respectively, in the blue cluster). This indicates that although important, the ICTs are not the central theme of the discussions about age and COVID-related stress.

The main hub of interest to our study *Older*, belonged to a network community that also included *Coping Strategies, Activities, Generation, Perspective* and *Experience* (coded under Resources) and *Ageism* (coded under Stressors). We refer to this cluster as *Older Adults' Coping Strategies* (green).

The second significant hub, *Covid-Stress* was linked to *Older*, but belonged to a different cluster that included *Social Stress, Health Worries, Isolation, Economy, boredom, Lost time, Worries about the young*, as well as *Independent Elder*. We refer to this cluster as *Age-Related Covid Stressors* (orange).

Interestingly, we found a split in sub-themes that were coded under primary codes *Resources* and *Technology*. Specifically, the central hub *People and Socialization Strategy*, which was coded under Resources, were in a cluster that also included *Younger* (initially coded under Age), Communication and ICTs that were used for such connections (*Zoom, Phone, Facebook, Chat, SMS, email*). This indicates that these communication technologies pertained to facilitating connections for the younger respondents on the social media. We call this cluster *Intergenerational Connections* (magenta).

On the other hand, the cluster (blue) that included central hubs such as *Media and Information and Entertainment* technologies (including *Computer, Watching TV, Games*)

which were initially coded as Resources, also included subthemes that reflected individual appraisal of ICTs (such as *Positive view of tech*, *Tech stress*, *Luddite*, *Indifferent to tech*, *Cost*) which were initially coded under *Technology*, and technological self efficacy such as *Nerdy Elder* (initially coded under *Age*). We call this cluster *Older Adults ICT Appraisal* (blue).

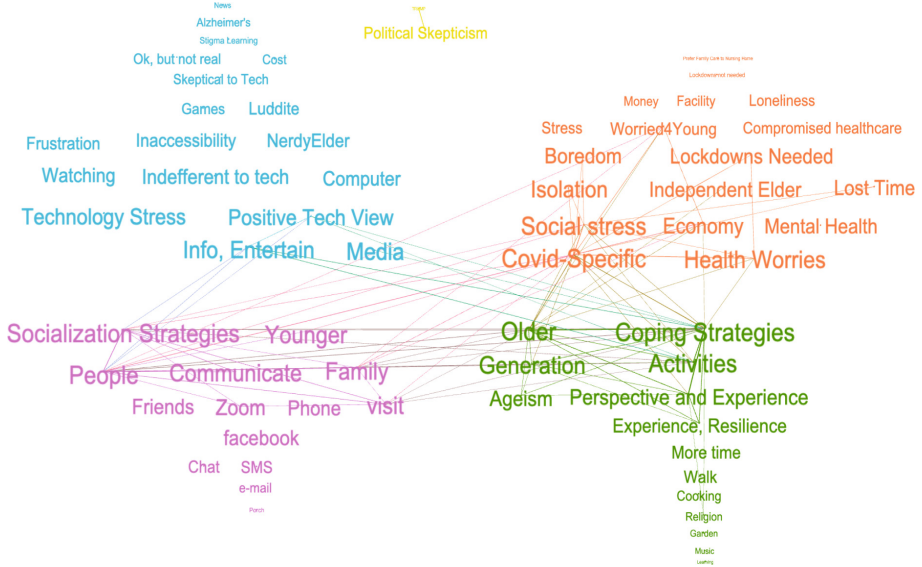


Fig. 2. Network clusters (identified by different colours) emerging from network analysis of co-occurrence matrix of 71 subthemes in comments. The letter size indicates the centrality of the theme in the cluster.

3.2 Age, COVID-Stress and Resources

A substantial portion of the public discussions on the topic of seniors’ stress during COVID-19 focused on cultural assumptions about the relationship between ageing and vulnerability and stated resistance to the implied ageism explicitly. Overall, the following themes emerged from studying the intersection of discussions about Coping, COVID-stress, and Age. (**The quotations are not modified or edited for language.**)

1. Senior isolation is not new.

C1:… America has treated senior citizens, in general, as a nuisance and a frequent topic of geriatric jokes for as long as I can remember. [...]. Millions of them are living just as they did before the Coronavirus...isolated and alone. I am hopeful that this tragic time and articles like this, will give more of us a sense of responsibility to reach out, in some way, to acknowledge that they are out there.

2. The young are presumptive about senior’s stress.

C2: This journalist must be young! Thanks for thinking of us but we are handling today’s situation quite well. The senior community can cope with this historic Pandemic

but we pray for our nation's young adults who are being tested with this social, medical and financial crisis. The writer does not realize our wealth of knowledge from years of life experiences, going back to the world situation of 1930's to this year, 2020 as well as our deep faith and trust in a higher being than ourselves.

3. Seniors are resilient and can help.

C3: Of all of the age groups who are dealing with this- people who are in their 70s, 80s and 90s are the most apt to cope with this pandemic We have been through so much in our lifetimes, seen so many changes, adapted to so much.

4. Seniors keep busy with routines.

C4: I am 86, widowed, live alone, and live in a very locked-down state [...]. I will describe something I do that helps but I apologize because it sounds really stupid. I write a list of every single thing I intend to do, no matter how small, like Empty the Dishwasher, Make the Bed, Manicure my Nails, Sweep the Balcony, Make Iced Tea, Pay Cable Bill, etc. etc. [...] This imposes structure and I feel more organized and less rudderless and depressed.

3.3 COVID-Stress, ICT and Coping

Overall, the following themes emerged from the intersection of discussions about COVID-stress, ICT and Coping. The quotations are not modified or edited for language.

5. Seniors use ICTs for connection to family but have other coping resources.

C5: FaceTime and Zoom let you see all your friends and family easily enough- I just keep thinking how thankful I am that I'm not stranded in some foreign country like India trying to find food on long lines with so many people. Thankful that I have a house and backyard to sit in each day- so many books to read and have my crafts and music and a stockpile of food to eat. I'm just grateful for all I do have.

6. Seniors take advantage of ICTs to taking care of the young.

C6: My parents have played virtual hide and seek with my five- and three-year olds. They take turns trying to find the person that hides. So my mom will hide in her house and my Dad will try to find her while my kids suggest hiding spots to him. It's good for at least a half hour of fun!

7. Seniors have discovered and enjoy new forms of intergenerational connections.

C7: To me this is the upside of the pandemic which is spending time with grandkids who I just saw on holidays and select weekends. Now I have learned Zoom and brushed off my multiplication tables, and experienced the joy of reading books out loud. I turned the guest bedroom into their sanctuary and my lower level into a learning/ arts and crafts room. I am no longer just a grandmother who brings gifts.

8. Seniors have enjoyed learning new skills for staying connected.

C8: My own father never went to high school, but when made redundant in his 50s, became interested in computers and actually became pretty confident (with some occasional nudging from me). But when he passed away recently in his early 70s, it left my mum quite disconnected, as she was previously not interested in computers/tech. She is the kind of person who struggled with the remote control, and would cry with frustration when she couldn't get the wifi to work at home. [...], I installed whatsapp for

her, and now we have family chats, and she sees get grandkids by video chat everyday- [...]. I think it has been a primary part of her mental health not deteriorating.

9. Seniors use different ICTs to fill the time with different activities.

C9: *As a comfortable retiree, I was thinking what about if this had happened circa 1975 when I was just starting out and living in a small efficiency (i.e. one room) apartment. No internet, no cable, TV only NBC/CBS/ABC/PBS and independent channels 5 and 20 (anyone else remember “Channel 20--The Great Entertainer”?), an AM/FM radio. It there’s a time in my life to be constrained as I am this is it. Hundreds of cable channels, all of the knowledge of humanity accessible via the internet, ebooks I can buy or borrow from the library, Kindle/Nook, Apple Music with almost every song ever recorded and Apple News with hundreds of magazines, streaming services (Netflix, Disney +, Apple TV, all the HBO/Showtime/Starz premium channels)--the choices are limitless. Throw in Facetime and Zoom.*

3.4 Age, COVID-Stress and ICT

To specifically investigate the topic of age and ICT in relation to COVID-stress, we examined the links between the *Older* hub, ICTs and what stresses can be linked to them. This analysis revealed the following common themes.

10. ICT does not fully address the stress of separation from loved ones.

C10: *The biggest issue is we can’t see our two grandchildren. We now interact with them using FaceTime but it’s not the same.*

C11: *I was introduced to Zoom by my grandson and have converted to online tuition via this app. I prefer face to face tuition but will tutor online until an antibody test or vaccine is found.*

11. Physical Inaccessibility of technology causes stress.

C12: *I’m 84 and macular degeneration and arthritis. I’m willing to help myself any way I can but crawling on the floor to check modems and black cords plugged into black tech items with teeny white numbers and names on black surfaces while talking with a clutched phone at my ear while some young person “talks me through it” at a mile a minute drives me crazy. Every time I manage to climb up to my chair again and see a working TV screen I cheer.*

12. Constantly changing User Interfaces cause stress.

C13: *Perhaps it should have been at greater pains to say that both types of older people exist - those who embrace technology well and those who struggle - with a massive sliding scale in between. My mother, in her 70s struggles, but we have got her using Facebook video Messenger and Zoom. I feel a lot of it is about keeping up with these things as the years progress as the ‘grammar’ of using them changes quite a bit. [...].*

13. Costs of technology cause stress.

C14: *The real issue for older people is not the inability to use technology but the fact that when you give up regular work you may no longer have access to either the funds to buy and keep up to date the hardware you need or the informal access to help and support which comes with working in many office/educational etc. environments. [...] Digital exclusion and the issues this poses for all ages is a far more pertinent issue in the current lockdown than whether someone in their 80s who can afford to buy a laptop or tablet can use zoom for an online reading group or class.*

12. Some seniors do not trust the surveillance features in new ICTs.

C15: Perhaps after a certain age a person becomes less concerned with having their private data mined, placing themselves under home surveillance, whilst being manipulated by clandestine third party interests.

C16: I can't believe the amount of people suckered in to using Alexa etc. having your actions monitored and paying for the privilege.

13. Pushing technology on older adults while neglecting their choices causes stress.

C17: As an older person, I do find this article and comments a bit patronising. Technology is straightforward and easy for most people, older people who do not use it, chose not to. A friend of mine has parents, who will not even consider using a tablet or computer, saying they are too old to learn and for the majority of older people that is a choice not a fact. When my mother was in her mid eighties (she has been dead for 15 years), she insisted on having a go and mastered the tech available then with no issue. In fact she said that using a keyboard was helping to keep her arthritic hands mobile. Another friend has lost speech and mobility due to a stroke and now has taught herself to communicate using a ipad, we talk to her daily. If anyone of any age has mental capacity they can use IT if they want to, it's a choice.

14. The implied ageism in technology adoption discourses cause stress.

C18: Oh dear. Yet another simplistic lumping of seniors into one class of computer-illiterati. I'm 74. I wrote my first computer program in 1968 had an Apple II in 1982 was using modems over telephone lines to communicate like iMessage back in 1984. Maybe I'm atypical but it illustrates the oversimplification. Like saying "all journalists are stupid". May be true for some obviously not for all.

15. Stigmatization of older adults' digital literacy stifles learning.

C19: But it is simply a reality that the majority of seniors still are not comfortable enough with technology to be independent with it. Denying that there is a problem only creates a stigma about getting help.

4 Discussion

The aim of this study was to investigate the older adults' reaction to mainstream media's depiction of older adult's COVID-19 stress, and their appraisal of ICTs as a coping strategy. Mapping the discourse emerging in the context of the public discussions about the stress of COVID-19 for older adults, we found that the themes of age and coping resources (green cluster in Fig. 2) and COVID stressors (orange cluster) were linked, but not co-occurring enough to form a common network community. We also found a thematic split in how ICTs were used to cope with COVID stress: ICTs that were related to dealing with boredom, or staying active and entertained (blue cluster) were independent of the COVID-stress (orange cluster)--although linked to older adults coping strategies (green cluster). However, ICTs that were specific to connecting with family and friends (such as Zoom, Facebook and telephone) were related to social resources for coping and were linked to COVID-specific stress of social isolation. Reflective analysis of the links between these clusters indicated that the negative appraisals of ICTs, were related to a host of well-known concerns that predate the pandemic (e.g., physical

and financial accessibility; disinterest or lack of trust; and technology shaming). The positive appraisals were related to new-found opportunities for intergenerational connection, albeit with emphasis on the temporary necessity of ICTs and the fact that they would not replace real and in-person experiences. We highlight the following important conclusions:

4.1 Older Adults Are Resilient and Concerned About the Young

Our observations corroborate other studies that have taken place in North America, suggesting that older adults have found ways to be resilient and proactive in coping with COVID-related stress [31–33]. In a literature review study published in 2020, Fleth and Heisel, argued that to feel valued and respected for their ability to contribute and offer experience matters most to older adults who need to cope with the biological hazards of this pandemic [34]. This is in fact what this data reveals as well, both because age-related experience was often referred to as a source of resilience, and also because older adults expressed concern for the young, and took pleasure from finding new ways (e.g. learning to babysit via Zoom) to help their children in the workforce.

For those who identified themselves as older adults (*Older*), besides social isolation, worrying about the effects of the pandemic on younger generations were a source of concern. Similarly, in a quantitative survey of >400 60+ adults, Nimrod demonstrated that although the respondents reported moderate to high levels of stress due to COVID, the greatest contributor to the score was their concern about others and not the immediate threat to themselves [35]. This finding was replicated in a qualitative study of 826 older adults of the same age group [36].

4.2 ICTs for Staying Active and ICTs for Connection Address Different and Independent Needs

We found that the benefits of ICTs in the COVID-19 context were in: 1) allowing one to stay safely connected to others while practicing social distancing; 2) helping working children by tutoring or playing with grandchildren, either via Zoom or via other online activities; and 3) learning new things because of the need to connect to others, including younger generations, *via* such technologies. These findings are consistent with Freeman *et al.*'s TILL study, which identified intergenerational connections as one of the main motivational factors for older adults to adopt technologies that are introduced to them by the younger generations [37]. However, it is also important to underscore that beyond serving as a social strategy, various other activities such as reading, gardening, cooking, or sitting on a porch were equally important to coping with COVID-19 related boredom and isolation. In general, too little attention is being paid to the desire for leisure activities, for meaning and for general social equity are rarely the primary concerns for technological innovation [38, 39]. Misunderstanding the needs and desires of older adults might, in turn, may stifle technology adoption [37].

The use of ICTs for leisure entertainment and information have previously been linked to coping with stress--independent of age [8, 24, 37, 40], however studies in older adults to date do not indicate that ICTs act as the primary coping strategy for older adults throughout the COVID-19 pandemic [36, 40–42]. We found that although new

technologies like Zoom were appreciated for creating possibilities for connecting with family and friends--especially creating new ways of connecting with grandchildren--they were not fully replacing face-to-faced contact. While many researchers are exploring whether older adults will accept and adopt smart ICTs [43, 44], choice, accessibility and agency continue to remain critical factors [11, 45, 46].

4.3 Media's Role in Ageist Messaging Is Remarkable

Exaggerated attention to age-related limitations in cognitive and physical abilities of older adults contributes to a messaging environment in which ageist narratives that simplistically equate aging with decline propagate.

Our study corroborates other studies that argue that ageism is a pervasive theme in COVID-19 discourses [47]. Media have been known to perpetuate ageist stereotypes, [14, 16, 48], and our data shows that older adults object to it. In a cultural milieu, where ageism is manifest in the uncritical valorization of ideals of 'successful', 'healthy' or 'positive' aging, it is critical to understand how the zealous promotion of these alternative images may unwittingly reinforce their very opposite intended effect, including age-related shaming and blaming [49].

Examining comments on news articles that promoted new technologies such as VR, show a certain level of skepticism emerging from being pushed into rapid adoption of technology due to COVID-19. As many older commenters stated, this is not because all older adults are luddites, but because technology may threaten a way of living in which they have already flourished. Our findings confirm that, the 'pandemic precarity', i.e., the risk of further marginalizing older adults in the presumptive development of homogenizing stress-relief solutions must be considered [38]. As numerous comments in our study corroborated, in the context of the pandemic, ignoring situational vulnerability prevents attending to the diversity of socio-economic circumstances and intersecting identities, including ethnicity and gender [15].

4.4 Implied Ageism in Discussions of Older Adult's Relation to ICT Is a Potential Obstacle to Their Adoption

Ageism, an unintended consequence of focusing on older age, has at least three facets: the stereotyping of older adults based on their age and abilities; discrimination based on age; and institutional and policy practices that perpetuate those stereotypes [50]. Positive stereotypes of old age may have detrimental consequences too; for example, positive images of ageing may make those who do not live up to these norms feel like they have failed and often contain new normative values that promote successful aging as individual achievement, rather than as a shared social responsibility [48].

In examining the link between technology and ageism, Ivan and Cutler have argued that there is a circular relationship between ageism and technology, in that being designed by the younger innovators, technologies are not always meaningful or accessible to many older adults, and thus internalized stereotypes (even by older adults themselves) perpetuate this disconnect further [51]. This is when messaging around the issue of age-stress and distressing-ICT can become a source of stress in and of itself.

In our research, three issues associated with ICTs and aging were identified as frustrating, ageist and contributing to their stress: 1) discourses on older adults as ICT illiterate (citing examples of the fact that many septuagenarians (like Bill Gates) are the pioneers of computing technology; 2) the assumption (presumably) by young writers of the articles that older adults were disinterested in technologies and 3) the lack of acknowledgement of structural and systemic issues including the insufficiency of financial and human resources that would facilitate the adoption of ICTS by octogenarians.

Indeed, several of those who raised objections to ‘ageist’ attitude of the mainstream media, pointed out that many new ICTs did not serve any purpose in their lives, and that it was their choice, not inability to learn, that made them refuse adoption of new technologies. These observations corroborate previous research that age alone is not a predictive factor in determining usage or non-usage of ICTs [9–11], suggesting that choice, agency and systemic conditions are also critical factors [11, 45, 46].

Our findings corroborate results from a pre-COVID qualitative study of older adults in various communities in the UK and Canada. Marsten et al. identified the two sources of resistance to technology: apprehension about how to use it because of feeling ashamed for not knowing about it or not being able to learn it; lack of interest stemming from concerns about technology replacing actual human connections [10]. Here we observed that many older adults saw this pandemic as an ‘opportunity’ for learning ICTs (e.g., as a new tool to babysit grandchildren) for new purposes. These findings corroborate Sawchuk’s observation in the RECCA study, where a community of older adults who pushed back against mainstream depictions of ageing as a hindrance, adopted technology as an activist strategy to advance their agenda [11]. In other words, as difficult and ‘stressful’ as technology might be, if there is a good reason for using it, age is not an impediment in adoption--although physical and cognitive abilities remain challenging.

5 Conclusion

5.1 Addressing Research Questions

Our first research question was: “What stressors and resources dominated the discussions of the stress of COVID-19 from the perspective of age?” We found that proportionately, there were more references to *Resources* than to *Stressors* and that to be *Older*, in and of itself, was identified as a major asset for coping with the stress of pandemic--primarily due to the experience of having lived a long and eventful life. However, *People* and *Activities* were important resources, especially to cope with the social limitations created by lockdowns.

Our second question was about how ICTs were implicated in the discussions of older adults coping with stress during COVID. We found that in general, ICTs were not the primary resource for coping, except to alleviate the stress of being cut-off from the family members. In addition to serving their usual purpose of providing information and entertainment, they were also referred to as important for creating new intergenerational experiences. To have to learn new skills to foster such relations was welcomed by all who mentioned such benefits.

Finally, we wanted to explore what themes emerged from older adults' discussions of the topic of COVID-related stress and coping through ICTs. We found that even when the social affordances of ICTs were acknowledged, they were not seen as a replacement for actual physical human contact and interaction. Moreover, the prevalence of ageist discourses on older adults' experience of stress during COVID, and presumptions about aging with technology, were frustrating to many older adults within our sampling range.

Our findings suggest that the physical and financial accessibility of ICTs, especially for the oldest of this cohort was important, but to consider older adult's agency, and decision-making, irrespective of their experience with technology was important to all age groups.

5.2 Limitations

A major constraint of our study is in that we only focused on Anglo-American and Canadian news media websites, mainly targeting an educated readership.

Conclusions of this study are based on the comments of a group of older adults who already have access to ICTs and who possess enough digital proficiency to interact with news media via social networks. The majority of those who commented often reflected on their own privilege in possessing the financial and technological means to take advantage of ICTs. Therefore, these results do not address the reality of digital divide, that is still pervasive even in countries like Canada.

5.3 Implications for Future Research

Despite limitation of not being inclusive-enough, and given the fact that access was not an issue for the commenters that informed this study, it is noteworthy that ageism emerged as a significant theme, both in protest to presumptions about older adults coping with COVID-19, and in protest to presumptions about their ability or needs to take advantage of ICTs. This observation highlights the fact that the mediatization of ageing creates cultural and psychological tensions that need to be carefully considered while new technologies for alleviating stress are pushed into the lives of older adults.

The interdisciplinary methodological approach of this study, applied to data gathered from social media of major news media outlets where the answers were framed by the topic of the articles, but unsolicited point of views of participants were expressed on Social Media) provides an opportunity for a critical approach to studying aging within our current media ecology, which all too often neglects or misrepresents older-users' appraisals of the proposed tech-based solutions that industry and academic scholars may design for them.

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