The use of workplace instant messaging since COVID-19 ☆

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Introduction

This research project examines workplace interactions that were constructed in a virtual instant messaging space during the onset of the Coronavirus pandemic (COVID-19). As COVID-19 border and social distancing restrictions forced many employees to work from home [35], the usual workplace corridors and staffrooms were no longer available spaces for workers to bump into each other and spontaneously start up conversation. McGloin et al. [29] found those working from home shifted their face-to-face interactions to digital online modalities, and similarly, Tromer [47] highlights, that online team spaces encouraged informal interactions. In the scope of this enquiry, the researcher looks at the changes in workplace instant messaging (IM) since COVID-19.

The aim of this project was to analyse how COVID-19 has impacted workplace communication through instant messaging (IM) by comparing experiences before and after the pandemic. The research sought to identify the uses and gratifications people were seeking from IM and understand how social and psychological needs have changed over time. To accomplish this, a mixed-methods approach was used, including a deductive thematic analysis of work-related tweets mentioning IM. This analysis was then cross-examined to compare usage patterns and sentiments in two separate two-year periods: pre-COVID-19 and post-COVID-19. By doing so, we were able to distinguish changes in workplace IM experiences and identify the evolving needs of workers who use IM.

Literature review

It is evident that the COVID-19 pandemic imposed a proliferation in remote work, which accelerated communicative technology use [29,47,49] and advanced the pace of change within organisations [26]. Wang et al. [49] describe how new communicative norms and challenges introduced since COVID-19, urged people to learn new digital skills that assist in online communication and collaboration. Employment surveys since COVID-19 (Future [11]; Hays [17]) found workers wanted "flexibility in both 'where' and 'when' they work" (Future [11], p. 3), an expectation which transpired after COVID-19. These evolving

work norms lead to an awakening of a new field of research that acknowledges the shift in future work since COVID-19.

The way people communicate in the workplace can be complex and varied, Holmes and Marra [18] view the workplace as both a professional and social domain where interactions are influenced by the characteristics of social actors, context, tasks, and culture. Informal interactions in the workplace can be considered as spontaneous, brief, frequent, casual, and random conversations. Once seen as distracting by Roethlisberger and Dickson [43], research since then argues that informal interactions are crucial to team collaboration and performance [22]. Haigh [15] later adds that impromptu conversations are conducive to creativity, with Haynes et al. [16] reporting that informal interactions support social networks and deep cultural connections. This growing body of evidence was primed by Tromer [47], who found that during COVID-19 colleagues had to find new ways to conduct these types of interactions since they no longer had the usual gatherings "around the coffee machine at the office" ([47], p. 1).

Email, video calls, instant messaging, shared document collaborations, and bulletin boards are all forms of computer-mediated communications (CMC). They provide access to create, find, and share information between two or more people through computers, tablets, and smartphones [50]. CMC, once confined to a small set of tools, is now ubiquitous in most workplaces [10] and embedded into daily life [28]. Depending on the task, workers may choose between a variety of communication modes [30], or use multiple modes at the same time. For example, a team could start a conversation through IM, move into a video call, and simultaneously collaborate on a shared document. These options set a scene for colleagues using technology to complete work, along with developing new norms for teamwork [10]; adding efficiencies into the workplace and enabling the capacity to connect workers in virtual spaces [35].

IM is defined by Baron [3] as typically referring to typed messages between two individuals, sent by a computer in real-time and expecting an almost instant response. IM has an umbrella term of "desktop instant messaging" that enables multitasking from a work computer and sending quick versatile communication [20] with colleagues. It gained popularity from the use of the ICQ ("I Seek You") platform

in 1996, later including other contenders such as Microsoft Network (MSN) and Windows Live Messenger [24]. Similarly, text messaging, also referred to as mobile instant messaging (MIM), is sent *via* mobile phones in an asynchronous exchange, meaning time-delays between replies [3]. MIM platforms, like WhatsApp, facilitate text messaging which was largely introduced around the mid-2010s and afforded the convenience of sending and receiving messages on mobile phone while away from the desk. With transmissions being sent and received interchangeably between desktop and mobile, the distinction between IM and MIM is becoming increasingly blurry ([42], p. 641). For clarity, this study uses the term IM inclusively for both desktop IM and MIM.

The Uses and Gratification Theory (UGT), coined by Katz et al. [21], looks at consumers of media to explain "social and psychological origins… needs… expectations… differential patterns of engagement… gratifications… and other consequences" ([21], p. 510). This theory existed before the digital era and was originally designed to understand why people consumed analogue media. Since then, it has become useful in explaining the complex reasons users engage with social media and IM [40]. Ruggiero [44] argues that UGT provides an advanced approach in seeking users' social and psychological factors behind using online channels to communicate. Additionally, there has been a growing amount of research that applies UGT in IM studies [4,14,38]. All of which, seek to understand the motivations behind users' engagement with IM, identifying common user traits, and inspecting the changes it has on norms and practices.

The gap in the literature is around the impact that COVID-19 has had on the use of work IM. Therefore, this research project will explore the impact, by asking: What can Tweet authors tell us about the reasons they are adopting IM in the workplace? Has the COVID-19 pandemic impacted the reasons for adopting IM in the workplace? What social and psychological needs does IM fulfil and what are the consequences?

Methodology

This exploratory study used a mixed methods approach that investigated Tweets over a four-year period, March 2018 to 2022. As COVID-19 had occurred two-years prior to this study's analysis, there was an opportunity to explore the comparison between the two-year period leading up to COVID-19 (March 2022) and the two-year period since COVID-19. The data used for this research included Tweets from Tweet authors worldwide that tweeted about workplace IM. Tweets were scraped from the webpage twitter.com/explore using a Twitter keyword and date search query. To be specific, the search query was based on the following keywords, (work OR workplace) AND (message OR messages OR messaged OR messaging OR text OR texts OR texted OR texting), results were then scraped by the tool 'Octoparse' [36] over multiple parses. There were 1909 Tweets collected in total; these provided the qualitative comments for the thematic analysis.

Using a deductive approach, the preconceived themes for the thematic analysis were inspired by Grellhesl and Punyanunt-Carter [14], who used a model based on UGT to look at text messaging practices. They used six definitions conceptualised from Leung and Wei [23]: "affection/sociability", "relaxation", "immediate access", "mobility", "fashion/status", and added two more of their own, "coordination", and "escape". For this study, the definitions of the UGT model were modified, to 'information', 'social/affection', 'escape/relax', 'express', 'access/mobility', and 'manage'. 'Access/mobility' was included to define immediate access and mobility of messaging, whilst 'manage' provided a definition of messages about employers managing and governing the use of IM within the workplace. Although these themes originated over a decade ago, similar themes were applied in a modern context by Phan and Sethu [38] who investigated work-related IM use during COVID-19. Additionally, the chosen themes were tested with the data and were deemed as relevant in sorting through the Tweet comments. The rationale for using themes based on UGT came from the theory's recognition

of social and psychological factors [21] and exploring the reasons workers consumed IM.

The thematic analysis was coded with the assistance of the Qualtrics' TextIQ program [39], whereby the coder would use keywords and key phrases to query the list of Tweets for coding. It is noted that there was only one coder which reduced the rigour that "intercoder reliability" ([48], p. 403) would have provided, however, research findings were still deemed credible and dependable. Once the thematic analysis was complete, the theme counts, Twitter data, and automatic sentiment scores from Qualtrics were collated to provide a full dataset for the comparative analysis.

Analysis

Part of this enquiry was understanding what platforms were being used to send work IMs. The data analysis indicated that the platforms used in the workplace were varied or unidentified, with Tweet authors mainly mentioning platforms such as Slack, Whatsapp, Facebook Work-Place, followed by mentions of WeChat, Skype, Zoom, Google Chat, and Discord. This is demonstrated in Fig. 1 which is a word cloud of platforms mentioned in Tweets.

Out of 1909 Tweets analysed, 1004 were deemed irrelevant, leaving 905 Tweets that contributed towards the analysis. Some of these Tweets were also categorised under miscellaneous, which are hidden from the data tables and visualisations in this paper. Recurring subthemes were divided between the seven parent themes from the UGT model. In Table 1, the 'uses' category featured three parent themes: 'information', 'manage', and 'access/mobility', while the 'gratifications' category included 'social/affection', 'escape/relax', and 'express'. Whilst the 'uses' category looked at the specific utilisation of IM, the 'gratifications' category represented the satisfying gains that were received. The codebook that describes the interpretations around each of these themes can be found in Appendix 1. The following Table 1 provides a breakdown of the theme counts from before and since COVID-19.

Sentiment scoring that was automatically applied to each Tweet from Qualtrics, used the following measurements: −2 'very negative', −1 'negative', 0 'mixed' or 'neutral', 1 'positive', and 2 'very positive' (Table 2).

The chart in Fig. 2 shows that most Tweet sentiment scores were below 0, represented by colours detailed in Table 2. In Fig. 3, sub-themes 'care/appreciation' and 'visual cues' are shown as having an average sentiment score above 0, with all other sub-themes below 0, and the sub-theme 'harassment' below −1.7 (Fig. 3).

When comparing the themes before and since COVID-19, Fig. 4 illustrates the number of Tweets that occurred each month over four years, with the trend line indicating a steady rise. The grey section on the left represents the two-year period leading up to COVID-19; March 2018 to 2020. The yellow section on the right highlights the two-year period since COVID-19; March 2020 to 2022. In the centre of the two periods the graph marks the beginning of COVID-19 and shows the peak in Tweet counts that occurred in March 2020.

Table 1 indicates that 'gratifications' and 'uses' were equally sought after and obtained since COVID-19, a change from before COVID-19 which showed more Tweet authors seeking and obtaining gratifications. This result suggested that since COVID-19, work IM became more useful in the workplace than gratifying. Furthermore, based on the theme counts shown in Table 1, there were four main reasons for adopting IM in the workplace: (1) Information exchange, (2) Social connection and affection, (3) Escape and relaxation, and (4) Managing IM in the workplace.

Comparing each of these themes by time-period, before and since COVID-19, identified varying factors around people adopting IM in the workplace. The following four sections highlight these main reasons that provided perspectives around the social and psychological needs being fulfilled. Each section includes verbatim Tweet quotes that support the recurring themes. Stacked horizontal bar charts provide visualisations of the theme's Tweet count and shows a comparison of before and since
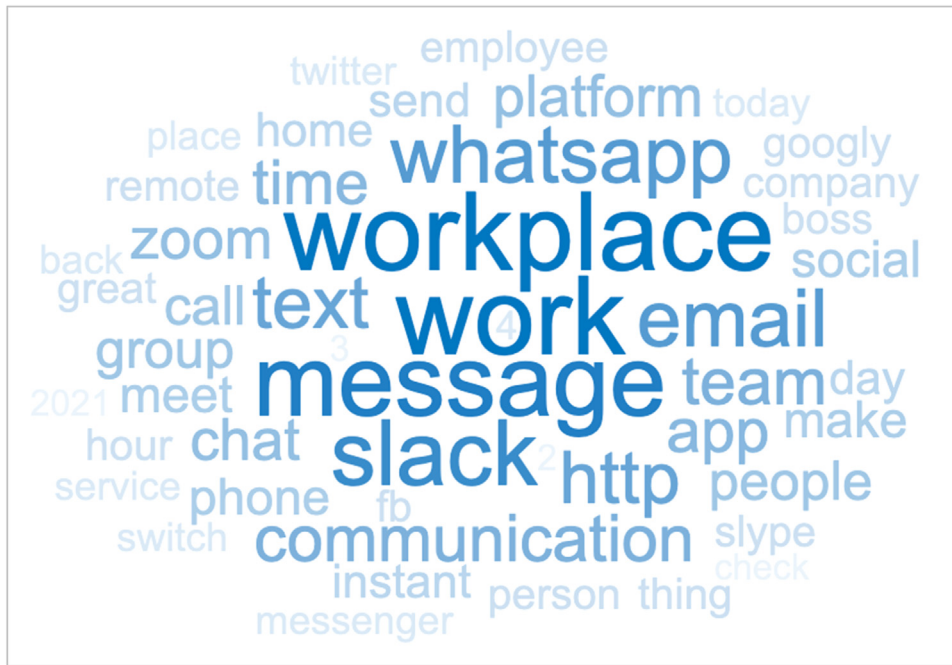
Table 1
Overview of themes and statistics.

UGT	Parent Themes	Sub-Themes	Before COVID-19 (%)	Since COVID-19 (%)	Difference
Gratifications	Social/Affection	Interpersonal	27	50	23
		Care/Appreciation	17	36	19
		Harassment	16	29	13
		Total	60 (24%)	115 (28%)	55
	Escape/Relax	Boundaries	43	50	7
		Escape	6	7	1
		Total	49 (20%)	57 (14%)	8
	Express	Misinterpret	22	9	−13
		Share Opinions	10	18	8
		Visual Cues	4	7	3
		Total	36 (15%)	34 (8%)	−2
	Total		145 (58%)	206 (50%)	61
Uses	Information	Coordinate/Notify	28	96	68
		Contact After Hours	21	32	11
		Ask	4	10	6
		Total	53 (21%)	138 (33%)	85
	Manage	Track	15	27	12
		Privacy/Security	7	17	10
		Blocks/Rules	12	12	0
		Total	34 (14%)	56 (13%)	22
	Access/Mobility	Efficiency	16	16	0
		Total	16 (6%)	16 (4%)	0
	Total		103 (42%)	210 (50%)	107
	Grand Total		248 (100%)	416 (100%)	168

Table 2
Sentiment measurements.

	Very negative	Negative	Mixed	Neutral	Positive	Very Positive
Sentiment Score	-2	-1	0	0	1	2

COVID-19. Tables under each section compliment the visualisation with the extra detail of Tweet counts and the average sentiment scores.

Information exchange

Since COVID-19, the main reason for adopting work IM was to exchange information. This theme significantly increased in size by 2.6 times from before COVID-19 (Fig. 5 and Table 3). This finding was similar to Bautista and Lin [4], who found mobile IM for nurses was primarily used to exchange information promptly.

Tweets in this parent theme mostly came under the sub-theme 'coordinate/notify' (Fig. 5), with Tweet authors speaking about sending and receiving work updates for upcoming events, closures, requests for fulfilling work shifts, and notifications of absences. Tweets in the latter part
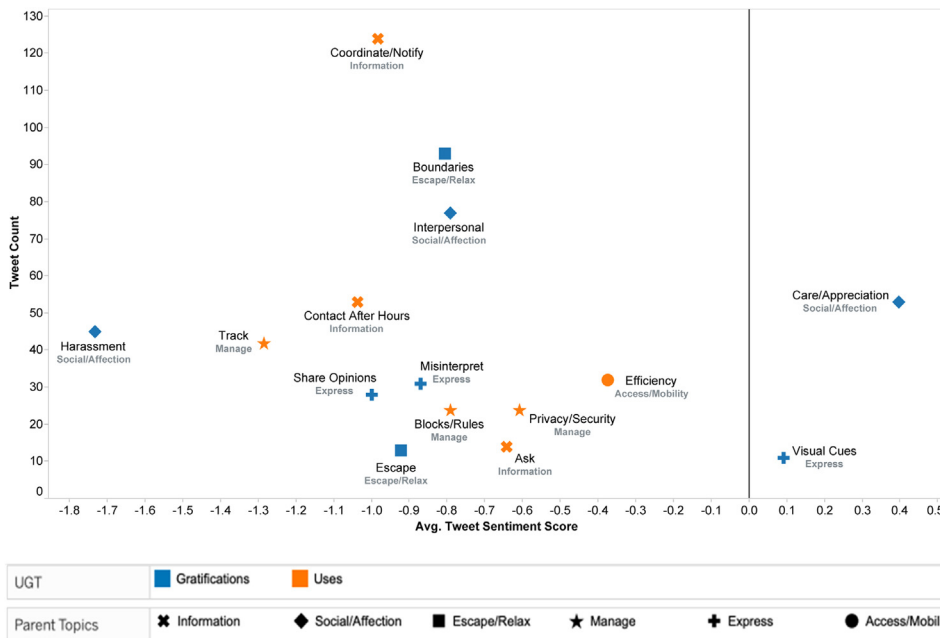
Fig. 2. Sentiment by unit chart.

Fig. 3. Sentiment by scatter plot.

of the study suggested that IM was mostly used to navigate the workplace through COVID-19, with alerts and notifications sent by managers or the workplace. Tweets related to the 'coordinate/notify' sub-theme, were:

> My workplace needed to send out a studio-wide message telling us how to work the kitchen sinks. (Tweeted, March 2019)

> Oh. A text came from my workplace and because of the typhoon, I don't need to go to work today. (Tweeted, July 2019)

> So umm if I read the firmwide text message properly I'd realise I wouldn't have had to leave my house for work today... The virus is not in my workplace however we are closed firmwide so now I can catch up on my chat [sic] at home. (Tweeted, March 2020)

...this is ireland. our work texted us they will provide booster shots to employees at our workplace. (Tweeted, January 2022)

The second sub-theme was 'contact after hours' (Fig. 5), with Tweets in this theme strongly indicating that stress was caused by receiving work IM outside of work hours or when on leave. Since COVID-19, the overall sentiment on 'information exchange' took a more positive outlook, however, when it came to the sub-theme 'contact after hours' the sentiment dropped from –0.8 to –1.2. Tweets related to this sub-theme, were:

> Really wish my workplace would just send an office memo during work hours instead of messaging us after I've gone home and making the rest of my evening stressful. (Tweeted, April 2019)
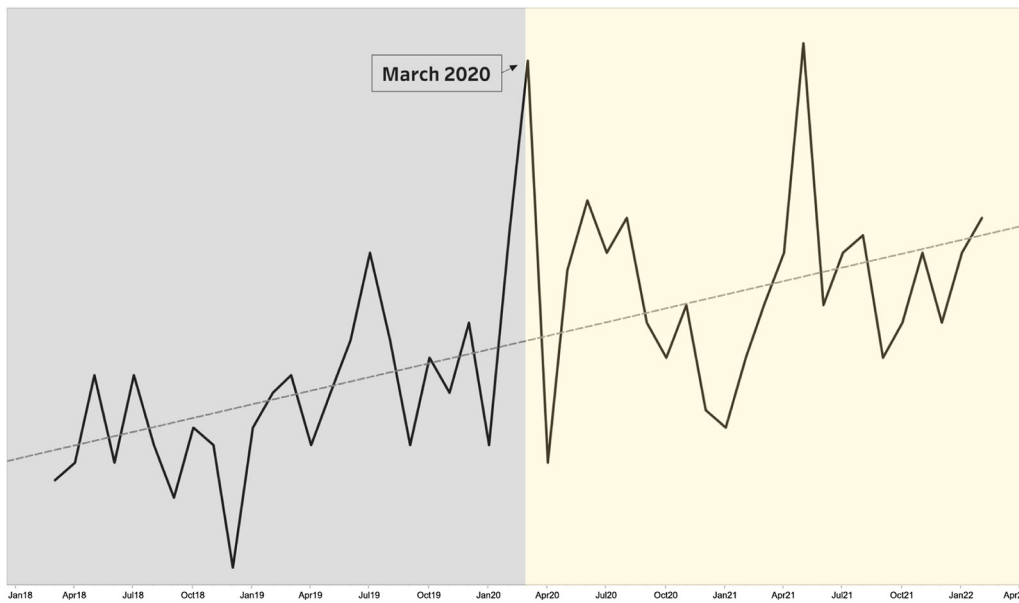
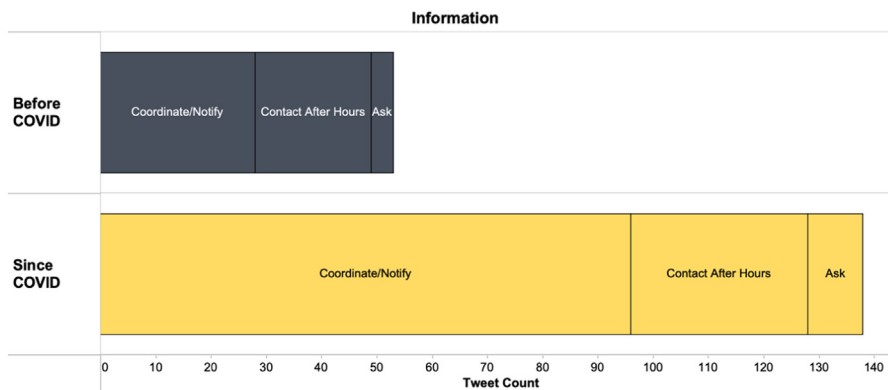**Fig. 4.** Line graph - Tweets per month over a four-year period.

Fig. 5. Information theme, horizontal stacked bar chart.

Table 3
Information sub-themes.

	Tweet Count (%)			Avg. Sentiment Score	
	Before COVID-19	Since COVID-19	Total Count	Before COVID-19	Since COVID-19
Coordinate/Notify	28 (23%)	96 (77%)	124 (100%)	−1.3	−0.9
Contact After Hours	21 (40%)	32 (60%)	53 (100%)	−0.8	−1.2
Ask	4 (29%)	10 (71%)	14 (100%)	−0.8	−0.6

A woman was reported to her workplace's human resources department for sending work-related messages to colleagues after work hours. (Tweeted, October 2019)

Toxic Workplace Habit: Sending you work related texts on a weekend (Tweeted, January 2021)

The third small sub-theme 'ask' (Fig. 5) included Tweets that suggested using instant messaging to pose a question to an individual or group. Related Tweets:

I asked in my group work chat but my message went unanswered, even though they were online. (Tweeted, August 2020)

…someone who also started working at my new workplace just texted me asking for tips with the upcoming intensive week on mon-

day (students from 10 to 5 basically every day for a week) girl. (Tweeted, July 2021)

Social connection and affection

The second reason to use work IM was to socially connect and provide affection. This theme increased 1.9 times from before to since COVID-19 (Fig. 6 and Table 4), with the sub-theme 'harassment' highlighting Tweets that spoke of sexually harassing, toxic, or inappropriate messages. Tweet authors in this theme indicated that since COVID-19, although work had shifted to working from home, harassment was still taking place and increasingly so through online transmissions. This online behaviour is described by Gosse et al. [13] as a consequence of connectivity. In this parent theme, the sentiment of the 'harassment' sub-theme dropped from a negative sentiment score of
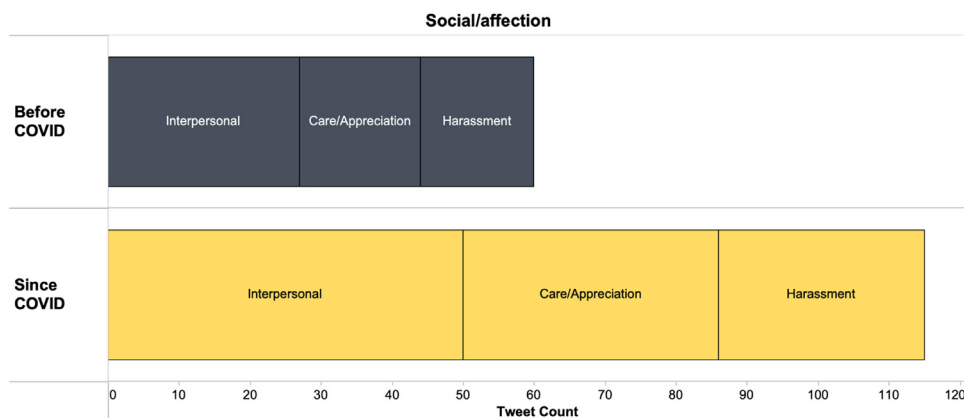
Fig. 6. Social/affection theme, horizontal stacked bar chart.

Table 4
Social/affection sub-themes.

	Tweet Count (%)			Avg. Sentiment Score	
	Before COVID-19	Since COVID-19	Total Count	Before COVID-19	Since COVID-19
Interpersonal	27 (35%)	50 (65%)	77 (100%)	−0.9	−0.7
Care/Appreciation	17 (32%)	36 (68%)	53 (100%)	0.8	0.2
Harassment	16 (36%)	29 (64%)	45 (100%)	−1.4	−1.9

−1.4 before COVID-19 to −1.9 since COVID-19. Tweets related to this sub-theme:

>…texting a young female colleague after work "thinking of you (as I do more than is socially appropriate)" and admitting to calling her "yummy" in the workplace is sexual harassment. (Tweeted, October 2018)

>Before the pandemic, toxic behaviours at work would take place in person. Now, they occur over calls and in messages - and remote working makes it worse rather than better. (Tweeted, May 2021)

>Think sexual harassment in the workplace stopped once we went remote? Not at all. Remote work has led to more late night/weekend messages and an increased use of recorded messaging platforms (Slack, Zoom, etc.) . . . so now it's just all in writing! (Tweeted, August 2021)

>Flirting, whether it's in-person at work, or by phone, email, Zoom, or text, if it is unwelcome, unwanted, unsolicited by you, it's already sex discrimination (Tweeted, December 2021)

The sub-theme 'care/appreciation' (Fig. 6) featured Tweets that spoke of receiving IM from colleagues or managers that expressed support or acknowledgement of work contributions. These types of messages were fondly spoken about by Tweet authors and this theme received the highest positive sentiment score over all themes. Tweet authors indicated they felt supported and much more satisfied in the workplace by receiving these types of messages. Subsequentially, this gratification increased during COVID-19, a time when Tweet authors might have incurred stressful factors from the transition of working from home; caring for children, dealing with health issues, and adjusting to environmental changes [12,33]. Tweets relating to this sub-theme, were:

>With a supportive workplace, the return to work is much easier to face. After a day to recuperate and a whole bunch of supportive texts from the #ThriveTribe, I'm back to feeling like myself again. (Tweeted, June 2019)

>The people I work with are so freakin good. Gettin texts from coworkers and my supervisor asking about how I am doing, lettin me know

they got my back, that I need not worry about my job... (Tweeted, May 2021)

>My boss just sent me a text to say how grateful she is for my work in transition. A simple act can make staff feel so valued and more likely to go above and beyond in the future. It has been an amazing week and I really feel I'm going to enjoy my new workplace. (Tweeted, August 2021)

The sub-theme 'interpersonal' (Fig. 6), looked at Tweets that mentioned reaching out to others and forming interpersonal connections through casual conversation. This theme also increased since COVID-19 and was significant in continuing the bonds and morale usually formed in co-located teams through informal interaction [9]. Related Tweets of the sub-theme 'interpersonal':

>Workplace Culture: You and your work bestie texting each other about how much you hate a meeting while sitting next to each other at the meeting. (Tweeted, February 2020)

>I had to message my colleague for a work related stuff and we ended up talking about NCT and KPOP in general. Hahahhaa. It's always like this. I now miss our workplace. As well as people who's willing to listen to my kpop related stories. Hahahhaha. (Tweeted, January 2021)

>I love that my group texts with the other 3 co-charge nurses I work with are comprised of Office Space GIFs and overall dumb sarcastic comments about annoying coworkers & workplace memos. (Tweeted, January 2022)

Escape and relax

The need to escape and relax came up as the third reason to turn to IM in the workplace, with the sub-theme 'boundaries' (Fig. 7 and Table 5) representing Tweets that spoke of sending and receiving work IM during non-work hours. Tweet authors in this theme advised that although it might be tempting to look at work IM notifications during days off, it was best to avoid this temptation for the sake of wellbeing. This gratification increased slightly since COVID-19 with the sentiment remaining the same between both periods. It is noted that whilst Tweets mentioning work-life boundaries were an equal proportion over the two
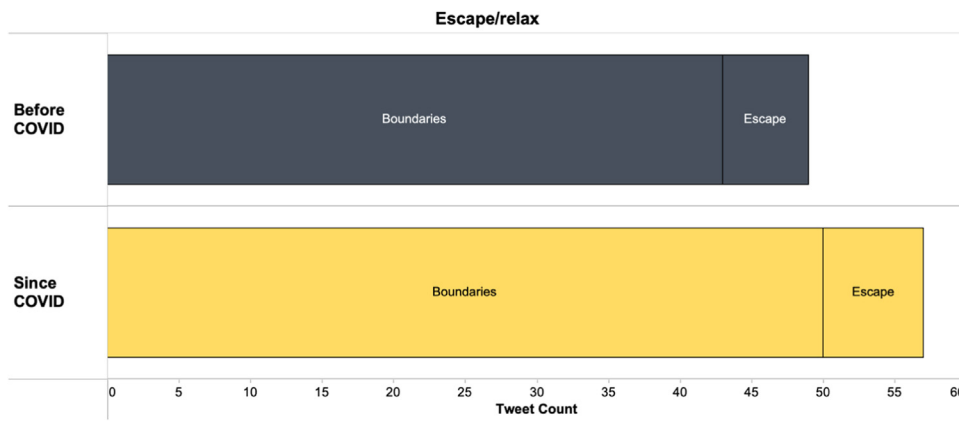
Table 5
Escape/relax sub-themes.

	Tweet Count (%)			Avg. Sentiment Score	
	Before COVID-19	Since COVID-19	Total Count	Before COVID-19	Since COVID-19
Boundaries	43 (46%)	50 (54%)	93 (100%)	−0.8	−0.8
Escape	6 (46%)	7 (54%)	13 (100%)	−0.7	−1.1

periods (Fig. 7), comments since COVID-19 tended to lean towards the responsibility residing with the person checking messages outside work hours rather than the sender. In a similar vein, Sutherland and Janene-Nelson [45] talked about "work-life fusion" (p. 87) which looked at managing work-life balance by merging work with life experiences, for example, going on a cycling holiday where you continue to work in-between; all made possible through CMC. Tweet authors posted:

> I don't WANT any messages in our work group about things from our workplace in my bloody holiday!!!!!!!!!!!!!!!!!!!!! (Tweeted, July 2018)

> Every time I wake up and see 5+ text notifications I get excited until I realize it's from my work group chat. (Tweeted, October 2018)

> I don't answer work-related emails/texts/calls/etc. outside of work hours (Tweeted, June 2021)

> …my workplace everyone sends emails or teams messages whenever they want and have the common sense to log off or set do not disturb outside their work hours (Tweeted, November 2021)

The next sub-theme was 'escape', which featured Tweets that suggested some workers would rather use IM than interact in face-to-face discussions. This sub-theme included Tweets expressing frustration from those that had observed, that since COVID-19, there was a greater reliance on CMC and reluctance for face-to-face discussions. Tweet authors in this sub-theme, posted:

> Just discovered how to send direct to voicemail messages at work....my plan to never talk to anyone directly at the workplace moves one step closer. (Tweeted, May 2018)

> I'm cool with phone calls, texts, e-mail, etc...not so much an in-person cold call at work. (Tweeted, April 2019)

> I get people like to work from home to avoid commute & have flexibility. But those who NEVER want to be in the office must have poxy coworkers & grim workplace. As texting & video calls have become the norm, it's pleasant to have occasional in-person interaction. (Tweeted, November 2021)

Managing IM in the workplace

Managing IM in the workplace was the fourth reason for adopting work IM, and featured Tweets that described how organisations were managing the use of the tool. The sub-theme 'track' increased in Tweet counts since COVID-19 (Fig. 8 and Table 6) and looked at Tweets discussing the transparency of IM and the retention of messages for the
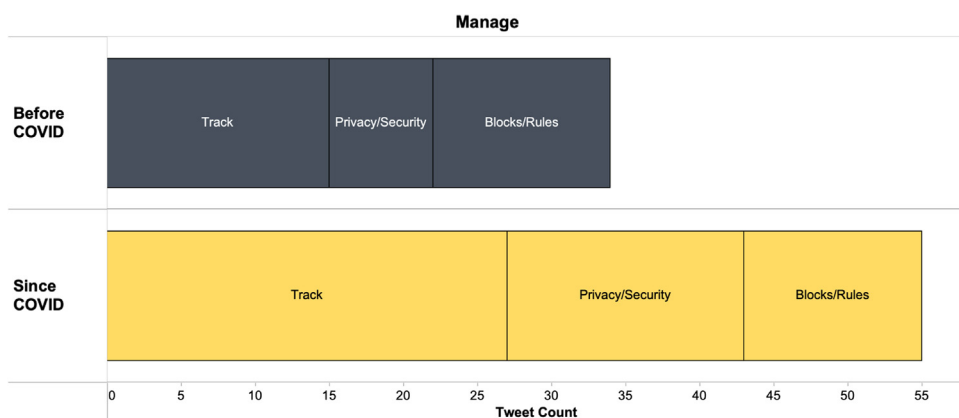
Table 6
Manage sub-themes.

	Tweet Count (%)			Avg. Sentiment Score	
	Before COVID-19	Since COVID-19	Total Count	Before COVID-19	Since COVID-19
Track	15 (36%)	27 (64%)	42 (100%)	−0.9	−1.5
Privacy/Security	7 (30%)	17 (70%)	24 (100%)	−0.9	−0.5
Blocks/Rules	12 (50%)	12 (50%)	24 (100%)	−0.8	−0.8

organisation to view. Tweet authors advised this type of record keeping was standard and accepted; adding it could be useful in assisting workplace investigations of inappropriate behaviour and harassment. Tweet authors in this sub-theme, posted:

> My workplace could read my text messages; that's fine. I write them with that awareness. They could listen in to my phone conversations, too. What I say at work I am aware could be monitored. Here's the difference: at my workplace these tools are used for my protection. (Tweeted, July 2018)

> Also saving of abusive chats and messages is another great way to keep evidence on your side. (Tweeted, July 2021)

> As a workplace investigator, I'll never understand why people put the things they do in emails and texts. Makes my work easier though. (Tweeted, October 2021)

The other sub-theme 'privacy/security' also increased since COVID-19 (Fig. 9), and featured discussions around the privacy and security measures taken in the workplace. Tweets in this sub-theme included:

> In my work we have calls and messages through the workplace app, no one has anyone's personal number apart from maybe their manager for absolute emergencies. It's a good system. (Tweeted, December 2020)

> …where I work there is a policy stating that all communications using electronic means of the workplace is subjected to being kept for lots of time due to regulatory requirements. Including private messages on work devices. (Tweeted, February 2021)

The next sub-theme 'blocks/bans' (Fig. 8) included Tweets that involved workplace blocks or bans related to IM. This theme had no increase between the two periods, before and since COVID-19. Tweet authors posted:

> I think live chat platforms in the workplace should be banned. I've been working from home all day and people don't stop messaging. My manager has seen me online at 6.45pm and is now messaging me about work. (Tweeted, March 2020)

> While work-life balance has become the oxymoron of our times, Portugal's new 'right to rest' law aims to make it reality that bans bosses from text messaging and emailing staff outside of working hours. (Tweeted, November 2021)

> Phones are no longer allowed in my workplace because of someone constantly texting while at work. (Tweeted, February 202

Discussion

In view of the analysis, the study found that IM in the workplace was, over time, increasing in popularity. Whilst many scholars have already arrived at this conclusion [6,8,35], this study supports it and recognises the impact that COVID-19 has had in accelerating its use. The analysis of the use and gratification themes, before and since COVID-19,

disclosed the social and psychological needs that were being fulfilled through work IM. Furthermore, insights into the perceptions of Tweet authors provided a broad lens of what had happened with IM in the workplace since COVID-19.

It has become evident through this analysis that a collection of Tweets can draw insight into the use and adoption of work IM between 2018 and 22. As highlighted in the thematic analysis (Table 1), the top four reasons were (1) Information exchange – *n* 191, (2) Social connection and affection – *n* 175, (3) Escape and relaxation – *n* 106, and (4) Managing IM in the workplace – *n* 90. The first reason was closely matched to research conducted by Bautista and Lin [4], whom found IM improved workplace efficiency by enabling a way to promptly exchange information. This was supported by examples of organisations delivering group alerts and bulk messaging *via* IM, which facilitated navigation through the COVID-19 event. Consequently, the IM facility gained higher visibility, leading to increased activity and presence.

The second reason identified was social connection and affection. This finding was also similar to Bautista and Lin [4] who acknowledged that IM amongst nurses was used for social and emotional connections; echoed by Hwang and Lombard [19], who found IM was mostly used as a social utility amongst college users. Contributing to this segment, the research in this study found that care and appreciation shown through work IM was positively regarded as a sign of respect and was reciprocated towards the organisation. However, on the contrary, online work harassment was found to be omnipresent and as online work communications were often seen through the victim's phone or other personal devices [34], work harassment followed them into their home environment.

The third reason, escape and relaxation, highlighted the need for boundaries when it came to sending and receiving work IM. Phan and Sethu [38] purported that accessing work resources during non-work hours was beneficial to performance during the pandemic. Whilst Sutherland and Janene-Nelson [45] suggested a fusion of work and life was made possible through CMC. It is noted in this study, that many of the Tweet authors thought the responsibility of work-life balance resided with the receiver and not the sender, and they encouraged people stop looking at their work IM during non-work hours.

The fourth reason was to manage IM in the workplace, this finding anticipated that as work IM becomes ubiquitous, organisations will need procedures and assurances around the misuse of the tool. Many scholars have addressed users' privacy concerns related to the use of online channels [1,5,41], and in this study, it was found that Tweet authors mostly expected organisations to track work IM as they saw it as a mechanism to help protect people from abusive messages by adding a layer of transparency and a way to report evidence around such cases.

Over the four-year period of this data collection, there was an increase in Tweets covering the topic of work IM. While it remains uncertain whether the increase was due to COVID-19, it was determined that a substantial peak of Tweets occurred in March 2020, particularly to the parent theme 'information'. When interpreting the Tweets in this theme, the analysis suggested that IM was being used to coordinate the workplace during the pandemic and contact workers after hours. This

could be a case of information needing to be sent in a timely way to facilitate the flow of information during the COVID-19 crises [31]. The analysis of this study showed that whilst social connection was a major contributor to using work IM before COVID-19, information exchange succeeded this theme since COVID-19, as work IM was used to notify and coordinate workers.

Since COVID-19, there was a significant increase in the 'social/affection' parent theme, which indicated that work IM provided gratifying interpersonal connections in expressing care and appreciation. Tweet authors highlighted that these messages evoked esteemed attitudes towards the workplace. This increased result could be due to a greater reliance on the tool to build and maintain interpersonal rapport since COVID-19 [29]. Panteli et al. [[37], p. 13] found that this type of supportive behaviour by project leaders fostered work engagement. In this research, the findings from the 'social/affection' theme indicated that supportive and encouraging messages from supervisors and colleagues were appreciated and it helped to build and maintain interpersonal rapport.

As the use of IM became more prevalent in workplaces, so too did harassment within this space, and this often extended beyond work boundaries and crossed over to private lives as workplace chats could also reside on home devices. The theme 'harassment' expressed work IM being misused to send sexually harassing messages, and despite working from home, harassing behaviours continued *via* CMC. Favourable to the survivors of harassment, IM platforms enabled evidence gathering mechanisms, by capturing messages, links to profiles, and in some cases a full account of actions. As Tenório and Bjørn [46] stated, there are several cases where the tracing of IM had been used in court to demonstrate criminal behaviour and convict the person of harassment. It is therefore important that employers consider their role in providing protective measures, such as, tracing identities and the history of IM logs. Furthermore, making it known that all messages can be traced back to the perpetratorcan act as a deterrent and provide a sense of security.

When it comes to the onslaught of work IM after hours, this research suggests that employees are experiencing increasing pressures to be always on alert. Phan and Sethu [[38], p. 3] noted that IM was a valued after hours' resource for workers to manage working from home and navigating through the COVID-19 situation. Considering this, organisations will need to judge their stance on using work IM after hours. The "Right to rest" legislation was captured under Portugal's new laws in November 2021 and was designed to protect workers from being contacted after their designated work schedules [2]. This law is similar to other legislation in Europe that was formed to maintain the right balance between work and personal time [7]. These measures highlight the importance for researchers and practitioners to work together on implementing standards and practices in the workplace and look at healthy work habits of IM use after hours.

While IM after hours closely aligns with work-life balance, there is more that unfolds when exploring the boundaries necessary to establishing healthy habits. For instance, Mak and Chui [25] highlighted, that after hours online status updates served as a means to propose administrative changes, foster colleague relationships, and alleviate work-related tension which could see a collapse of workplace context. Whilst Marwick and Boyd [27] also noted, that those authoring online content to a networked audience saw a collapse of social context which resulted in feeling pressured to perform and present personal context to show authenticity and make connections. This leads to workers establishing new norms in managing their work life balance and the context they deliver in work IM.

According to Phan and Sethu [[38], p. 8], those that obtained uses and gratifications from information exchange, mobile convenience, and self-presentation, enjoyed better work life balance as IM was more read-

ily seen as a resource rather than a job demand. The "near-synchronous" ([32], p. 80) nature of IM has, in some cases, placed a certain amount of expectations on the immediacy of this mode of communication ([6], p. 1755), however, workers can also find value in IM's capacity to communicate asynchronously, and in that respect leave work IMs for suitable times to respond rather than blocking it altogether. Other research suggests that managers should lead by example and reflect the values and expectations of using work IM after hours [38,47]. It is therefore concluded that organisations would benefit from investigating these expectations further ([6], p. 1756).

The research had some limitations that should be noted. Firstly, the approach taken involved analysing tweets without any demographic identification or knowledge of the instant messaging (IM) platform used. Consequently, while the study was able to determine general perceptions around work IM, it could not identify any common characteristics of users or platforms. Secondly, the research faced difficulty in distinguishing MIM from IM use, which was important in noting the affordances and expectations of using mobile over desktop technology. Moreover, UGT typically revolves around users choosing media channels, whereas in the case of work IM, workers may have been directed to use a particular media tool by their organisation rather than given the choice. Finally, it was suggested that people's perception of how they use a tool may differ from how they actually use it, which means observing the tool's use in context would provide a more comprehensive analysis.

Conclusion

This research found that IM in the workplace has become an integral part of work since COVID-19, as workers relied on CMC to connect with others and IM to provide a means of quick, impromptu, text and media-based communication. Furthermore, the analysis found the main reasons workers adopted work IM since COVID-19 was to exchange information, establish and maintain social connections, escape, and manage IM in the workplace. The recurring themes over the four-year period indicated that with the prevalence of IM in the workplace, communication standards and practices would benefit from the inclusion of protective and supportive measures in using this mode of communication. This was most evident when addressing the use of IM to contact colleagues after hours, establishing work-life boundaries, and managing harassing messages. Overall, the research imparted how people are changing the way they communicate in the workplace since COVID-19 and the relevance that IM has on these developments.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

Author's name: Katrina Paerata

Data availability

Data will be made available on request.

Appendix

Codebook.

Themes *(n)*	UGT Parent Theme
Coordinate/Notify (124)	Information
Sending and receiving updates to the workplace, upcoming events, requests for staff to fill work shifts, and notifications of absence.	
My workplace needed to send out a studio-wide message telling us how to work the kitchen sinks	
Got text from boss Boss: after u come back from off day, can help do full shift?	
Contact After Hours (53)	Information
Sending messages to someone outside of their work hours or when they are on leave.	
Toxic Workplace Habit: Sending you work related texts on a weekend	
Really wish my workplace would just send an office memo during work hours instead of messaging us after I've gone home and making the rest of my evening stressful.	
Ask (14)	Information
Messages sent to ask questions from an individual or group.	
I asked in my group work chat but my message went unanswered, even though they were online.	
someone who also started working at my new workplace just texted me asking for tips with the upcoming intensive week on monday (students from 10 to 5 basically every day for a week) girl.	
Interpersonal (77)	Social/Affection
Reaching out to others and forming interpersonal connections through casual conversations.	
I still get messages a couple of times a week from my work buddies	
Workplace Culture: You and your work bestie texting each other about how much you hate a meeting while sitting next to each other at the meeting.	
Care/Appreciation (53)	Social/Affection
Sending and receiving messages that show care and appreciation.	
With a supportive workplace, the return to work is much easier to face. After a day to recuperate and a whole bunch of supportive texts from the #ThriveTribe, I'm back to feeling like myself again.	
My boss texted me this morning to be like "please don't worry about your PTO, we'll work something out, just keep staying home and getting better"	
Harassment (45)	Social/Affection
Receiving messages that involve sexual harassment, are toxic or inappropriate.	
Flirting, whether it's in-person at work, or by phone, email, Zoom, or text, if it is unwelcome, unwanted, unsolicited by you, it's already sex discrimination.	
I was the target of targeted harassing, hateful personal attacks through anonymous messages mailed to my workplace and close friends a few years ago.	
Boundaries (93)	Relax/Escape
Placing boundaries on when you send and receive work messages.	
…if I really have to send them messages outside work hours, I tend to wait till 10PM or above when their Slack notification is automatically snoozed.	
I don't answer work-related emails/texts/calls/etc. outside of work hours	
Escape (13)	Relax/escape
Preferring to message rather than have face-to-face discussions	
Just discovered how to send direct to voicemail messages at work….my plan to never talk to anyone directly at the workplace moves one step closer!	
I'm cool with phone calls, texts, e-mail, etc.…not so much an in-person cold call at work.	
Track (42)	Manage
Discussions around messages being kept on record.	
One of the people saved their private WhatsApp messages onto work emails so they'd have a record. However what's on your work email, can legitimately be read by your work. That's standard in any workplace contract.	
My workplace could read my text messages; that's fine. I write them with that awareness. They could listen in to my phone conversations, too. What I say at work I am aware could be monitored. Here's the difference: at my workplace these tools are used for my protection.	
Blocks/Bans (24)	Manage
Workplace blocks or bans related to instant messaging	
Phones are no longer allowed in my workplace because of someone constantly texting while at work :/	
While work-life balance has become the oxymoron our times, Portugal's new 'right to rest' law aims to make it reality that bans bosses from text messaging and emailing staff outside of working hours	
Privacy/Security (23)	Manage
Discussion around the privacy and security measures that workplaces are taking.	
In my work we have calls and messages through the workplace app, no one has anyone's personal number apart from maybe their manager for absolute emergencies. It's a good system.	
No but where I work there is a policy stating that all communications using electronic means of the workplace is subjected to being kept for lots of time due to regulatory requirements. Including private messages on work devices.	
Share Opinions (27)	Express
Express and share opinions with others.	
My new place of work has a whatsapp group that I was added to. It's not had a single positive message in it. I really hate workplace group chats.	
So we have a message board at work… there's a discussion going on about sexism in our workplace. A surprise to nobody, the middle aged white men say sexism (gender discrimination) does not exist at the company.	
Misinterpret (31)	Express
Misinterpretations or mistakes that are taking place in	
I agree on having a diverse work staff that are all committed into making the workplace excel, but your message is being drowned out by your grammatical errors	
predictive text keeps suggesting i put 'xoxo' at the end of work emails so now i'm just gonna go for it pls don't fire me for workplace misconduct xoxo	
Visual Cues (11)	Express
The use of emojis, video, or typography in the form of visual cues in workplace instant messaging	
I brought up a question at work after texting a source, asking about using emojis in the workplace. People here had various opinions.	
Everyone i work with loves to;) at the end of everything. texts, emails. zoom meetings. im pretty sure i can even sense it during phone calls. is this the new workplace etiquette? should i start winking more?	
Efficiency (32)	Access/Mobility
Using instant messaging in the workplace because it is more efficient, flexible, easy, or quick.	
In my ideal and likely infeasible workplace, it's never disruptive to receive a message because you'd only receive messages when it's appropriate to receive them (slack is treated as truly async and is only open at work and during designated times)	
#SlackHQ not many people realize that you are yhe one who revolutinize next gen workplace messaging. The work from home would not be possible without you.	

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