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EXTENDED ABSTRACT

Introduction

Water quantity crises, namely droughts and floods, can devastate lives, livelihoods and property. Often, efforts by public authorities and water suppliers to manage these crises will require active participation by the public. The 2017-2018 Cape Town Drought necessitated Capetonians halve their water consumption to offset 'Day Zero'; the point at which the municipal water supply would be exhausted. During the 2019-2020 UK Winter Floods, at-risk communities often had to act in line with official guidance to reduce harm to their wellbeing, households and businesses. Referred to as participatory disaster management [1], these cases required sustained communication by authorities to affect behaviour modification. Social Behaviour Change Communications (SBCC) is informed by the Social Ecological Model that contends behaviour is shaped by stimuli at four levels of influence: the individual, family and peer networks, community and social structures [2]. By spreading targeted messaging through these levels, SBCC aims to achieve positive behaviour modification and overcome barriers to action, enabling the public to make informed decisions to reduce personal and communal risks [3]. As social media campaigns enable direct, synchronous and sustained communication by spreading messages across social networks through multiple vectors [4], it offers an invaluable medium for SBCC.

This research seeks to answer *what social media campaign strategies do public and water authorities use to promote social behaviour change during water quantity crises*? To do so, a comparative analysis was conducted of two SBCC social media campaigns conducted during the 2017-2018 Cape Town Drought and 2019-2020 UK Winter Floods as part of the H2020 funded aqua3S project. While research on SBCC social media campaigns is well addressed in domains such as public health interventions, few studies have examined SBCC campaigns on Facebook during floods or droughts.

Methods

Social media campaign strategy was operationalised into the essential elements of communication *channels*, *content* and *messages* [5]. Public posts on Facebook pages, groups and verified profiles by was collected one week prior, during and one week after each crisis by searching keywords and hashtags on CrowdTangle[1]. The methodological motivation to examine Facebook was twofold. First, while platforms such as Twitter impose a character limit of 280 characters, Facebook's 63,206 character-limit per post is better suited for qualitative analysis. Second, the relative ease of obtaining data from platforms like Twitter has resulted in Facebook being understudied within crisis communication literature despite its large user base [6]. The data was validated according to an inclusion and exclusion criteria to retain only relevant posts, resulting in a final sample of 1,385 posts that were analysed with NVivo 11. As case studies examine a bounded system of interest and 'is not a methodological choice but a choice of what is to be studied' [7], social media data for each campaign was analysed through thematic analysis. Thematic analysis qualitatively identifies, analyses and interprets patterns of meaning or 'themes' [8]. The sample was coded according to sub-themes within communication channel, temporality (i.e. pre-crisis, crisis and post-crisis), content and messages. This enabled the identification of SBCC social media campaign strategies that emerged from the data and cross-comparison between cases.

Results and Discussion

The SBCC social media campaigns conducted during the 2017-2018 Cape Town Drought and 2019-2020 UK Winter Floods were found to have a high degree of convergence in terms of content and messaging while diverging primarily in channels (see Table 1). In both cases, public and water authorities natively published messages from their organisational accounts. Importantly, there was significant cooperation between multi-level stakeholders in social media campaigns. UK water companies, public authorities and civil society organisations (CSOs) ran parallel campaigns focusing on aspects relevant to their operations as well as established a shared Facebook page to disseminate flood resilience content. During

[1] Data from CrowdTangle, a Facebook-owned tool that tracks interactions on public content from Facebook pages and groups, verified profiles, Instagram accounts, and subreddits. It does not include paid ads unless those ads began as organic, non-paid posts that were subsequently "boosted" using Facebook's advertising tools. It also does not include activity on private accounts, or posts made visible only to specific groups of followers.

the Cape Town drought, posts from private companies, CSOs, water suppliers and public authorities were posted natively or shared as part of a unified campaign to persuade the public to abide by restrictive water rations. The main point of divergence was endorsement of the campaign by credible voices and influencers in South Africa, which was not found in the UK sample during this time-period. Moreover, flood resilience Facebook groups in the UK circulated content and messaging originating from the campaign. However, no drought resilience groups were found in the Cape Town case, although some community Facebook groups did post and share content and messages from the campaign.

Table 1. Comparison of Strategies

	Channels				Content					Messages			
	Relevant Authorities	Multi-Level Stakeholder Cooperation	Credible Voices	Resilience Communities	Multi-media Content	Hashtags	Information & Advice	Toolkits & Resources	Challenges & Competitions	Risk Sensitisation	Self-efficacy	Solidarity	Cultural Relevance
SA	X	X	X		X	X	X	X	X	X	X	X	X
UK	X	X		X	X	X	X	X	X	X	X	X	X

In terms of content, both cases utilised multi-media to convey their messages, including video, images, infographics, memes and more. Common hashtags were also found across channels in both cases to improve the findability and shareability of posts. Publishing pages frequently posted tips and advice for saving water in South Africa and improving flood resilience in the UK. Often, hyperlinks to re-direct audiences to digital toolkits and resources were included to provide more extensive guidance. Additionally, both cases launched social media competitions and challenges to improve engagement with content, uptake in the campaign and spread messages through social networks.

There were significant points of convergence in the messaging of both campaigns. Public sensitisation of risks posed by droughts and flooding formed a key theme within these posts, such as the severe implications of Day Zero or the dangers of driving through flood waters, respectively. As the campaigns sought to persuade the public to alter patterns of behaviour, the posts often focused on enhancing self-efficacy. In South Africa, messages were targeted at how to reduce individual water usage, while the UK reinforced the need to adopt personal protective measures and avoid risky behaviour. Messages of solidarity in South Africa were typically formulated as a collective objective to avoid 'Day Zero' through individual actions, while in the UK greater emphasis was placed on community readiness as well as individual actions. Importantly, these messages were embedded in culturally relevant norms and values of the respective target audiences to enhance public receptivity to the messaging in both cases.

Conclusions

During the Cape Town Drought and UK Winter Floods, the active participation of the public was essential for effective crisis management. In both cases, SBCC social media campaigns provided a tool to engage affected individuals and communities to comply with and contribute to the countermeasures implemented by authorities. The comparative analysis of social media campaigns aimed at altering public behaviour identified a high degree of convergence in terms of channels, content and messages within the sample of Facebook posts examined during the respective crises. These initial findings highlight communication mechanisms for authorities to engage the public through social media to enhance resilience against droughts and floods. Limitations of this study are the low number of cases, although positive degrees of freedom were achieved by a large-n sample of posts. Additionally, no quantitative methods for measuring effectiveness in terms of engagement or message diffusion were conducted. Future research will seek to triangulate these results with quantitative methods to determine which sub-categories of *channels*, *content* and *messages* were most effective.

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