Theoretical perspectives on the use of social media in the propagation of health messages

Andrew McNeill
Northumbria University
Ellison Place
Newcastle upon Tyne
NE1 8ST
andrew.mcneill@northumbria.ac.uk

Pam Briggs
Northumbria University
Ellison Place
Newcastle upon Tyne
NE1 8ST
p.briggs@northumbria.ac.uk

Abstract
Influence on social media can be conceptualised as both extensive (relating to quantitative spread) and intensive (qualitative impact). Both of these are important considerations in understanding the dissemination of health messages. We outline several theoretical approaches that offer fruitful ideas for future studies including agenda-setting theory, social norms theory, social representations theory, and theories relating to emotion, framing and recontextualisation. Some of these approaches are novel in social media research and are suggestive for future research directions.

Author Keywords
Social media; twitter; healthcare; theory; psychology

ACM Classification Keywords
J.3 Computer Applications: Life and Medical Sciences: Health

Introduction
Social media can be used for the rapid spread of useful information, but can also be used for the proliferation of disinformation and harmful ideas. In a new study, we have begun to explore ways in which social media
can influence the communication of health messages, specifically assessing the proliferation of messages during the last H1N1 pandemic. In this paper, however, we ask what theory can contribute to our understanding of social media influence, arguing that theory can contribute to our understanding of two key constructs: extensive influence (the quantitative spread) and intensive influence (the qualitative force and impact). While our discussion is limited to blogs and tweets (from Twitter), many of the theoretical ideas can be applied to other platforms.

Theory and extensive influence
Numerous factors feed into the extent to which a message will be spread. On Twitter these include the use of hashtags retweets, the number of followers a user has and the use of addressing (via the @username syntax) [2, 12]. While debates may be had about the relative importance of this or that feature, when used effectively, a Twitter message can be spread throughout many users. Consequently, three theories are relevant to understanding the effect of this influence: agenda-setting theory, social norms theory and social representations theory.

Agenda-setting theory
According to this theory, people acquire cues to the relative importance of various topics based on the emphasis given to them in media [8]. Transferring this to social media, one can conclude that social media selectively amplifies traditional media [1] as well as moderating its influence by promoting citizen journalism [9]. In communicating health messages, this can be a mixed blessing. If health authorities wish to highlight an issue, social media has the power to amplify the effects of traditional media thus making the issue salient for many. On the other hand, the effect of extensive blogging and tweeting of conspiracy theories can give undue prominence to harmful ideas. For example, during the 2009 H1N1 pandemic, links to both quality news websites and poor quality blogs were frequently posted on Twitter [15].

Social norms theory
While this comprises more than one theory, the idea central to them is that human behaviour is shaped by shared rules for social behaviour. These norms can be either descriptive or injunctive. The latter are moral obligations while the former are indications of the behaviour of others. So, for example, if many people indicate via Twitter that they are going to engage in behaviours such as vaccination or taking medication, this can create or consolidate a social norm. These norms are likely to be generated within specific groups of users who share a social identity and are linked together in an online network [3]. Potentially then, whole groups of people can be identified who react positively or negatively to health interventions.

Social representations theory (SRT)
SRT [10] is widely used to explain how stable representations of an issue emerge in society. These representations serve to legitimise particular thoughts and practices regarding issues such as health, disability and criminality. In regard to health, SRT emphasises that beliefs and practices surrounding illness are "intersubjectively negotiated" [4]. Social media would be one area in which these are negotiated yet despite its increasing prevalence, there appears to be little or no research looking at its role in generating social representations. Yet social media may be used for example, to perpetuate representations of health that
focus on weight which may lead to harmful dieting. While other research has fruitfully used SRT to explore how representations of pandemics in online newspapers explain various societal approaches to vaccination and maintaining health [5] research remains to be carried out in social media studies.

**Theory and intensive influence**
Not only may a message be spread extensively, but it can have more or less influence depending on its content. Messages can generate more impact if they express negative emotion [11] or are framed in specific ways [7].

**Emotion**
Numerous theories have cropped up around emotion but considered more broadly, the study of emotions in social media has great potential. In pandemics for example, sentiment analysis can identify clusters of individuals who have negative attitudes towards a vaccine since information seems to be shared among users of similar sentiment [13]. Because there is a positive relationship between the expression of sentiment and the retweeting of information [14] this increases the likelihood that affective information about vaccines or illnesses will be shared.

Appraisal theories of emotion see action-tendencies as essential for emotion [16]. Likewise, discourse analysts see the expression of emotion as functional. In relation to social media then, it is important to ask, "When people express emotion about illness or health, what are they trying to accomplish? What behaviours are they trying to stimulate or repress?" This will help to explain health behaviours that arise through social media.

**Framing**
All messages come framed in terms of a "metamessage" which affects the interpretation of the message. Thus a message may be framed as a "crisis" or "general advice" and this affects how people receive it. Liu & Kim [7] identified four frames used in a recent pandemic on social media: general crisis, disaster, health crisis and general health issues. They suggest that framing has four functions: (1) identify causation, (2) identify source of the problem, (3) make moral judgements about the situation and (4) provide solutions. They note that "general crisis" was often used but that the use of "health issue" framing may have encouraged positive health behaviours by emphasising prevention behaviours and lifestyle factors. Understanding how messages are best framed has the potential for encouraging appropriate messages to be shared on social media by health authorities to encourage healthy behaviours.

**Recontextualisation**
Although a relatively underused approach, this theorises that when a message is reproduced, it inevitably subtly (or significantly) changes the meaning of the original message [6]. On Twitter, this can lead to the production of unfounded rumours [2] or even to the distortion of official health messages. Analysis of how messages are reproduced can uncover this process.

**Conclusion**
Social media has both intensive and extensive influence. This paper has summarised some key approaches that may be taken in understanding how health messages can be influential in social media. In the workshop we will describe how such theoretical frameworks are helping us understand the role of
tweets and blogs made during the last H1N1 pandemic. While we have only explored blogs and tweets, influence is likely to manifest itself in different ways on different social media platforms. For example, emotion will be conveyed in different ways on social media sites such as Instagram or Pinterest which focus on images. Likewise, the framing of messages is likely to be different between Facebook and Twitter where the former allows longer messages whereas the latter does not. Despite this, the theoretical perspectives are helpful even if the way influence is manifested is different.

References