



## Full length article

Working with tweets vs. working with chats: An experiment on collaborative problem solving<sup>☆</sup>Daniela Isari<sup>a</sup>, Andrea Pontiggia<sup>b</sup>, Francesco Virili<sup>c,\*</sup><sup>a</sup> Department of Management, Catholic University of Milan, Largo Gemelli 1, 20123, Milan, Italy<sup>b</sup> Department of Management, Ca' Foscari University, San Giobbe, Cannaregio 873, 30121, Venice, Italy<sup>c</sup> Department of Economics and Management, University of Sassari, Via Muroni 25, 07100, Sassari, Italy

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## ABSTRACT

This paper aims to explore how “working with tweets” differs from “working with chats”. With eight experimental sessions involving 120 Italian students, we investigate how the well known 140-character limit and other subtle differences between Twitter and a typical instant messenger affect group problem solving performances. In our laboratory experiment, teams of the same size carry out a problem solving task communicating via Twitter or Skype instant messaging. Comparative group performance is measured in terms of successful task completion time. Our results show that the lower number and volume of text messages exchanged via Twitter does not negatively affect group performance: Twitter teams are just as effective as Skype instant messaging teams. These results can be interpreted in accordance with the latest developments in multiple media choice and virtual team effectiveness theories, disclosing interesting windows of opportunities for “working with tweets” in the forthcoming organizational settings.

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## 1. Introduction

Twitter is a free web platform enabling people to publish short messages, called “tweets”. When a new tweet is sent by a Twitter user, all her registered “followers” get notified. Since its debut in 2006, Twitter users have grown over half a billion, with 135,000 new users signing up daily and 190 million unique site visitors every day (Statistic Brain, 2014). Twitter has a very peculiar trait: each “tweet” has a maximum length of 140 characters. Therefore it can be considered as a “restricted length” communication medium.

Restricted length communication is not yet well known in organizations. Most firms and institutions mainly use Twitter as a new form of communication with the outside world. But Twitter is not yet largely adopted for collaboration and teamwork inside organizations. Is “working with tweets” actually possible? In what specific forms? Existing theoretical and empirical research on similar textual communication media, like chats (Instant

Messengers: IMs, e.g. ICQ, AOL, MSN, Yahoo!, IRC, and Skype instant messaging), may represent a good departure point for an exploratory investigation. Extant research shows that IMs, while not a substitute for face to face interaction, have an important role in computer supported collaborative work. We do not know whether these findings could be extended to Twitter as well, and we aim to investigate whether working with tweets is fundamentally different than working with chats.

When attempting to apply the extensive literature on instant messengers to Twitter and restricted length communication media, important issues would arise.

First, there may be radical technical differences between tweets and textual chats. The most evident seems to be the restricted message length of Twitter. This limitation may produce important effects on conversational language and structure, as we already know from studies on individual communication by texting devices (SMSs). Besides message length, subtle differences in technical features like user interface, communication delay, user reach, and text persistence could importantly alter user perceptions, expectations, intents and actual usage patterns of restricted length communication media. We investigate the relevance of these technical differences as for a typical work activity, i.e. collaborative problem solving.

Second, in absence of specific theories on restricted length media, traditional concepts in CSCW like media richness and media

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synchronicity may be adapted to make sense of “working with tweets”. This exercise is delicate, and it would require taking into account technical, behavioural and even linguistic aspects, like expression form and discourse management strategies. We address this issue in the theoretical background session, reinterpreting consolidated studies on CSCW to understand what role Twitter and other restricted-length media may actually play in collaborative problem solving at work.

Third, despite the important, and growing, presence of Twitter in organizations, we still have to wait for years before seeing massive texting users (generation Y) at work. They are simply too young now. We recurred to laboratory sessions to observe young generations at work in collaborative problem solving exercises based on short messages. In the laboratory we can show how Twitter’s 140 characters limit and technical features actually affect textual communication in teamwork, observing different teams at work, communicating by otherwise identical instant text message systems with and without the message length restriction and technical features typical of Twitter.

The experiment proposed here is focused on textual-only communication for group problem solving, comparing Twitter, the 140-character microblog, with the Skype feature of instant messaging. Skype is one of the first and most successful synchronous communication and collaboration platforms.<sup>1</sup> Both applications are main players and widely diffused; both are available for free for all the main technological platforms and operating systems.

The comparison of Twitter and Skype instant messaging (Skype IM) was accomplished in a series of laboratory experiments in which a problem solving activity was carried out by groups of subjects using the two different systems.

Given the 140 characters message length restriction, we expected to find significant differences in communication patterns between Twitter and Skype IM sessions. Our results confirmed these expectations: the average Twitter users exchanged a significantly lower text volume, measured both in characters and in message count.

These outcomes are in resonance with recent research findings, suggesting that lower degree of media richness and synchronicity, together with the higher rehearsability and potential of public access, in presence of the 140-character limit, could push users to a lower degree of “chatness” reducing the volume of exchanged messages.

More surprisingly, the actual message length resulted higher in Twitter than in Skype IM sessions. This result, only apparently in contrast with the 140 characters message length restriction in Twitter, is commented in the [Discussion Section](#).

On the other hand, in our experiment, Twitter problem solving performance, was not negatively affected by the lower text volume exchanged: On average, Twitter groups performed just as well as Skype IM groups.

This result, while limited and partial, supports the view of restricted-length lean media as effective means in low intensity communication, suggested by recent studies reviewed below.

The structure of the paper is the following: next section presents a brief historical evolution of Twitter diffusion and use. Section 3 proposes a theoretical discussion of restricted length media peculiarities; exploring and interpreting extant literature from the technical, behavioural, and linguistic point of view, and setting grounded expectations for an empirical exploratory analysis. Section 4 is dedicated to the experimental research methodology. The experimental focus and the setting, the data sample and

measurements are discussed. Section 5 reports the results of the experiments. Section 6 provides a discussion of our findings. Finally, the last section reports some concluding remarks and limitations of the study and suggest further experimental analyses for future investigations.

## 2. Twitter usage: previous studies

Twitter was created in October 2006 as a free service that allows users to communicate via text-based messages of up to 140 characters known as ‘tweets.’ Twitter is a microblogging service where users post status messages and short communications (a.k.a., tweets) to a network of associates (a.k.a., followers) from a variety of devices. Tweets are text-based posts of up to 140 characters in length. The default setting for tweets is public, which permits people to follow others and read each other’s tweets without giving mutual permission. Each user has a Twitter page where all her tweets are aggregated into a single list (hence the name microblogging).

Tweets are not only displayed on a user’s profile page, but they can be delivered directly to followers via Internet or Short Message Services (SMS). At its introduction in 2006, Twitter was originally conceived as a mobile status update service, well expressed by the famous initial question “What are you doing now?”. Eventually, users began to share, besides status updates, any kind of information over Twitter, “witnessing accidents, organizing events, sharing links, breaking news, reporting stuff their dad says, and so much more” (Stone, 2009). This evolution is reflected by an updated Twitter question, introduced in late 2009 “What’s happening?”.

A peculiar trait of Twitter is its 140-character limitation, originally constrained by the use of the mobile SMS channel (Sagolla, 2009). This feature directly derives from the diffusion of mobile phones and the success of SMS as a pervasive communication form.

With the growing diffusion of smartphones with an Internet connection, the technical restriction inherited by the SMS channel might soon disappear: the most recent mobile Internet-based texting applications are not limited anymore to 140 characters. But microblogging is already a widely used alternative form of communication media, with an ever growing user base and specific usage patterns. The message length limitation may be considered more an advantage than a restriction: this study is a first step towards better understanding its underlying reasons.

### 2.1. Adoption and use of Twitter in organizations

At the organizational level, microblog platforms like Twitter are often used to support communication with customers. Together with other social network tools, they represent an important instrument to establish the company’s “presence” in the market (Culnan, McHugh, & Zubillaga, 2010). A similar pattern was recently observed in the US Congress, where Twitter was primarily targeted to diffusing information to the citizens, and to reporting on daily activities (Golbeck, Grimes, & Rogers, 2010).

Besides these purposes of communicating to the external public, an internal use of microblog tools in companies is occasionally reported. According to a report issued by Gartner Group (Mann, 2009) companies encourage the use of microblogs to have employees “share ideas or communicate about what projects they’re working on”. Investigations on Twitter use in major companies, like (Zhang, Qu, Cody, & Wu, 2010), show how corporate Twitter users may vary in their posting activities, reading behaviours, and perceived benefits, but they also point out barriers to adoption for internal use like a high “noise to value ratio”.

We could not actually find much more extant research on Twitter for collaboration on-the-job. Only a few studies until now

<sup>1</sup> In 2013 Skype reached 300 million actively connected users (Steele, 2013). In 2011 there were already 663 million registered users (US SEC, 2011).

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