



An exploratory study of the selection of communication media: The relationship between flow and communication outcomes

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ABSTRACT

This study examined how two communication media (e-mail and instant messaging) affected communication outcomes; and, more specifically, how these two media influenced the relationship between flow experience and communication outcomes. An experiment was conducted on a college campus using 94 student subjects. Communication outcomes were collected using a questionnaire. Data were analyzed using MANCOVA (multivariate analysis of covariance) and discriminant analysis. Playfulness was used as a covariate. The analysis showed that the e-mail group appeared to have higher communication quality and effectiveness. A significant relationship was found to exist between flow and communication outcomes when the communication medium was e-mail; but no significant relationship was found to exist when the communication medium was instant messaging. Playfulness, a covariate, affected the relationship between the media type and communication outcomes.

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1. Introduction

Previous studies on computer-mediated communications (CMC) focused primarily on comparing CMC to face-to-face communication [23,26,29,32,36,43,47,50]. Among these studies (conducted in the last two decades), e-mail was the communication medium most widely discussed, compared, and contrasted with other channels of communication [9,11,17,18,26,29,31,37]. As with e-mail, instant messaging is also an important communication medium, but it has not received the same amount of attention, and has not been studied extensively. This may be due in part to the fact that instant messaging is a relatively new application, newer than e-mail, and to the fact that most early adaptors have been younger users. As a result, instant messaging has not received adequate attention in literature.

Although they share many characteristics, there are some fundamental differences between e-mail and instant messaging. For instance, a frequently cited difference between e-mail and face-to-face communication is the reliance of e-mail on textual information, which lacks both visual and social cues during use [46]. But such a deficiency no longer exists in the case of instant messaging because instant messaging applications are equipped with a number of features that mimic visual and non-verbal cues, such as emotional icons, presence awareness, presence notification, voice chat, video conferencing, file exchange, drawing pads, application sharing, and others. These additional features and functions give instant messaging capabilities that significantly exceed those of traditional text-based e-mail previously studied. For example, the physical presence of participants is required for face-to-face communications, because the participants are necessarily aware of each other's presence due to proximity. Such awareness information is not available when using e-mail, but is available in most instant messaging applications, because instant messaging programs can notify users when someone they know becomes available online by changing the icon representing the user or even by sounding an alert.

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However, presence does not always indicate availability to start a communication. For example, a person facing you may not be available to make conversation if he or she is reading a document quietly with the head down. Such cues are, again, unavailable to the user of traditional telecommunication media. To overcome this obstacle, instant messaging applications use additional icons to represent a user's availability status while online. Common availability status indicators include "away," "do-not-disturb," "call-me," or "busy." Such presence and availability status information is not available on e-mail applications. E-mail users need to wait for a response from the other party before knowing if that party is available. Other non-verbal cues such as hand waving, may attract the attention of persons involved in face-to-face communication, and instant messaging can also provide this effect. For example, some instant messaging applications allow a user to "shake" another user's application window to attract attention. At present, few studies have empirically examined the effects of such features offered by CMC media to provide the type of surrogate functionality that would be comparable to verbal and non-verbal cues in face-to-face communications [3].

As instant messaging technology plunges ahead in its rapid evolution, it sometimes creates obstacles to smooth communication. Because features in certain instant messaging programs are proprietary, they set up incompatibilities between applications, and so offer less consistency in user experience. Now, however, standardization of instant messaging protocols is underway through the Internet Engineering Task Force's (IETF) proposal of Session Initiation Protocol for Instant Messaging and Presence Leveraging Extensions (SIMPLE). This standardization effort will serve as a foundation for enhancing compatibility across instant messaging programs because it will not limit the ability of vendors to add features to enhance interactivity or to improve communication quality. (Vendors could "borrow" features from other vendors without fear of copyright infringement.) Although standardization of instant messaging technology is not yet a reality, more interactive features, such as emotional icons, presence awareness, presence notification, voice chat, video conferencing, file exchange, drawing pads, application sharing, and others, are gradually becoming available across multiple proprietary instant messaging programs.

With these added capabilities, instant messaging will not only provide a new way to communicate, but will also offer a wealth of opportunities to change communication outcomes. As a result, some of the early theories and findings on computer-based communications may need to be revisited to assess their applicability to these new applications [29,36].

Due to the many differences between e-mail and instant messaging described above, existing theories and research outcomes applicable to e-mail may not be applicable to instant messaging; and using instant messaging instead of e-mail for task communication may lead to different research outcomes. The purpose of this study is to examine how two electronic media, e-mail and instant messaging, may affect communication outcomes differently, to examine the relationship between the flow construct and communication outcomes, and to determine how the choice of media may affect that relationship.

2. Literature review

Two areas of study that are directly related to this research are media choices and the concept of flow. A considerable amount of research has focused on the choice, use, and consequences of communication media [19,24]. This issue has become even more important recently due to the proliferation of new media that have changed CMC in fundamental ways (such as videoconferencing and instant messaging). Flow is a construct that captures a person's inner state of feeling and perception when deciding to carry out a task to its completion. In human-computer interaction, flow is characterized as being either a playful or exploratory experience. Flow is also used as a frequent construct in the study of electronic media and computing tools [49]. In the following section, the two areas of study are briefly reviewed.

2.1. Media choice

A medium is a material substance capable of carrying waves or energy. Communication media are carriers of signals or information. Choices of communication media have increased significantly in the last two decades with the proliferation of computing and networking technologies. Before the 1980s, conventional communication channels were limited to face-to-face conversation and the use of telephones, telegraphs, and paper documents. In the 1990's, a great deal of attention was shifted to e-mail and its potential impact on business organizations and society in general [9,11,17,26,29,31,37]. In recent years, the use of instant messaging and its related applications has stimulated another wave of change.

Managers' selection of media to fill different communication needs has always been an important subject of study [3,15,21,35,38,41]. Throughout this existing literature, a significant theory upon which to base media selection has been media richness theory (MRT). MRT argues that media characteristics affect media richness, which in turn affects media choice. Media characteristics that affect media richness include feedback capability, availability of non-verbal cues, language variety, and level of personal focus [2,9,10,11,25].

An example of rich media is face-to-face communication. Face-to-face communication provides immediate feedback; conveys non-verbal cues such as gestures, tones, and eye movement; and gives both parties increased personal attention. E-mail is an example of lean media. It provides feedback, but the response time is difficult to control; non-verbal cues are usually absent; and because e-mail may be addressed to a large number of recipients, it usually lacks personal attention.

However, rich media are not intrinsically superior to lean media. The ideal medium for any task depends on the type of information to be processed and the purpose of the communication. In previous studies, two main purposes of information processing were uncertainty reduction and equivocality reduction [9]. For reducing uncertainty, a medium simply needs to facilitate the exchange of a large amount of objective and numeric data. On the other hand, media for reducing equivocality need to support a number of communication cues to clarify and explain issues, rather than merely providing large volumes of data. Consequently, lean media are better for reducing uncertainty, while rich media are more appropriate for resolving equivocal situations [6,9,11].

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