

# A SOCIOMATERIALITY PRACTICE PERSPECTIVE OF ONLINE SOCIAL NETWORKING

*Research-in-Progress*

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## **Abstract**

*Social networking using social media has fundamentally changed the way people maintain friendship networks, and the way people interact and communicate with others on their social networks. Traditional research on social networking uses associations between or relationships among actors. Using a sociomateriality perspective in this paper, we address calls to the IS research community to explore new ways of seeing and theorizing IS in society, inspired and enabled by an emerging sociomaterial world view. We argue that in the case of social networking, actors (social users and their friendship networks, social network designers etc.) and artifacts (hardware, social network interface / software, Internet, social media devices etc.) are so entangled with each other that studying them as one entity instead of two makes more sense than treating them as distinct or interdependent entities. In this paper, we aim to address how sociomateriality entails itself in the phenomenon of social networking.*

**Keywords:** Sociomateriality, Online Social Networks, Facebook, Practice Perspective, Empirical Study

## Introduction

Sociomateriality is a perspective that “challenges the deeply taken-for-granted assumption that technology, work, and organizations should be conceptualized separately, and advances the view that there is an inherent inseparability between the technical and the social” (Orlikowski and Scott 2008 p. 434). It is a practice lens that emphasizes the indissolubility of social and technical (Orlikowski and Scott 2008). It emphasizes that “material agency and human agency are so entangled with each other that previously taken-for-granted boundaries are dissolved” (Yoo 2010 pp. 221-222). As individuals interact with various digital and non-digital artifacts to perform their everyday activities, the social and material aspects of everyday experience are constitutively entangled through sociomateriality (Orlikowski 2007).

Social networking using social media has fundamentally changed the way people maintain friendship networks, and the way people interact and communicate with others on their social networks. There are two aspects to using social networking to study sociomateriality. First, the proliferation of social media is an indication of the digitalization of artifacts. Second, social networking accomplishes digitalization of actors. Sociomateriality entails that the two dimensions of “actor” and “artifact” are indeed just one.

Traditional research on social networking uses associations between or relationships among actors. Orlikowski and Scott (2008) argue that “if we let go of the methodological assumption that we should think of relationships as molded into networks and frame our analysis in terms of practices instead, we can more effectively examine the specific forms of sociomateriality that are entailed in performing everyday work” (p. 467). There has been relatively little work in the IS discipline that has contributed to the growing debate about sociomaterial versus traditional views of technology. By using a sociomateriality perspective in this paper, we address the calls to the IS research community to explore new ways of seeing and theorizing IS in society, inspired and enabled by an emerging sociomaterial world view.

We argue that in the case of social networking, actors (social users and their friendship networks, social network designers etc.) and artifacts (hardware, social network interface / software, Internet, social media devices such as iPhone etc.) are so entangled with each other that studying them as one entity instead of two makes more sense than treating them as distinct or independent entities.

In this paper, we explore theoretically and empirically how sociomateriality entails itself in today’s technologically infused social networking society. More specifically, we aim to address the following research question: “*How does sociomateriality entail itself in the phenomenon of social networking?*”

## Literature Review

Orlikowski and Scott (2008) discuss the notion of sociomateriality by comparing it to traditional views of social and technical worlds. In one of the traditional views (for example, Blau et al. 1976; Huber 1990), they argue that humans and technology are assumed to be “discrete, independent entities with inherent characteristics” (p. 438). The problem with this view is that it has led to disparate, fragmented and conflicting empirical results (Orlikowski and Scott 2008). In the other traditional view of social and technical worlds (for example, Barley 1986; Prasad 1993; Boudreau and Robey 2005), humans and technology are assumed to be “interdependent systems that shape each other through ongoing interaction” (p. 438). Orlikowski and Scott (2008) argue that research which treats humans and technology as interdependent systems has led to difficulties in explaining existing technological phenomena. They add that the sociomateriality view (for example, Callon 1986; Pickering 1995; Suchman 2007) addresses these shortcomings by questioning the assumption that humans and technology are separate in the first place.

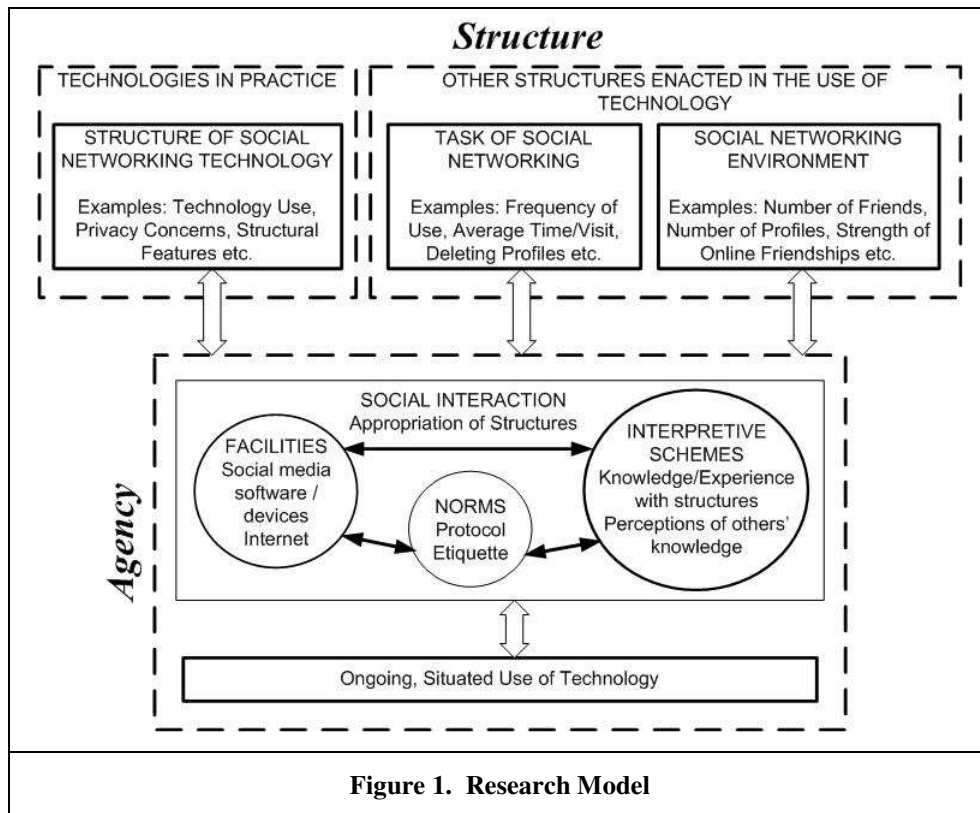
Orlikowski (2007) provides a practice lens on technology at work. She argues that traditional IS research tends to treat technology as a specific occasion/circumstance in organizations, focusing on either, the design and diffusion of technological artifacts, or on the adoption and appropriation of technological artifacts. Orlikowski (2007) adds that by separating and privileging the technology and/or the people, we lose sight of their mutual constitution. She provides examples of how sociomateriality entails itself in everyday practice using the activities of information search and mobile communication.

Wagner, Newell, and Piccoli (2010) study project survival in an enterprise system (ES) environment using a sociomaterial practice perspective. They contribute to the emerging sociomateriality literature by providing a new perspective “to understand the processes of mutual adaptation of the technical and social, during system implementation and maintenance of large scale systems” (p. 276). They find that “practices are negotiated through processes of use rather than being permanently and systematically selected at a particular moment in time” (Wagner et al. 2010 p. 276).

While the above literatures study sociomateriality in an organizational context, we investigate sociomateriality in the context of an individual’s everyday interaction with his/her online social networks.

## Research Framework

Our research framework to study the sociomateriality of social networking is presented in Figure 1. We extended the framework by Orlikowski (2007) by adapting it to a social networking context.



### Categories of Behavior that Constitute Sociomateriality in Social Networking

According to adaptive structuration theory, advanced information technologies “bring social structures which enable and constrain interaction” (DeSanctis and Poole 1994, p. 125). DeSanctis and Poole (1994) add that the different sources of social structure provided by advanced information technologies include the technology itself, the task, and the social environment. Online social networking technologies certainly fit the definition of advanced information technologies put forth by DeSanctis and Poole (1994) according to which advanced information technologies “support coordination among people and provide procedures for accomplishing interpersonal exchange” (pp. 125-126). The sociomateriality of online social networking is constituted by three categories of behavior based on the online social networking technology, online social networking tasks, and online social networking environment. Together the behaviors in these three categories explain the ubiquitous presence and sociomateriality of social networking in everyday life.

### Behaviors due to Social Networking Technology

Social networking technology refers to the actual online social networking site (software), hardware, networking technologies, and social media devices used to access the online social networking sites. The behaviors in this category pertain to the structure that is enacted by the use of the technology itself. These behaviors include the technology use behaviors and privacy-related behaviors. The technology use behavior is assessed using the user’s self-reported efficacy of the use of online social networks. Privacy-related behavior is assessed using the concerns the user has related to the collection and use of his/her personal information (Smith et al. 1996).

### Behaviors due to the Task of Social Networking

The task of social networking creates its own sources of social structure. The primary reasons for use of online social networking capture the different tasks that users use online social networking for in their everyday lives. The behaviors related to the task of social networking include the frequency of use of online social networks, average time per visit on online social networks, social networking-related behavior, and behavior related to deleting online social network profiles.

### Behaviors due to the Social Networking Environment

The social networking environment provides the third source of structure. The behaviors that fit in this category are related to the number of friends in online social networks, online social network profiles, reasons for having more than one profile, and the strength of online versus offline friendships.

## Methodology

We use a multi-method approach to address our research question. In the first part of our multi-method approach, a survey was designed based on measures from existing literature. The survey items and their literature bases are presented in Table 1. We pre-tested our instrument using researchers in the academic world. Following the pre-test, the instrument was pilot tested using real social networking users. As a part of the pilot test, 35 responses were collected from students enrolled in undergraduate IS courses at a southeastern University. Changes were made to the survey based on the pilot test feedback. The full study is currently under progress to collect further data after changes were made to the instrument based on the pre-test and the pilot test. The respondents are students enrolled in undergraduate and graduate IS and psychology courses at a large southeastern University.

Source of Behavior	Items	Literature Source Adapted From
Online Social Networking Technology	Technology use	Liu et al. (2005)
	Privacy concerns	Son & Kim (2008)
Task of Online Social Networking	Frequency of use	Sledgianowski & Kulviwat (2009)
	Average time per visit	Sledgianowski & Kulviwat (2009)
	Deleting profiles	Pew Internet (2009)
Online Social Networking Environment	Number of friends	Ellison et al. (2007)
	Number of profiles	Pew Internet (2009)
	Online vs. offline friendships	Chan & Cheng (2004)

In the second part of our multi-method approach, we use a qualitative approach to collect information from students to triangulate data from our quantitative analysis. In the third and final part of our multi-method approach, we collect secondary data from different information sources related to how the different features of Facebook have evolved over the past 3 years. Once data from these three methods have been collected and analyzed, we will use that information to identify how social (user) behavior has

an impact on material (Facebook) features and vice versa. We hope this will provide us insights into the sociomateriality of online social networking.

## Data Analysis

Data analysis includes an analysis of demographic data, behavioral change analysis using the categories described in the theoretical foundation and SEM Latent Growth Modeling (LGM) using LISREL Version 8.80. LGM refers to a class of models to analyze longitudinal data in SEM using a single sample (Kline 2010). The analysis was done on 176 completed responses.

### Demographics

The first step of the data analysis is to analyze the sample of responses for demographics based on gender, age group, and education level. 51% of the respondents were male and 49% were female. 78% of the respondents were under the age of 26. In terms of the education level, 80% of the respondents had either completed high school or had some college, technical, or associate's degree.

### Behavioral Change Analysis

In this section, an analysis of the behavioral change associated with online social networking is discussed. From the theoretical foundation, we recall that the three categories of behavioral change are behaviors related to the online social networking technology itself, behaviors associated with the task of online social networking, and behaviors related to the online social networking environment. So we proceed with the analysis according to these three categories using summary statistics and a latent growth model.

#### Behaviors due to Social Networking Technology

The behaviors that fall under this category are the technology use and privacy-related behavior. Figure 2 presents the respondents' behavioral change in the use of online social networking over the past three years in intervals of 6 months, 1 year, 2 years, and 3 years. From the figure we see the behavioral change in the respondents' use of online social networks moving from being mostly an occasional user 3 years back (with a mean of 2.377) to becoming a frequent user now (with a mean of 2.947).

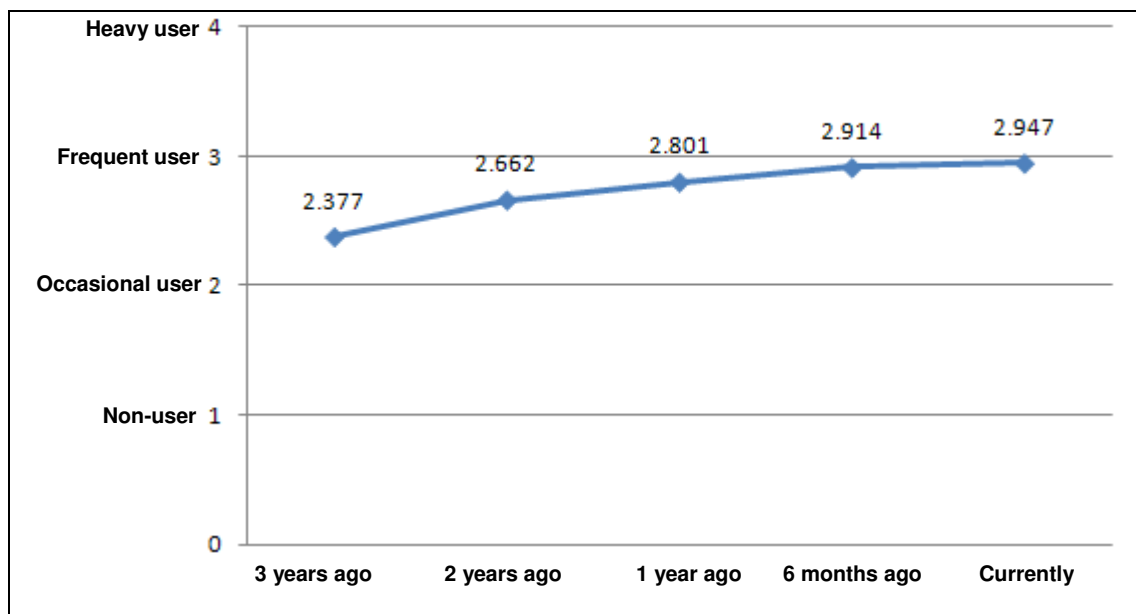


Figure 2. Behavioral Change related to Social Networking Technology Use

The privacy-related behaviors that can be attributed to the social networking technology include privacy concerns related to the misuse of information provided on online social networks, unauthorized access of private information, provision of personal information, and unforeseen uses of personal information provided on online social networks. The behavioral changes in privacy concerns are presented in Figure 3. From Figure 3, we see that there is a steady increase in privacy concerns from 2 years back to now for all the four dimensions of privacy concerns related to misuse, unauthorized access, sharing personal information, and unforeseen uses of personal information provided on online social networks.

### Behaviors due to the Task of Social Networking

The behaviors related to the task of social networking include the frequency of use of online social networks, average time per visit on online social networks, social networking-related behavior, and behavior related to deleting online social network profiles.

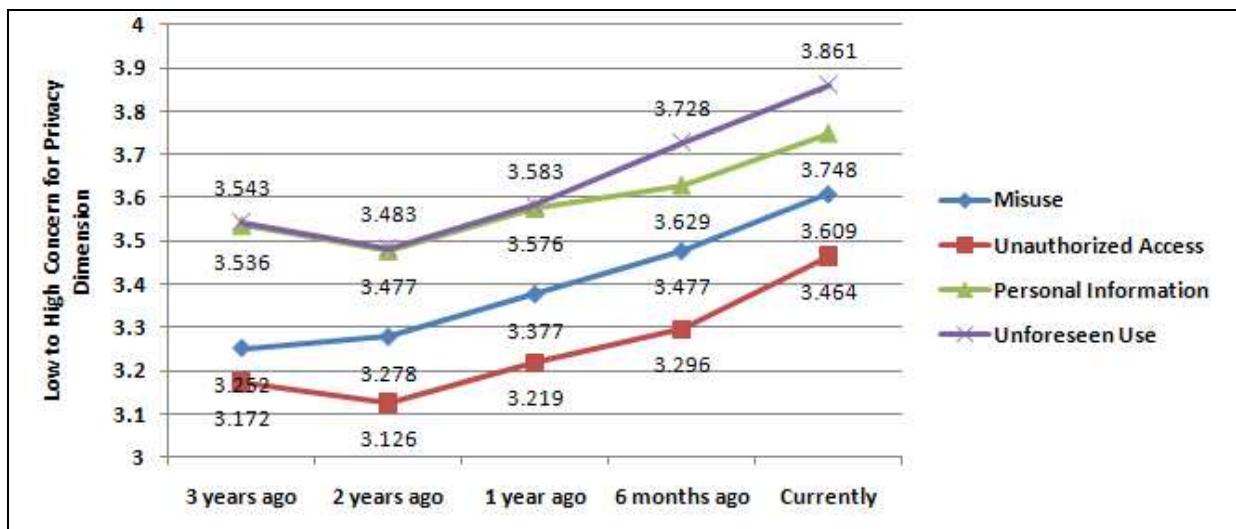


Figure 3. Behavioral Change related to Privacy Concerns

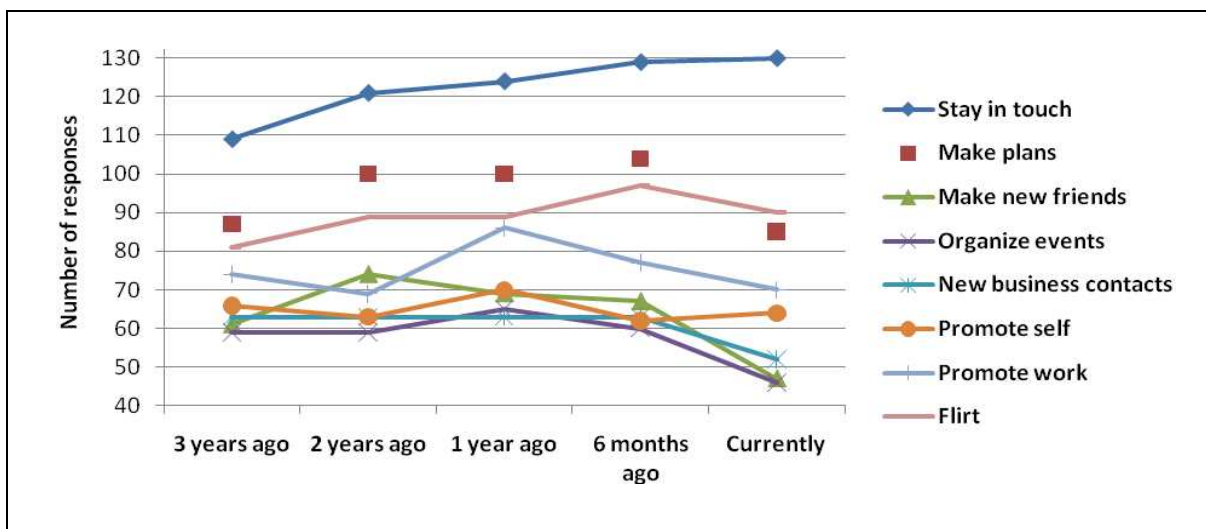


Figure 4. Behavioral Change in Online Social Networking Tasks

The most commonly used tasks in online social networking are presented in Figure 4.

As we can see, the primary task is to stay in touch with friends which steadily increased from 3 years ago to now. The second most important task is making plans with friends although this task seems to drop off after being on the rise for the past 2.5 years.

Figure 5 presents the behavioral change in the frequency of use of online social networks. From the figure, we see that the frequency of use has shown a steady increase over the past three years. Figure 6 shows and the average time per visit on online social networks over the past three years. From the figure, we see that the average time per visit increased from 3 years ago to 1 year ago, but declined after that.

### Behaviors due to the Social Networking Environment

Behaviors that fit in this category are related to the number of friends in online social networks, online social network profiles, reasons for having more than one profile, and the strength of online versus offline friendships. The behavioral change in the number of friends over the past three years is presented in Figure 7. We see that the number of respondents who report having more than 400 online friends has steadily increased over the past three years at the expense of the other categories.

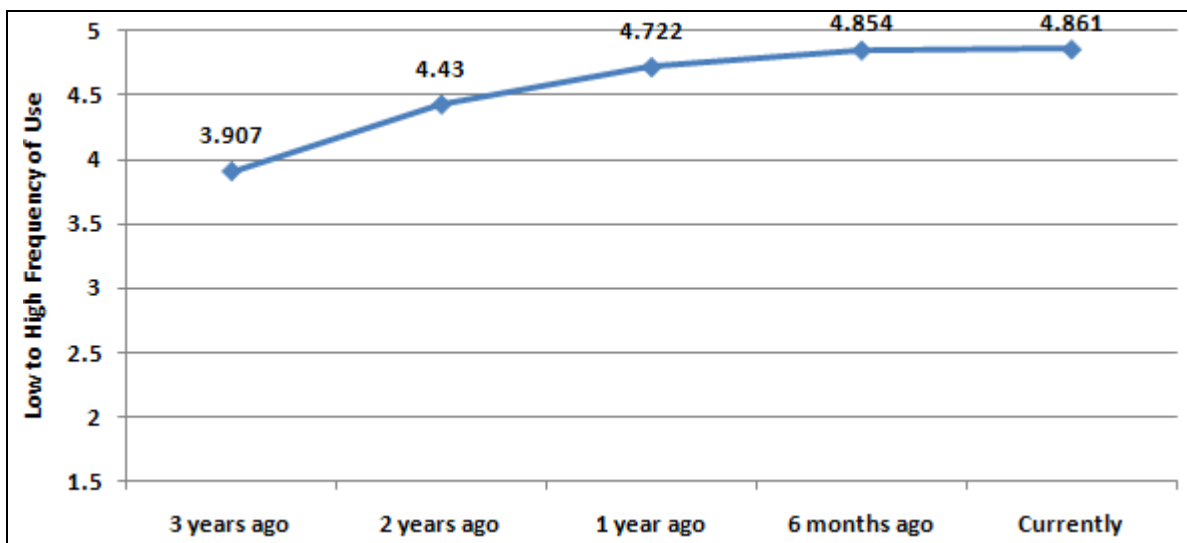


Figure 5. Behavioral Change in the Frequency of Use

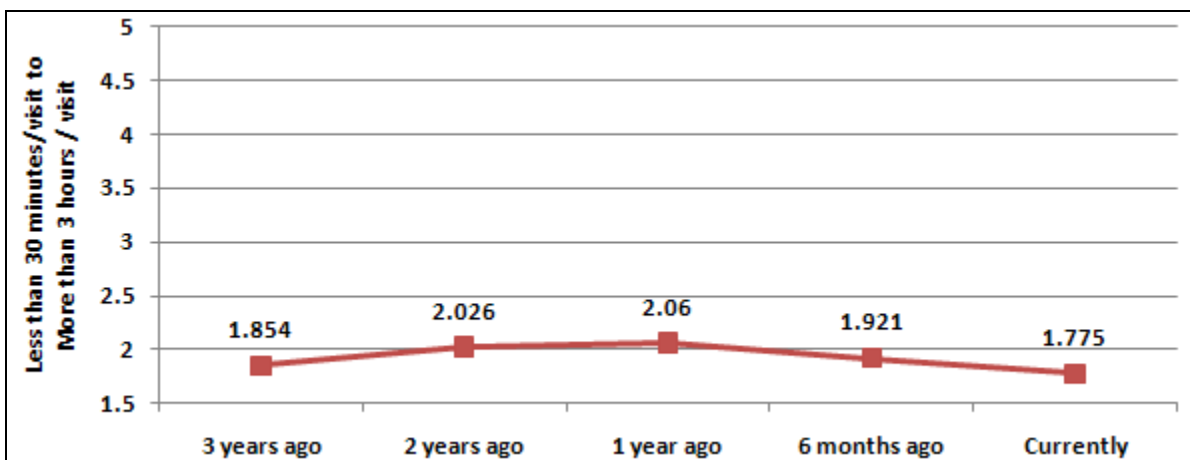
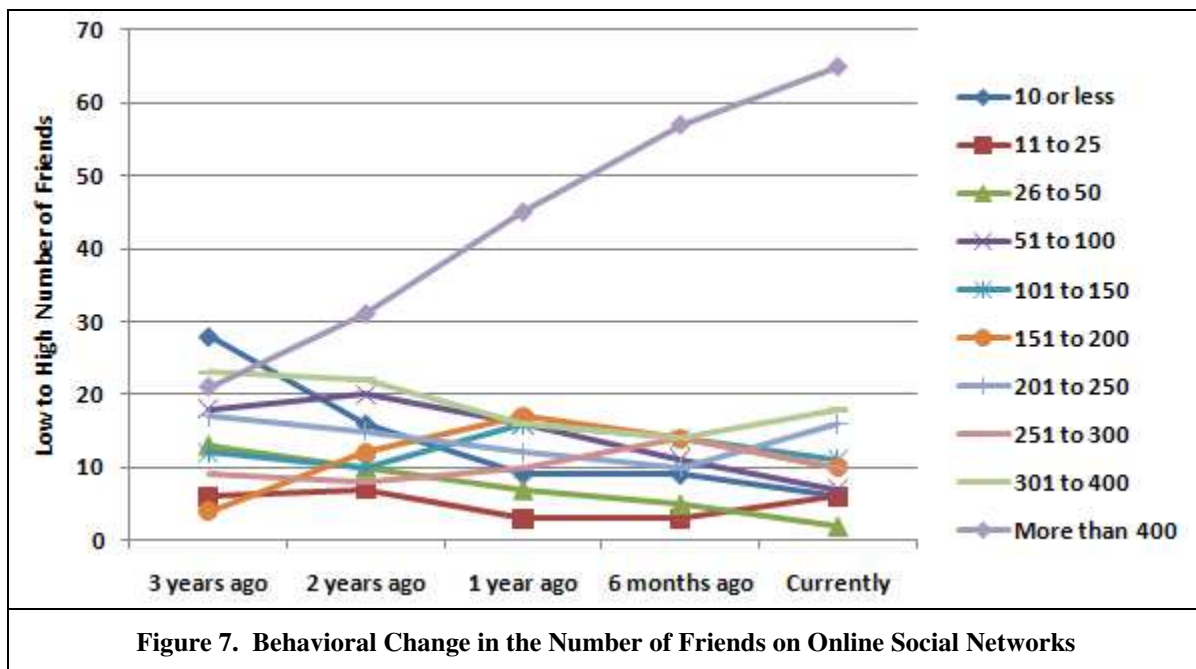
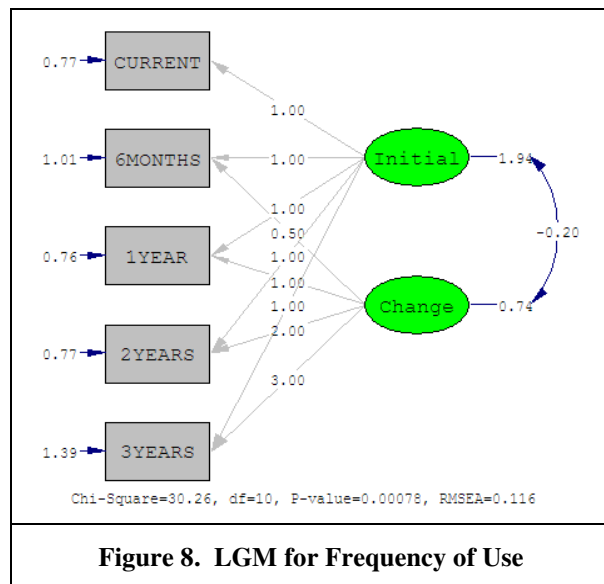


Figure 6. Behavioral Change in the Average Time / Visit



**Analysis of the Survey Data using SEM and Latent Growth Modeling**

SEM analysis was done using LISREL. Latent Growth Models (LGM) were specified to model the changes in different online social networking behaviors. An LGM for frequency of use is shown in Figure 8.



Statistic	Value
Degrees of freedom	10
Minimum Fit Function Chi-Square	28.02
RMSEA	0.12
90% Confidence Interval RMSEA	(0.07 ; 0.12)
P-Value for Test of Close Fit (RMSEA < 0.05)	0.012
Comparative Fit Index	0.97
Standardized RMR	0.074

From the fit statistics (Table 2), we see that the model Chi-Square is 28.02 (Chi-Square is rejected with a p-value of 0.0018), so the model does not fit the data well and the latent growth model is not supported. An RMSEA of 0.12 (greater than 0.10) suggests poor fit according to the rules of thumb provided by Browne and Cudeck (1993). This is confirmed by the p-value of 0.012 for the test of close fit (RMSEA < 0.05). However, a CFI value of 0.97 indicates excellent fit (Hu and Bentler, 1999). An SRMR of 0.074 (< 0.08) is generally considered favorable (according to the cutoff provided by Kline, 2010). Thus two global



indices of fit favor the model while two others don't. Based on the above fit statistics, the basic change model of latent growth is acceptable.

<b>Table 3. Maximum Likelihood Estimates for the Latent Growth Model</b>			
Parameter	Unstandardized	SE	Standardized
Latent growth factor means			
$\Delta_1 \rightarrow$ IS	4.96**	0.13	0
$\Delta_1 \rightarrow$ LC	-0.30**	0.08	0
Variiances and covariance			
IS	1.94**	0.28	1.00
LC	0.74**	0.11	1.00
IS $\leftrightarrow$ LC	-0.20	0.13	-0.17

Note. \*\* $p < .01$ ; \* $p < .05$

The estimated variances of the IS and LC factors are, respectively, 1.94 and 0.74, and each is statistically significant at the 0.05 level (Table 3). This result implies that respondents differed from one another in the rates of their increases in frequency of use as they gained experience. The direct effects of the constant on the exogenous latent growth factors are the means. The mean of the IS factor represents the average initial level of reported frequency of use. Likewise, the mean of the LC factor reflects the average amount of period-to-period decrease in average levels of frequency of use. The estimated mean of the IS factor is 4.96, which is close to the observed average level of defiant behavior currently (4.8609). The estimated mean of the LC factor is -0.30, which indicates the average year-to-year decrease in frequency of use. These results suggest that higher initial current levels of frequency of use predict lower subsequent rates of linear annual decreases in frequency of use, i.e., the way frequency of use changes over time depends on the initial status of the respondents' frequency of use.

## Future Research to Complete the Research-in-Progress

### Methodology

We plan to use qualitative information to find out what additional structures emerge from the everyday use of online social networking. We also intend to collect information on the structural features of the social networking technology to study how the changes in social networking technology features create new structures that shape the users' behaviors. The completed research paper will include those results in addition to the latent growth models for the other behaviors in our study.

### Expected Conclusion

Preliminary results based on our survey methodology indicate that online social networking affects users' behavior in a number of interesting ways. These behavioral changes include the increased frequency of use of online social networks, increased number of online friends, improved online social network self-efficacy, and increased concern for privacy. There seems to be a paradox in terms of increased usage despite the increase in privacy concerns. This paradox has been explained by Thambusamy et al. (2010) which showed that the enjoyment derived from social interaction on social network sites provides an incentive for individuals to ignore privacy concerns and act contrary to their best interests. Interestingly the average time per visit on online social networks increased for the respondents to a certain peak level and then dropped off. The respondents' still valued their offline friendships as much as their online friendships. Findings of our completed study will inform how sociomateriality entails itself in the everyday use of online social networks.

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