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# Effects of Anonymity, Media Richness, and Chat-Room Activeness on Online Chatting

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## Abstract

This paper investigates the factors that affect users' communication satisfaction within a virtual community, in particular, an online chat room. A research model consisting of 3 aspects—psychological, technological and environmental—is developed to examine effects of anonymity, media richness and activeness of chat room on social presence, privacy concern, and further communication satisfaction. We leverage on well established theories such as self awareness, SIDE model, social presence, and the institutional theory theories to make our arguments. Results from a survey conducted to test our model suggests that higher self anonymity decreases privacy concern, while higher others anonymity increase in privacy concern. We also confirm that richer media leads to an increase in social presence, which, in turn, influences privacy concern negatively. Lastly, results support that privacy concern and social presence are determinants of communication satisfaction in online chatting.

Keywords: Online Chat, Anonymity, media richness, social presence, privacy concern, satisfaction

## 1. INTRODUCTION

Virtual communities are essentially groups of people who share common interests and “form webs of personal relationship in cyberspace” (Rheingold 1993). In the context of online chat rooms, individuals cultivate personal relationships (Furlong 1995) and provide social and emotional support (Rice & Love 1987, Walther 1996). Previous research has suggested that users’ satisfaction with online communication is an important factor that determines users’ involvement and usage of the system, and further determines the sustainability, development, and success of the chat room and the community (Bailey and Pearson 1983). However, there lacks substantial prior research focusing on satisfaction in the context of online chat. Hence, our paper aims to fill this gap by identifying, on an individual level, the factors that determines communication satisfaction in an online chat room.

Specifically, two determinants of online chat satisfaction are investigated in the paper, i.e. privacy concern and social presence. Social presence is an important element in computer mediated communication—in our case, online chat room—since there is no face to face interaction (McKenna et al. 2002). Individuals are better able to model the communication process after one that is conducted face to face if social presence is high. Similarly, the prevalence of privacy concerns within computer mediated communication will restrain individuals from fully committing themselves in the communication process (Sheehan & Hoy 2000). Further, this paper also identifies psychological (anonymity of self and others), technological (media richness) and environmental (activeness of the chat room) aspects of an online chat room and examines their effects on privacy concern and social presence.

The paper is organized as follows. An extensive literature review of theories related to relationship building in computer-mediated communication is first carried out. Relevant research streams are then integrated for developing a research model. A description of the research methodology is then followed by the discussion of the data analysis. Finally, limitations, suggestions for future research and practical implications conclude the paper.

## 2. THEORETICAL FOUNDATION

### *Public and private self awareness*

Matheson and Zanna (1988) made a distinction between the social and nonsocial dimension of the self, namely, the public self and the private self. The public self reflects “the overt aspects of self which are sensitive to attention and evaluation by others”. It is a result of viewing one's self from the perspective of others, and is expressed through intentions of self presentation and social comparison. The private self, on the other hand, involves a “more covert aspects of self” and is emphasized in situations that encourage introspection, or self-evaluation in a nonsocial sense (e.g., when striving to reach personal goals).

According to the Social Identity explanation of De-individuation Effects (SIDE) model (Reicher et al. 1995, Spears & Lea 1992), social influence takes different routes depending on whether social identity (i.e. the self-perception is dominated by a group membership) or personal identity (i.e. the self-perception is dominated by the individuality of a person) is salient. The SIDE model stresses that the distinction between the two social influences can be explained through the anonymity of members within the virtual community. Anonymity of the self to others allows “one to express one's true mind, or authentic self, unfettered by concerns of self-presentation” (Spears & Lea, 1994), which results in higher private self-awareness and might lead to a reduction in conformity to group norms. On the other hand, anonymity of others to the self leads to a salient social identity, which in turn heightens public self-awareness, and thus to greater adherence to group norms (Spears et al. 1992).

### *Social Presence*

Social presence is defined by Short et al. (1976) as the degree of salience of the other person in the communication interaction and the consequent salience of the interpersonal relationship. According to them, social presence is a subjective quality of the communication medium and relates to the social psychology concepts of intimacy (determined by physical distance, eye contact, smiling and personal topics of conversation) and immediacy (determined by the medium’s capacity in transmitting information). Based on this theory,

communication media with more cues are considered to have higher social presence (King & Xia 1999). Short et al. 1976 support this by stating that the fewer channels or codes available within a medium, the less attention is paid by the user to the presence of others. Therefore, media that support audio and video information are high in social presence because it offers multiple channels of communication for exchanging verbal, non verbal and visual cues.

#### *Social Norms and Institutional Theory*

The social norms theory assumes that much of an individual's behavior is influenced by how other members of their social groups behave (Deutsch and Gerard 1955). Norms exist to regulate individual's behavior within a virtual community (Okleshen & Witte 1999). Another theory closely related to this theory is the institutional theory (Scott 1995). It examines the relationship between organizations and their environments and identifies three ways in which the organization influences individual cognition and behaviors. *Structures of signification* yield meaning and understanding through prevailing institutional structures. Individuals apply these structures as cognitive guides to understand how they should behave/act. *Structures of legitimization* validate specific behaviors as being appropriate in the organization. Individuals draw upon these structures as normative templates to reassure themselves about the legitimacy of their actions. *Structures of domination* regulate individual actions and behaviors. Individuals draw upon these structures to ensure that their actions do not violate institutional rules and to avoid being the target of organizational sanctions.

#### *Information Privacy Concern*

Information privacy concerns refer to an individual's subjective views of fairness within the context of information privacy (Campbell 1997). These perceptions of fairness vary with external factors such as industry sectors, cultures and regulatory laws (Milberg et al. 1995, Culnan and Bies 2003, Andrews 2002) as well as personal characteristics and past experiences (Donaldson and Dunfee 1994). In the age of the Internet, personal information privacy concern is about how comfortable individuals are in disclosing their personal information online (Hsu & Kuo 2003).

A conceptual model for understanding individual privacy concern by Phelps et al. (2000) identified types of personal information requested, amount of information control offered, potential consequences and benefits and individual characteristics as input factors that affect beliefs about information practices and privacy concern, which in turn lead to behavioral and attitudinal responses. Prior research also found that people perform a simple risk-benefit calculation in deciding whether or not to disclose their personal information (Lauder & Wolfe 1977). The benefits of disclosure are balanced with an assessment of the risks of disclosure (Derlega et al. 1993).

With much focus on information privacy over the Internet in the recent years, a scale has been developed by building upon previous research (Smith et al. 1996) to reflect Internet Users' Concerns about Information Privacy (IUIPC) (Malhotra et al. 2004). The authors conceptualize IUIPC as collection—the degree to which a person is concerned about the amount of individual-specific data possessed by others relative to the value of benefits received; control—control over personal information and awareness—understanding about information practices. They argue that the IUIPC is considered “an efficient and effective representation of online consumers' concerns for information privacy.”

### **3. RESEARCH MODEL**

The research model used to guide the present study is shown in figure 1. The model takes the perspective of an individual in an online chat environment, taking into account factors from the perceptions of oneself, others, communication between them and the environment. In our context of online chat room, the main aim of users is to form relationships. In order to build relationships, people need to have some form of exchange, and in our case, this exchange is the exchange of information through chatting. With these points in mind, anonymity (both self and others) characterizes the relationship between each entity, while the effectiveness exchange (of

information) is contingent upon the richness of media. Activeness, on the other hand, characterizes the interactive environment in which individuals communicate with others.

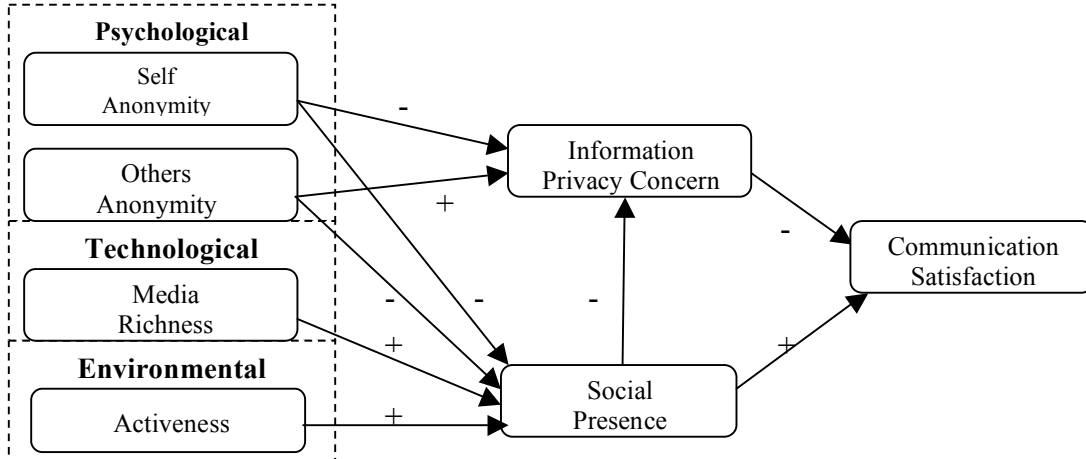


Figure 1. Research Model

Anonymity is a condition that frees individuals from social evaluation or scrutiny (Williams 1988). It offers a low threat environment by breaking down social barriers and conformance pressures, which disinhibits behaviors (Connolly et al. 1990) and enable individuals to engage in behavior they would not engage in when identified. Since chatting is an interactive process between two or more people and an individual’s attention is divided between their online chat partners (others) and themselves (self), there is a need to distinguish between two kinds of anonymity. “Self anonymity” is how an individual views the anonymity of the self to others. “Others anonymity” is how the individual views the anonymity of others to the self. These two types of anonymity can vary in different conditions. When people do not know each other at all, self and others anonymity may be very high. Self anonymity, however, can be varied through manipulating cues such as nickname, or personal profile. Nickname such as “girl23\_california” reveals the identity of the user as a 23 year old girl from California. Similarly, individuals can choose to hide their identity by choosing not to fill up personal profiles of themselves. On the other hand, others anonymity can be varied through the observation of behavior through chat history. Chat history may reveal likes and dislikes, distinguishing characteristics or chatting behavior that makes it easy to identify the individual.

High self anonymity offers a low threat environment (Connolly et al. 1990). Being unidentifiable, individuals are liberated from social and behavioral restraints and place less emphasis on self-presentation (Spears et al. 1994) and self evaluation (Cottrell et al. 1968). Their private self awareness is therefore more salient. On the other hand, when self anonymity is high, the individual is less concerned about both the amount of information collected by their chat partner, and their privacy practices due to the lack of identity and thus lack of accountability (Spears et al. 1992). Individuals also tend to demand lesser control over their personal information when they are anonymous due to the lack of accountability.

In addition, people perform a simple risk-benefit calculation in deciding whether or not to disclose their personal information (Lauder & Wolfe 1977). In an online chat environment, the benefits may include development of interpersonal relationships (Furlong 1995), feelings of companionship (Rheingold 1993), perceptions of affiliation (Walther 1994), knowledge sharing (Abbot 1988) and providing social and emotional support (Rice et al. 1987, Walther 1996). The risks of disclosing may include embarrassment, evaluation by others and the spoiling of self image (Goodwin 1992). Hence if a person feels highly self anonymous, the risk of disclosing will be lesser than the benefits, since the individual feels unaccountable for due to lack of identity. Consequently, their information privacy concern is reduced.

**H1: High self anonymity leads to a reduction in privacy concern**

Higher others anonymity leads to higher public self awareness, and according to the SIDE model, leads to a more salient social identity, which in turn results in greater concerns on self presentation and social comparison

due to greater adherence to group norms (Spears et al. 1992). In addition, when others anonymity is high, there is a lack of identification and accountability on the other person's part, thus the risk of disclosing personal information to someone whom one is unfamiliar with may be relatively higher than the benefits, since familiarity plays an important role in intent to respond (Rogers 1996) and willingness to trust (Vidmar & Flaherty 1985).

**H2: High others anonymity leads to an increase in privacy concern**

Due to the lack of identity, anonymous individuals communicate with each other through a "smoke screen". Both anonymity of the self and others reduces social cues (Connolly et al. 1990) that are critical in an interpersonal relationship. It increases the perceived distance of individuals as they are unable to identify each other, and restricts the topics of conversation to those which will not reveal individuals identity. This consequently affects intimacy and immediacy of others (Short et al. 1976, Latane 1981) in a computer mediated communication setting, thereby lowering social presence.

**H3a: High self anonymity leads to a reduction in social presence**

**H3b: High others anonymity leads to a reduction in social presence**

Daft and Lengel (1984, 1986) first coined the term "media richness" to represent the capacity of communication media to process "rich" information. Rich media allows more types of information to be exchanged simultaneously, facilitating communicators to clarify and reduce any message ambiguity (Burke & Chidambaram 1999). In the context of an online chat room, media richness can be varied through the use of different chat features such as text chat, web cam and voice chat. A synchronous text based chat room will be considered lean because it is limited to a single linguistic channel: text. However, users have innovatively created icons or characters to make text-based chatting "richer". Examples include "smileys", or embedding words in text such as \*grin\* (Wilkins, 1991). On the other hand, a synchronous web cam enabled, voice chat enabled chat room will be considered even "richer" because it now provides, in addition to text, other channels to facilitate human interaction and make it as rich as possible as users are now able to view or hear their interaction partner.

Media richness and social presence theory are closely related to one another. Communication cues that typically yield higher social presence are those that convey immediacy of others (Latané 1981). Numerous studies comparing face to face and computer mediated communication, as well as the exchange of physical and aural cues via audio- and video-conferencing systems, predominantly report greater feelings of "social presence" when more cues are available, suggesting that immediacy and intimacy is itself highly dependent on the exchange of multiple cues (Walther & D'Addario 2001).

**H4: Rich media leads to an increase in social presence**

The social presence theory suggests that computer-based communication media may eliminate the type of communication cues that individuals use to convey trust, warmth, attentiveness and other interpersonal affections (Short et al. 1976). In a lean social presence situation, it is easier to hide information and engage in unreliable behavior. In this case, the demand for control of personal information and degree to which individuals are concerned about their awareness of their chat partners' information practices and the amount of information collected will be higher due to the lack of nonverbal feedback cues that prevents individuals from judging the sincerity of the other party (King & Xia 1999).

**H5: High social presence leads to a reduction in privacy concerns**

Bagozzi and Dholakia (2002) state that the virtual environment acts as an important reference group for its individual participants. We expect the activeness of the chat room to play a part in affecting the social presence within that environment. The institutional theory (Scott 1995) states that prevailing institutional structures yield meaning and understanding. Therefore a more active chat room may make the individual feel more "real" as there is evidence of people chatting within the chat room. Furthermore, when people discover they have similar problems, opinions or experiences through observing conversations in an active chat room, then according to the structures of legitimization they feel validated as being appropriate, and subsequently feel closer to the people

within the chat. Activeness might also make an individual feel more “warm” due to the amount of activity happening there instead of a quiet chat room where no body is participating.

**H6: Increase in activeness of a chat room leads to an increase in social presence**

Bailey and Pearson (1983) define satisfaction in a given situation broadly as the sum of one's feelings or attitudes toward a variety of factors affecting that situation. Online chat environments provide a variety of benefits which are carried out purely through the communication between users. These may include development of interpersonal relationships, feelings of companionship, and perceptions of affiliation (Walther 1994) and provide social and emotional support (Rice et al.1987, Walther 1996). We argue that when information privacy concern is high, individuals may choose to refrain from disclosing information about them. This may in turn affect the level of communication satisfaction as the individual is unable to be himself/herself fully during the process due to information privacy concern constraints.

**H7: High information privacy concerns lead to a reduction in communication satisfaction**

When social presence is higher, individuals feel more intimate and immediate to their chat partners. Hence there is more feeling of warmth and closeness towards their chat partners (Short et al. 1976), which in turn influences conversation satisfaction as the main objective of online chatting is to fulfill their social interaction needs such as building relationships or finding support (Furlong 1995, Walther 1996).

**H8: High social presence leads to an increase in communication satisfaction**

## **4 Research Method**

### **4.1 Setting, participants, and data collection methods**

A field study was carried out with the intention of getting real online chatters, rather than create a controlled experiment which would affect and restrain their normal chatting behavior. Yahoo! Chat was selected as the survey context because Yahoo!Chat is among the most popular online chat rooms in the world. Yahoo!Chat consists of the usual chat features such as emoticons (known in Yahoo! Chat as “smileys”), changing of font color and type and also boosts a number of additional features such as voice chat or webcam. Users were approached from all chat rooms under the “Cultures and Community” category.

We used two strategies in persuading users to fill up the survey. Firstly, we used the nickname “who\_wants\_to\_do\_paid\_survey”. Upon entering the chat rooms, we entered the link of the survey in the main chat room window and publicly announced the details of the survey. Secondly, users were approached individually by sending private messages to them. After the initial introduction and brief get to know each other session, they were briefed on the details of the survey. Once they expressed interest, they were then directed to an online survey where they can simply complete it online.

### **4.2 Measurement**

Please refer to Appendix A for the measurements used for our survey.

## **5 DATA ANALYSIS**

### **5.1 Subject information**

71 out of 87 who started the survey completed it. Since most subjects in a pretest can complete the survey was about 10-15 minutes, therefore final responses that took less than 10 minutes were considered invalid. 65 valid responses were thus returned and entered in the database for further analysis. The 65 subjects were recruited from 10 chat rooms under the “Cultures and Community” category, representing very diverse background. Among them, 28 (43.1%) were female and 37 (56.9%) were male. The average age was 24.6.

### **5.2 Measurement Model**

The research model was tested using *Partial Least Square* (PLS) with the PLS Graph 3.0. A general method for checking individual item reliability involves checking whether individual item loadings are above 0.6, or ideally

0.70 (Barclay et al. 1995, Chin 1998). The measurement items in the present study's model generally loaded heavily on their respective constructs as presented in Table 1, with most loadings above 0.6, except that the first item to measure privacy concern with a slightly small size (0.59).

	<b>Self</b>	<b>Others</b>	<b>Media</b>	<b>Activeness</b>	<b>Privacy</b>	<b>Social</b>	<b>Satisfaction</b>
Self-Anonymity 1	<b>0.81</b>	-0.11	0.03	0.19	-0.59	0.02	0.28
Self-Anonymity 2	<b>0.94</b>	-0.05	-0.25	0.01	-0.63	-0.14	0.09
Self-Anonymity 3	<b>0.86</b>	-0.05	-0.30	-0.12	-0.64	-0.07	0.00
Self-Anonymity 4	<b>0.86</b>	-0.06	-0.42	-0.08	-0.55	-0.23	-0.03
Others' Anonymity 1	-0.13	<b>0.89</b>	0.04	-0.25	0.53	-0.28	-0.41
Others' Anonymity 2	-0.12	<b>0.66</b>	-0.05	0.01	0.19	-0.15	-0.26
Others' Anonymity 3	0.02	<b>0.64</b>	-0.19	-0.29	0.13	-0.20	-0.42
Others' Anonymity 4	0.12	<b>0.88</b>	0.03	-0.07	0.21	-0.11	-0.32
Media richness 1	-0.08	-0.02	<b>0.80</b>	0.49	0.00	0.54	0.48
Media richness 2	-0.32	-0.10	<b>0.87</b>	0.31	0.06	0.66	0.55
Media richness 3	-0.24	0.13	<b>0.78</b>	0.23	0.16	0.48	0.30
Media richness 4	-0.26	-0.03	<b>0.85</b>	0.27	0.07	0.57	0.47
Activeness 1	0.03	-0.11	0.34	<b>0.89</b>	-0.14	0.32	0.33
Activeness 2	-0.05	-0.33	0.39	<b>0.92</b>	-0.16	0.47	0.40
Activeness 3	0.04	-0.06	0.32	<b>0.89</b>	-0.03	0.26	0.32
Privacy concern 1	-0.32	0.28	-0.19	-0.16	<b>0.59</b>	-0.30	-0.34
Privacy concern 2	-0.32	0.23	-0.07	-0.05	<b>0.60</b>	-0.30	-0.33
Privacy concern 3	-0.32	0.46	-0.09	-0.13	<b>0.66</b>	-0.37	-0.39
Privacy concern 4	-0.70	0.20	0.28	0.07	<b>0.87</b>	-0.08	-0.19
Privacy concern 5	-0.72	0.25	0.19	0.02	<b>0.90</b>	-0.16	-0.25
Privacy concern 6	-0.72	0.21	0.13	-0.09	<b>0.79</b>	-0.14	-0.25
Privacy concern 7	-0.55	0.47	0.15	-0.17	<b>0.83</b>	-0.16	-0.33
Privacy concern 8	-0.51	0.51	0.11	-0.19	<b>0.89</b>	-0.24	-0.35
Privacy concern 9	-0.57	0.34	0.02	-0.21	<b>0.87</b>	-0.25	-0.35
Privacy concern 10	-0.65	0.37	0.00	-0.11	<b>0.80</b>	-0.21	-0.37
Social Presence 1	-0.25	-0.21	0.73	0.36	-0.10	<b>0.84</b>	0.59
Social Presence 2	-0.17	-0.39	0.59	0.38	-0.19	<b>0.85</b>	0.58
Social Presence 3	-0.11	-0.25	0.64	0.41	-0.27	<b>0.86</b>	0.62
Social Presence 4	0.03	-0.17	0.42	0.26	-0.38	<b>0.82</b>	0.62
Social Presence 5	-0.06	-0.18	0.61	0.29	-0.19	<b>0.89</b>	0.60
Social Presence 6	-0.13	-0.17	0.54	0.43	-0.21	<b>0.83</b>	0.51
Social Presence 7	0.02	-0.15	0.43	0.26	-0.27	<b>0.77</b>	0.43
Com. Satisfaction 1	0.24	-0.39	0.46	0.18	-0.47	0.60	<b>0.87</b>
Com. Satisfaction 2	-0.04	-0.29	0.45	0.48	-0.22	0.50	<b>0.76</b>
Com. Satisfaction 3	-0.06	-0.50	0.51	0.37	-0.24	0.66	<b>0.90</b>
Com. Satisfaction 4	0.25	-0.43	0.35	0.26	-0.46	0.52	<b>0.82</b>
Com. Satisfaction 5	-0.01	-0.31	0.49	0.41	-0.25	0.52	<b>0.79</b>
Com. Satisfaction 6	-0.07	0.31	-0.49	-0.32	0.27	-0.53	<b>-0.78</b>

Table 1. Loadings and Cross-Loadings of Measures

To examine internal consistency, composite reliability and Cronbach's alpha are reported in Table 2. Because all reliability figures are above 0.7 (Nunnally 1978), the internal consistency criteria are met

The third step to assess the measurement model involves examining its discriminant validity. Off-diagonal elements in Table 2 represent correlations of all latent variables, while the diagonal elements are the square roots of the Average Variance Extracted (AVE) of the latent variables. For adequate discriminant



validity, the AVE of any latent variable (diagonal elements) should be greater than the variance shared between the latent variable and other latent variables (corresponding off-diagonal elements) (Barclay et al. 1995). Data presented in Table 2 therefore satisfy this requirement.

	Composite reliability	Cronbach's Alpha	Self Anonymity	Others Anonymity	Media Richness	Activeness	Privacy Concern	Social Presence	Satisfaction
<b>Self</b>	0.93	0.89	<b>0.87</b>						
<b>Others</b>	0.85	0.79	-0.08	<b>0.77</b>					
<b>Media</b>	0.90	0.84	-0.27	-0.02	<b>0.83</b>				
<b>Active</b>	0.93	0.88	0.00	-0.22	0.39	<b>0.90</b>			
<b>Privacy</b>	0.94	0.93	-0.70	0.43	0.08	-0.14	<b>0.79</b>		
<b>Social</b>	0.94	0.93	-0.12	-0.26	0.68	0.41	-0.27	<b>0.84</b>	
<b>Satisfaction</b>	0.93	0.63	0.10	-0.46	0.56	0.40	-0.40	0.68	<b>0.82</b>

Table 2. Internal Consistency and Discriminant Validity of Constructs

Another criterion for adequate discriminant validity requires that loadings of indicators on their respective latent variables are higher than loadings of other indicators on these latent variables and the loadings of these indicators on other latent variables. Table 1 largely demonstrates adequate discriminant validity, with the exception of the first three items to measure privacy concern. These three items were dropped from subsequent analysis<sup>1</sup>.

### 5.3 Structural Model

Bootstrap resampling was performed on the structural model to examine path significance levels. A summary of the outcomes for hypotheses testing is presented in Figure 2.

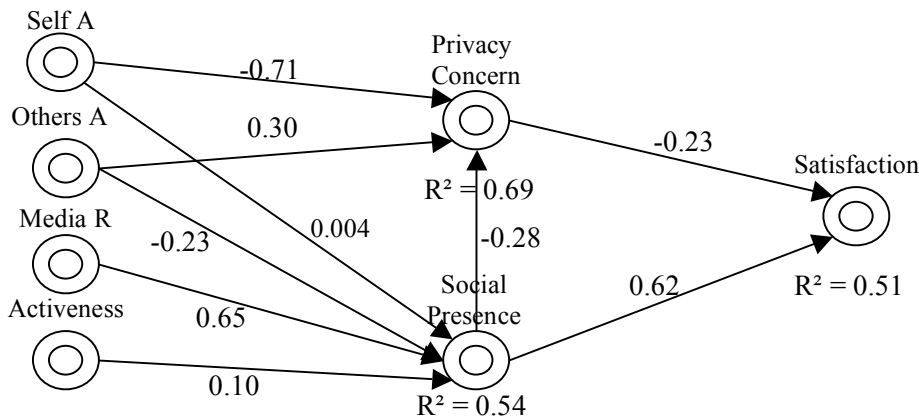


Figure 2. PLS Test of the Research Model

The predictive power of a PLS model can be measured by examining the R Square values. As shown in figure 6, the model explains a considerable amount of variances of all endogenous variables.

### 5.4 Discussion of results

Self anonymity was found to directly influence privacy concern in a negative way, while others anonymity was found to affect privacy in a positive manner. Therefore, H1 and H2 are supported. Our results showed that self anonymity has no effect on social presence. Therefore H3a was not supported. This could be because since

<sup>1</sup> In fact, we have run the structural model with and without these three items. All path significance and direction remain the same, indicating the presence or absence of these items does not affect the final result.

social presence refers to the degree of salience felt with another entity, more focus will be on others, rather than on the self. Therefore anonymity of the self may not play that important a role with regards to social presence as we thought. Others anonymity, as expected, affects social presence negatively, thus H3b is supported. H4 is also supported, confirming previous studies that media richness and social presence are closely related (Culnan and Markus 1987). Our results confirm that social presence affects information privacy concern, thus H5 is supported. Activeness was found to have insignificant effect on social presence, hence H6 was not supported. It seems that the general atmosphere of a chat room does not influence users' perception of a particular chat experience. Lastly, our findings confirm that information privacy concern has a negative effect on communication satisfaction, while social presence has a positive effect on communication satisfaction. Hence, H7 and H8 are supported.

## **6 CONCLUSIONS**

### **6.1 Theoretical Contributions**

Whereas previous studies focused on the individual aspects of virtual community (Burnett 2000, Berghel 2001, Kozinets 1999), this study presents a broad framework that incorporates psychological, technical and environmental factors to give a better insight to researchers on the variables that act on an individual while interacting in an online chat room. We identify two influences on communication satisfaction—social presence as a facilitating factor, which has positive effect on satisfaction, and privacy concern as an inhibiting factors, which has a negative effect on satisfaction.

Our findings suggest that it is important to distinguish between types of anonymity, especially in a social context of two-way communication. Self anonymity reduces privacy concern and others anonymity increases privacy concern. The implication is that the more anonymous an individual perceive himself/herself as, the more likely he/she will express him/herself freely; while the more anonymous an individual perceive his chat partner is, the more likely he/she feels constrained to express him/herself.

### **6.2 Practical Contributions**

This research helps chat room practitioners understand the importance of helping their users to reduce privacy concerns to ensure a more satisfactory communication process, translating to increased user base and better word of mouth. For example, this could be through better systems that allow users an option to better protect their own identity or facilitate them to trace others identity information. Further, chat room practitioners can also benefit from this study by understanding that the provision of richer media can enhance users' feeling of warmth and intimacy of the chat room, which not only directly contributes to user's satisfaction, but also helps reduce users' privacy concern. In other words, a chat room equipped with high media richness capacity can encourage users to chat and speak more openly.

### **6.3 Limitations**

Our study did not take into account the type of information that was being shared during the chat interaction. Our study represented generalized personal information—those that are generally disclosed by people during online chatting. Phelps, Nowak and Ferrell (2000) identified different types of personal information have different affects on the privacy concern level. Therefore, there should be a distinction made between the type of information being asked for and disclosed and the subsequent effect on information privacy concern. Lastly, subjects who participated in our online survey may tend to have a lower privacy concern than those who refused to participate. This could lead to a sample bias, as it is likely that those who are willing to participate are more likely to disclose, more open and more willing to make friends. Hence this may imply our results can only apply to these people instead of the entire online chat population.

### **6.4 Suggestion for future research**

Journad and Lasakow (1958) argued that females disclose more than males. Supporting this, Milne et al. (2004) found that males are more likely to protect their information online than females. Therefore, it would be interesting to investigate how males and females react differently to anonymity and social presence, and their effect on information privacy concerns.

In addition, we recognize that deception is an important factor that inhibits users from chatting online. In fact, there have been many studies on deception in computer mediated communications (Carlson & George 2004). O'Sullivan (2000) found that the ability afforded by CMC to manage self-presentation can result in the use of additional ingratiation and impression management tactics that may include deception. Therefore, future research may extend our research model by examining the influence of anonymity, media richness, and chat room activeness on users' deceit intention.

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## Appendix A: Survey Questions

**Anonymity:** 6 items adapted from Pinsonneault, Heppel (1997). The other two were created for this study

### *Self Anonymity*

1. In my most recent chat experience, I believe my online chat partner(s) could identify me through my nickname
2. In my most recent chat experience, I believe I had distinguishing online chatting characteristics that allowed my online chat partner(s) to identify me
3. In my most recent chat experience, I believe it was possible to trace my identity through the chat system (such as through IP address or observing my behavior through chat history)
4. In my most recent chat experience, I felt I was anonymous to my online chat partner(s)

### *Others Anonymity*

1. In my most recent chat experience, I did not know my online chat partner(s) well enough to identify him/her through their nickname
2. In my most recent chat experience, I believe it was possible to identify my online chat partner(s) based on his/her distinguishing online chatting characteristics
3. In my most recent chat experience, I believe it was possible to trace my online chat partner(s) identity through the chat system (such as through IP address or observing his/her behavior through chat history)
4. In my most recent chat experience, I felt my online chat partner(s) was anonymous to me

**Media richness:** 4 questions adapted from Carlson and Zmud (1999).

1. In my most recent chat experience, the media I used allowed me and my online chat partner(s) to give and receive timely feedback
2. In my most recent chat experience, the media I used allowed me and my online chat partner(s) to tailor our interaction to our own personal requirements.
3. In my most recent chat experience, the media I used allowed me and my online chat partner(s) to communicate a variety of different cues (such as emotional tones, visuals or sounds) in our interaction.
4. In my most recent chat experience, the media I used allowed me and my online chat partner(s) to use rich and varied language (such as numeric data, pictures or non word expressions that have meanings) in our interaction.

**Activeness:** 3 items were created to measure activeness of chat room

1. How often do people from this chat room post comments in the main chat window?
2. There is a significant number of different chatters who post comments in the main chat window
3. In general, how would you rate the level of activity in this chat room?

**Social Presence:** 7 items adapted from Burke & Chidambaram (1999)

In my most recent chat experience, the interaction with my online chat partner(s) was (1) **personal**, (2) **warm** (3) **close**, (4) **humanizing**, (5) **expressive**, (6) **emotional**, and (7) **sensitive**

**Information Privacy Concern:** 10 items adapted from Malhotra, Kim and Agarwal (2004)

In my most recent chat experience with my online chat partner(s), ...

1. my privacy was really a matter of my right to **exercise control and autonomy** over decisions about how my information was collected, used and shared.
2. the **control of my personal information** lay at the heart of my privacy
3. my privacy was invaded when **control is lost or unwillingly** reduced as a result of chatting
4. when my online chat partner(s) sought personal information from me, he/she should **disclose the reason for wanting it**
5. it was very important to me that I was **aware and knowledgeable** about how my personal information disclosed through chatting with my online chat partner(s) will be used
6. A good **privacy policy** from Yahoo! Chat should be **clear and conspicuous**
7. it **bothered me** when my online chat partner(s) asked me for personal information
8. when my online chat partner(s) asked me for personal information, I **sometimes thought twice** before providing it
9. it bothered me to give personal information to **my online chat partner(s)**
10. I'm concerned that my online chat partner(s) was **collecting too much** personal information about me

**Communication Satisfaction** 6 items adapted from McKinney et al. (2002)

1. In my most recent chat experience with my online chat partner(s), I felt Unsatisfied vs. Satisfied
2. In my most recent chat experience with my online chat partner(s), I felt Displeased vs. Pleased
3. In my most recent chat experience with my online chat partner(s), I felt Frustrated vs. Contented
4. In my most recent chat experience with my online chat partner(s), I felt Terrible vs. Delighted
5. After my most recent chat experience with my online chat partner(s), I will recommend Yahoo! Chat to my friends
6. After my most recent chat experience with my online chat partner(s), I will never use Yahoo! Chat again