

Psychoanalysis of Online Behavior and Cyber Conduct of Chatters in Chat Rooms and Messenger Environments

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ABSTRACT

With ease of access of internet connectivity and owing to ability of maintaining anonymity, online chatting has become very common. Based on an empirical study comprising of more than 700 chatting sessions spread over a period of 15 months with nearly 2500 online chatters, this paper aims to present a psychological study and analysis of the behavior of chatters in online chatting environments. It has been found that the chatting environments are dominated by male gender and explicit sexual expression is common. The paper also laments the ability of chatting environments to be exploited as breeding ground for cyber crimes by using 'social engineering'. On the sidelines, the paper also lists the motivations driving the people to chat as well as the various rewards and drawbacks that chatting poses to the chatter in specific and society in general.

Keywords - Chat Room, Chatting, Messenger, Pornography, Sex

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I. INTRODUCTION

With the penetration of technology in the remotest corner of the world and the reduced costs combined with the ease of availability of internet connectivity, online communication has become common. This online communication takes various forms ranging from blogs, forums, chatting, e-mails to submission of feedback and responses to questionnaires online. These forms of communication can further be divided into two categories based on whether the communication is taking place in real time mode or not. More specifically, real time communication refers to both the communicating agents to respond to each other immediately. This immediate response by one party to the communication of the other party generally is in range of minutes as opposed to case of hours or days or more as in forums. Even if the communication in such forms as forums is immediate coincidentally, it is not termed as real time mode of communication. It is also noteworthy that instead of two, there may be more than two parties also involved in real time communication.

The word 'Chatting' originates from the fact that 'Chat' refers to 'informal conversation'. Hence when informal conversation is done online, it is called 'Online Chatting' or many a times simply 'Chatting'. Wikipedia [1] defines online chat as any kind of communication over the Internet that offers a real-time transmission of text messages from sender to receiver. Chat messages are generally short in order to enable other participants to respond quickly. Thereby, a feeling similar to a spoken conversation is created, which distinguishes chatting from other text-based online communication forms such as Internet forums and email. Online chat may address point-to-point

communications as well as multicast communications from one sender to many receivers and voice and video chat, or may be a feature of a web conferencing service.

Various tools used for chatting include Instant Messengers (IM) and Internet Relay Chat (IRC). IM is a peer-to-peer service for remote users to communicate with each others. There are many IM systems such as MSN Messenger and Yahoo Messenger which are used by millions of users every day. The websites providing platforms for chatting may provide the chatters with options to choose from, for chatting. These mainly include Flash, Java and HTML.

The present paper presents the psychological analysis of the behavior of online chatters in the cyberspace scoped by chat rooms or messenger environments. The present paper uses the term 'male' for boys as well as men, interchangeably while the term 'female' has been similarly used to refer to girls as well as women.

II. LITERATURE REVIEW

Trausan [2] has demonstrated the system providing automatic support for the analysis of online collaborative learning chat conversations by taking the instance of tutor and its students. Rebedea et al. [3] have developed a tool for the discovery of the significant topics occurring while the conversation is going on among the chatters. By developing lexical and domain ontologies, they have extracted this data in the structure of socio-semantic form. Additionally, their work also discovers the contributions of the chatters during chatting. Dascalu et al. [4] have developed a system for the assessment of the competencies of participants taking part in the collaborative chatting environment. They have designed and implemented this system by making use of scores for

each utterance in the chat and annotations. For calculation of scores, they have taken into consideration numerous factors. Saini [5] has attempted to bring more awareness in research community and sensitize the masses about online and offline exposure to obscene and pornographic content, and has lamented the thinning of line of demarcation there between. Shukur et al. [6] have designed and developed an oracle in chatting software that is meant to give early warning to the chatting software users about their chatting partners based on the communication between the two stakeholders. Their approaches include expert rule, data mining, ontology as well as simple text processing. They have also lamented on the issue of safety and privacy, specifically of young children, when viewed from the perspective of parents. Schönfeldt and Golato [7] have discussed the ways by which the chatters take turns during chatting. They have also discussed the mechanism of repair of topics that get fractured during chatting owing to some other topic emerging from the ongoing discussion.

Bengel et al. [8] have developed a home-land security system through chat profiling by detection of chat room topic by means of classification. They have implemented the concept and demonstrated that their archiving and search system provides results promising enough to make the system implementation possible in real time. Kim and Ra [9] have constructed a relation table containing the mapping of general and chatting vocabularies. They have intended to present a resolution method for ambiguity resolution that occurs during the process of comparison of the languages used in general and in chatting. Kadav et al. [10] in an attempt to improve and enhance the online video chatting experience have used the concept of Touch Live Connect (TLC). They advocate that using TLC which can detect motions also; users can feel more connected as they view the amplified gestures through their specifically handheld devices. Saini and Desai, have worked in an attempt to comprehend the psychology of online advertising of Pornography as well as online advertising of body-enhancement products by spammers. They have presented slang unigrams based classification of male body-enhancement spam emails [11], identification of Hindi words in Pornographic spam emails [12] as well as identification of most frequent lexis in Body-enhancement spam emails [13].

Using a self-selected anonymous Internet sample, Hospers et al. [14] with an objective to describe the process of Internet chatting, and subsequent dating and sexual risk behavior among Dutch men who have sex with men, asked the participants selected from a prominent gay chatting website to complete an online questionnaire about chatting and dating and sexual risk behavior. They found that Eighty-two per cent chatted at least once a week, 88% had ever dated through chatting and of these 89% had had sex with one or more e-dates. With respect to the last e-date, almost 50% had had anal sex with their last e-date, and 15% reported unprotected anal sex. Especially among HIV-positive men, a high percentage of unprotected anal

sex was reported to the tune of 39%. Hospers et al. [14] have concluded that the Internet is a popular new meeting place for Men having Sex with Men and attracts men with a different demographic profile. Through their research work, they have observed that the level of risk behavior warrants the opportunities for interventions on the Internet with special attention to HIV-positive chatters. Cho et al. [15] in their research work have done an analysis of current video chatting situation and connection status. They have also proposed a technical method to block the obscene contents. Their proposed method is based on the analysis of chatting contents and selectively blocking the sound or video or both data streams.

Fenwick et al. [16] have identified the importance of the nurse–mother relationship and demonstrated that it is both the context and method by which nursing care is delivered. They have further observed that the verbal exchanges that take place between nurse and mother influence a woman's confidence, her sense of control and her feelings of connection to her infant. In this context, they have concluded that chatting is the important approach and mechanism through which positive interactions are initiated, maintained and enhanced. Their study confirms that nurses' language acts as a powerful clinical tool that can be used to assist parents in gaining confidence in caring for children. Leung [17] has shown the results from a random sample of nearly 600 college-going students that there are instrumental as well as intrinsic factors that lead these students to go online for chatting. The results of the researcher have also compared and contrasted the usage statistics of online media in general and chatting in specific by male and female students. The comparisons with their household income, ownership of cellular phones, other available modes of entertainment and length of online chatting session have also been considered as important factors in the research of Leung [17].

Simkova and Cincera [18] through their study of Czech online chat users and Czech university students, have analyzed connections between online chatting and the Internet Addiction Disorder (IAD). They compared the two groups of respondents and showed that not only that IAD is known among university students but also that some of them spend an enormous time on the Internet, and that many of them feel it is a problem. Grinter et al. [19] have considered the similarities and differences in styles of Short Messaging Service (SMS) and Instant Messaging (IM) use and analyzed the way that the chat technologies enable the pursuit of teenage independence. Zalk et al. [20] have provided insight into the role of online chatting in young adults' emotional adjustment. They developed a model that considered various factors and found that online chatting compensates the social dealings and that online peers improved young adults' emotional adjustment. Kucukyilmaz et al. [21] investigated the feasibility of predicting the gender of a text document's author using linguistic evidence. For this purpose, term- and style-based classification techniques were evaluated by them over a large collection of chat messages. They

obtained the prediction accuracies up to 84.2%. They have also analyzed the effect of gender on the writing style of the chatters. In another similar work, the same team of authors, Kucukyilmaz et al. [22] have investigated the possibility of predicting several user and message attributes in text-based, real-time, online messaging services.

Saini and Desai used textual and structural analysis towards study and analysis of online behavior of email users while the users design their yahoo-group identifier [23] and while MCA Institutes design the username segment of their email address [24]. Similar to the case of analysis of online behavior of chatters during chatting, Saini and Desai [25] after analyzing the online behavior of spammers, have proposed a taxonomical structure for Unsolicited Bulk Emails (UBE). Zinkhan et al. [26] have studied the use of chatting by persons in an attempt of chatters to advertise for their own-self in order to attract other chatters. In this way, the chatters advertise for themselves similar to the advertisements of other market products in order to attract consumers of their chatting requests. They have used a questionnaire and a survey to examine the conduct of chatters in cyberspace in order to attract chatting partners. The study of Cho [27] investigated the effect of motivations for online chatting and gender factors in self-disclosure in adolescents' online chatting. The participants of that research were 260 high school students who participated in online chatting. The participants comprised of almost an equal number of male and female gender participants. The results revealed that self-disclosure in online chatting differed by motivation, but gender was not a significant variable for explaining self-disclosure. The study of Lu et al. [28] have proposed an emotion detection engine for real time Internet chatting applications. They have adopted a Web scale text mining approach that automates the categorization of affection state of daily events. They first accumulated a huge collection of real-life entities from Web that would participate in events with a user in the chatting room. Based on the common actions between each entity and the type of the user in a chatting room session, such as boy, girl, old man and so on, each collected entity was automatically classified into different affective categories such as pleasant, provoking, grievous, and scary. After this, parsing based on semantic roles is done and a set of manually authored emotion generation rule, the system then assigns the emotion based on the verb and the affective categories of the object. The primitive evaluations of Lu et al. [28] show that the precision rate of the emotion detection engine is rather satisfactory for applications that distinguish emotions of Happiness, Sadness, Anger, and Fear.

Marjuni et al. [29] have performed lexical criminal identification using the utterances of chatting corpus through tokenization, tagging using Parts-of-Speech (PoS) and identification and analysis of the interrogative criminal construct to get the criminal evidence. Their paper hence aims to identify lexical of criminal elements

for chatting corpus, which involved suspect and victim conversation utterances. Patel et al. [30] have developed a chat application whose main objective is to avoid the misinterpretation about the messages that normally occurs during chatting. Their application captures current emotions of each user of the application in the form of an image through a webcam. These emotions are then reflected in the form of a smiley face on chat window of the other user of the application. Thus the users of their application can express their emotions in better way at nearly the same cost of data transfer. Hui et al. [31] have advocated that the Chatting technology serves as a double edged sword and could be misused for illegitimate information exchange or committing crimes for its anonymity and completely uncontrolled chatting environment. To help enforce legitimate contents communicated in chat environments, they have designed and developed a monitoring system for chat messages. Their system also does social network analysis as well as automatic topic discovery.

III. METHODOLOGY

Various types of chat rooms were visited for recording the experiences of chatters as well as chatting. The chat room types visited can be classified based on topic of chatting, language of chatting, age of chatters, gender of chatters, geographical boundary and sexual orientation (straight, gay, etc.). The experiences during chatting were not recorded in a single go, instead chatting was done, experiences recorded, followed by another session of chatting to follow recording of experiences and so on. The psycho-analysis of chatters and the one present in the chatting environments of chat rooms and messengers is based on both the author's personal experiences as well as experiences shared by chatters during an online chat. Offline inputs received from online chatters have also been appropriately accommodated in the findings. There were more than 700 chatting sessions spread over a period of 15 months with nearly 2500 online chatters.

IV. FINDINGS AND ANALYSIS

The experiences of environments of various chat rooms, messengers and online behavior of chatters in such rooms are listed below.

1. The chat rooms are pre-dominantly occupied by male gender. This is true in following three contexts:
 - a. The list of persons available to chat with contains 93% of persons with male gender.
 - b. The list of persons available to chat with, contains names of male sex organs as well as terms referring to male gender including 'm29' (where 29 is supposed to indicate age of boy), 'male_for_u' and 'nude_boy' to exemplify a few.
 - c. The discussion of topics is completely under the control of male gender. They

- are talking about invitations for gay-chat, invitations for sex, role-play, etc. This is truer in public rooms.
2. The chat rooms are used largely for momentary sexual satisfaction. They are used to satisfy the sexual urge of the chatter by way of providing the chatter with a vent to vomit the pent-up feelings of the chatter. The chat rooms are as well used to provide the chatter with psychological relaxation from other worries and tensions of chatter's professional or social life or both.
 3. The effect of sexual chat on the chatter is almost at par with the effect of other narcotics on the user. This is so because more the chatter is engrossed into chatting about sex, more is the chatter engulfed by its desire. In a way, this is as good an addiction of sexual chatting as is of any other thing. This is not addiction of computer or laptop, but is the addiction of chatting and that too more so of sexual chatting. This paper advocates that this type of addiction is actually different and a subset of the Internet Addiction Disorder (IAD) discussed by Simkova and Cincera [18].
 4. Perhaps, there is no chat room in world which is not acting as the platform for sexual chat. The chat rooms with strict restrictions, filtering rules, abuse policies and active moderator (automatic or manual) roles, are an exception. Still, this exception has been found to be easily overcome using techniques like:
 - a. Leet (e.g. writing "\$3*" or "\$€" for "sex")
 - b. Typosquatting (e.g. writing "fcuk" for "fuck")
 - c. Slang (e.g. writing "Rod" for "Penis"); Chatting environments are to be held chiefly responsible for increasing the usage of slang terminology in world.
 - d. Re-phrasing (e.g. writing "se x" and "pen is" respectively for "sex" and "penis").
 5. The disclosure of email id (specifically yahoo, gmail and msn: in the said order), skype id, facebook details and mobile number in chat rooms is very common. Again, restrictive websites providing chat facility with strict 'kick-out' rules are an exception.
 6. In addition to common disclosure of contact information like email id and mobile number, it is also common to disclose other personal information pieces in the chat room. This includes, the institution from where the person has studied, the institution where the person is working, names of friends and residential address.
 7. It is also common that the chatters are insisting to each other to switch on the web-camera. This is with showing of faces (strangely!) as well as without showing the faces but the other parts of the body (e.g. hands, torso, etc.).
 8. With exception of a few websites, flooding of chat rooms is a common phenomenon. Here the chatter floods the chat text area by continuously sending the same message or different messages again and again. The intention of the chatter is only to make sure that it is only the chatter himself/herself whose messages are being read by others. The intentions are also emphasize the content of message and also to make sure that the messages of others are not read by persons for whom the messages are intended for. The flooding effect is common when the chatter wants to 'invite for sex!', invite for sexual chat, advertise some product, pornography, astrology and in general tarnish the image of another chatter, geographical region (e.g. continent, country, state, etc.), religion, gender and community. This flooding is also an example of spamming in chat rooms. Additionally, chatters have been found to advertise about massage parlors too with indications of providing sexual satisfaction to their customers. There are instances when the chatters are luring their counter-parts to click on provided Universal Resource Locator (URL) links which in turn lead to installation of trojans or viruses. Such click events are also responsible for the notorious 'pay-per-click' fraud in addition to the later's various other versions too.
 9. Chatting has been found to be done for following reasons. An attempt has been made to list the reasons in order of the frequency and prevalence decreasing as we move towards the end of the list.
 - a. To chat about sex and get sexual satisfaction. Many chatters chat through un-common chatting websites only to culminate their chatting session in exchange of yahoo or skype identifiers and then feel more comfort in chat messengers provided these companies. They just chat in other rooms to transfer the chatter to messengers like yahoo and skype.
 - b. To interact with relatives and friends (mostly staying at a distant location which may range from within same city to states, countries and continents apart)
 - c. Persons looking for spouse for marriage (most of such chatters are un-married but the group also partially includes those who are widow, divorced and separated; similarly such chatters are mostly of young age (<=35) but rarely also include those with age more than 35)
 - d. To know each other to the extent of establishing friendship between the chatters. The same could also be later on

- extended to result in nuptial relationship between the chatters.
- e. Some chatters chat just for fun. They have not fixed specific area or topic to chat on and just go with the flow of the chat. This category also includes those who just pass their time rather kill their time by chatting online. Such people just want to avoid getting bored. Some who could not get to sleep easily start chatting till the time they start feeling sleepy.
 - f. To learn new language or to increase vocabulary of some slightly known language (firstly and mostly 'English', secondly 'Chinese', thirdly some European language)
 - g. To increase knowledge of some subject (e.g. Engineering, Science, Astrology, etc.)
 - h. To find solutions of problems ranging from technical, professional, social to academic and research (the current paper is an example of such an empirical study). Such chatters chat with a specific motive and have a fixed target of chatting on a specific topic and with a person of specific domain and domain-knowledge only.
 - i. To get updated knowledge and input on current affairs. Such chatters are chiefly interested in increasing their general knowledge and intelligence quotient
10. The hot topic in the public chat room is mostly the topic active in the current news. This includes festival, election and major international event (e.g. FIFA World Cup). Even in the private chat rooms, there is almost a sure reference of such events for the simple reasons that chatter is also a part of the same society in which the event is going on or about to happen or just happened.
 11. The chatting in the chat rooms classified based on the geographical limits is highly dominated by the local news. Such chat rooms typically also witness chatting in the local language. For instance a room with France as its theme typically has chatters using French for conversation.
 12. Typically, the chatting between two persons starts by asking 'asl'. This stands for 'age, sex and location'. Even in these three, the most important one for the chatters is 's', which is the abbreviated form of sex or gender of the chatter. Though placing 'a' or 'l' at second position of significance for chatters seems to be a bit debatable, still chatters are more attentive for age compared to location. The reason for giving more importance to age is the chatter's concern for conversing with a person who is able to comprehend the matter of discussion and provide one's own inputs to make chatting interesting. This is truer for cases where the person on the other side is interested in sex-chatting or "sexatting". The concern could also be due to the fact that sexatting with a person less than 18 years of age is illegal in many countries. Here 18 years of age is an example and could be any age as applicable based on laws enforced by local, political or geographical administration. Assuming the fact that chatters have ethical values too, 18 years of age also signifies their satisfaction of not violating their religious beliefs. Chatting has given birth to a new kind of culture in which shortening of text has become fashion of the day. Accordingly, usage of 'aka' ('also known as'), 'lol' ('lots of laughter', 'laughing out loud', etc.), 'asl' ('age, sex, location'), 'asap' ('as soon as possible'), 'wbb' ('will be back'), 'k' ('ok') has become common in chatting environments. This shortening of text owes to three reasons:
 - a. To have fast speed while chatting
 - b. To decrease network traffic while chatting (ultimately leading to fast speed only but could also be important for cases where bandwidth consumption is limited or monetary charging is being done in terms of data transfer)
 - c. To ensure that the person(s) on other side do not come to know that the chatter on this side is actually chatting with many persons
 13. Chatters lie fluently. Also, chatters express their confessions too fluently. The reason behind both of these behaviors of chatters is the fact that the truth cannot be adjudged during chatting.
 14. Chatters belong to all age groups with those between 23 and 45 forming the group of persons with highest chatting occurrences.
 15. Chatters belong to all genders that is male as well as female. The presence of third gender is very rare in the chatting environments or could be the fact that the same has been not disclosed by the chatter. The presence of males in chat rooms is more than that of females.
 16. Chatters belong to all religions with dominating sects being Christians, Hindus and Muslims in the said order.
 17. Chatters belong to all levels of educational and academic qualification. The lowest level is schooling (with decision of exact level of grade of school being difficult) and the highest level ranges from Engineers, Doctors to Research Scholars and Post-doctoral fellows.
 18. The field of academic specialization of the person has been found to be significantly influencing the person's tendency to chat. Those belonging to Information Technology and Computer or allied fields have been found to be more prevalent among the chatters compared to persons from other fields. Those from such computer related fields have been found to be upto 70 percent of the total chatters.

19. To be of 'male' gender when asked for 'asl' seems to be a sin and curse on the chatter. For 99 percent of cases, the opposite chatter is always looking for 'female' gender to chat with. The height of this psychologically is the fact that even the males know that for most of the times they are chatting with someone who is male but posing to be a female. This is a scenario like everyone is male in a group of persons and everyone is trying to find and chat with a female! The other strange online phenomenon is that at the verge of commencement of chatting, if one of the two parties to be involved in chatting discloses that the he is 'm' (when asked for 'asl'), the opposite person immediately says 'bye' or worst just stop communicating nor even bothering to say courteous 'bye'.

Can't two males chat with each other? They can, but the online psychologically has been nourished in such a way that the new-comers to the chatting world believe it to be a sin to chat to a male (at least to a chatter who has declared his gender to be a 'male'). It is strange but two males can't think of chatting online! This also signifies that they are looking for 'inter-gender' (instead of 'intra-gender') sexual chat only. Even such occurrences have been observed where as soon as it was disclosed at the time of commencement of chat itself and when asked for 'asl' that the person is m, the other person immediately replied 'I m not gay' or simply 'not gay'! The conclusion is that the online male chatters feel themselves (or the other person) to be gay if chatting with another male.

In addition to getting reply 'bye', 'not gay', the other replies include 'same', 'same here', 'm too' and 'looking for gf'.

20. No incidences were observed wherein similar to online 419 Nigerian scams and 'cry for help' scams, the chatter is luring the other chatter. Such incidences called "chising" (phishing through chatting) have so far not started to happen in the world of chatting environments. The simple reason for this is the effort the 'chiser' will have to spend for victimizing someone. Chatting being happening in real time, a chatter could be easily distinguished from a robot and this is the reason for un-success of these kinds of scams through chatting. But given the fact that the success-rate has decreased using phishing emails, the scammers can turn to chatting too.

V. CHATTING: ADVANTAGES AND DISADVANTAGES

Chatting provides easy and cheap medium of exchange of ideas as well as provides the platform where multiple inputs could be obtained easily. It provides a vent for easing pent-up sexual feelings of persons of all age groups, specifically young persons. It is a major platform

that is acting as a 'School of Sex Education'. The reason is that the chatters can freely exchange their views, share their thoughts and get them clarified (though clarifications received may be wrong also!), by freely conversing on the topic with someone without having to disclose either's identity. The internet in-between the chatters acts to provide a 'wall' to cover the feelings of shame and social fear of the chatter. It provides a medium to share, interact and talk! to some alive person without disclosing either's (true) identity. This is good for those who would otherwise go in depression, get bored or suffer from similar psychological problems.

Exposure to pornography, specifically child pornography and children (of age less than the age of mental and physical maturity) watching pornography is a major source of concern for the society from psychological effect that such things have on young minds. This is also a matter of concern from point of view of religion, morale, ethics, tradition and culture. It is noteworthy that chatting is a main gate of entry to the world of watching pornography.

On the other hand, the information provided through chat boxes could be easily exploited to black-mail someone and hence the chatters should be very very careful while disclosing any personal information, if at all they are disclosing it. When the findings of this paper are kept in view and combined with 'social-engineering', the results could be emotionally, financially, professionally as well as socially fatal. Hence, it is recommended that the concerned governing and administering bodies should ban chatting or try to make it safe. Chatting is like playing with fire where one day or the other, the person is going to be burnt by it.

Besides being probable for getting trapped in hands of fraudsters, scammers and sex-criminals, chatting online also is a source of medical problems like 'Computer Addiction', 'Obesity', 'Insomnia', 'Dry Eye Syndrome', 'Cervical Spondylosis' and 'Carpal Tunnel Syndrome'. Chatting also leads to increase in internet connectivity bill payments, more power consumption and wastage of time.

VI. CONCLUSION

The present work is an attempt to study and present an analysis of the psychology working behind the online behavior of chatters during chatting. The most important conclusion that surfaces from this analysis is that explicit sexual expression has pre-dominantly took over the real-time communication during chatting. The chat rooms are dominated by male gender. The chatters are looking for such an expression in various forms including textual, audio as well as video. Chat Rooms have, hence, become 'Dishes of Sex Salad' offering sex in text, audio as well as video forms. Such chat rooms have become a substitute for pornographic websites. The chatters are easily disclosing the personal identification and information pieces, leading them to vulnerable for scams and scandals. The factor of communicating with an alive person with

emotions ‘behind the wall’ while maintaining anonymity of both the parties, is the driving force behind the urge of chatting in general and of ‘sexatting’ in specific. Chatting has provided with both advantages as well as disadvantages to the society. It is an easy way out to express pent-up sexual feelings, to get mental nourishment in form of emotional as well as sexual maturity and to get pleasure and relaxation. At the same time, it is also a breeding platform for cyber crimes as well as physical crimes in real world.

This paper is not an attempt to promote or defame any website providing online chatting service. It is also not intended to encourage or discourage people belonging to any gender, age, geographical area or religion for chatting. This work is solely done as an empirical study with the motive of academic research and it intends to highlight the societal perspective of online chatting along with psychological analysis of online behavior of chatters. It throws light on ‘social engineering’ as well as the forces driving the chatters for confessions, lies, fake identities and assuming false genders.

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