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INFORMATION DISCLOSURE BY CHILDREN IN SOCIAL NETWORKING – AND, WHAT DO THE PARENTS KNOW?

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Abstract

This paper reports the results of a study of MySpace use, by Sydney high school children. It examines the reasons why children disclose information on the website and their understanding of some of the privacy issues involved. It also looks at parental involvement and their knowledge of what the children are doing. The study provides a useful beginning for further work in this area and identifies a lack of understanding by the parents of children's behaviour on the social networking website. It also suggests that children who are taught to value privacy are less likely to disclose sensitive information on-line.

Keywords: Social networking, MySpace, information disclosure, children

Introduction

“We talk to people on MySpace more because that’s the norm¹.” MySpace is, at an individual level, a personal website used for informing others of one’s interests and activities. At a higher level these sites are part of a network of perhaps 300 million global users (Wikipedia) who have the opportunity to communicate with each other. MySpace is just one of many such networks – others include Friendster, Facebook, Tribe and Bebo. “Online social networking has moved from niche phenomenon to mass adoption” (Gross & Aquisti 2005) and has evolved from an activity “to do in your spare time to an integral part of daily life” (Gefter 2006). These websites allow millions of users, generally between 14 and 35 years of age to form a network of connections of online “friends” based on real life friendships, business partners, those with common interests, and online acquaintances (Salz 2006). This is done by creating a self-descriptive profile which can include an individual’s name, image, hobbies, ‘web blog’ entries (an online personal journal accessible to others), sexual preferences, political views and education/employment history.

The sharing of personal information has been highlighted in the media as a major concern, especially for younger users. The Age (Fairfax Digital 2007a) reported that several convicted sex offenders are using the MySpace in Australia, the London Daily Mail (Rawstorne, 2006) and the Sydney Morning Herald (Baxter 2008) all drew attention to the wealth of private information being provided on social networking sites, with almost no control over how it used. Online users continue to reveal personal information on a range of websites despite privacy groups suggesting not to “reveal personal details to strangers or ‘just-met friends’” (McCandlish 2000, Govani & Pashley 2005). Such behaviour could lead to consequences such as stalking (Whelan 2005), identity theft, harassment, blackmail (Gross & Acquisti, 2005) and the discovery of information by individuals it was unintended for, such as university officials or future employers (Schweitzer 2005). This is of concern, given even non-users of MySpace are able to search and view profiles of users who have set privacy viewing settings to ‘public’, as opposed to ‘friends-only’. Furthermore, users do not realise that what they publish and change on their profile day to day can be stored permanently (i.e. cached) by another user. Consequences of participation in social network websites

¹ Quote from a teenage member of a focus group discussing the findings of this research.

are already apparent. According to Stafford (2006), in May 2006, US police authorities had charged three men with sexually assaulting teenagers they found through MySpace.

Gross and Acquisti (2005) studied the patterns of 'information revelation' of over 4,000 university students using an online social network designed for college students, Facebook. They declared that category-based representations of a person's broad interests are a recurrent feature across most networking sites, including Facebook. Such categories can include literary and entertainment interests as well as political and sexual orientation. In addition, personally identified or identifiable data are often provided, together with intimate portraits of a person's social or inner life. In the context of this study, *Information disclosure* is the quantity and degree of sensitive information released by individual users about themselves. This study also examines the role of parents in monitoring their children's use of MySpace and what they know about such websites.

Parameswaran and Whinston (2007) called for research into social computing – this study goes some way to answering that call and provides further background for dealing with issues such as cyber-bullying, the subject of a recent topical article in the *New Scientist* (McKenna, 2007).

Background

Online social connections are potentially much more lax than offline (Gross & Acquisti 2005). Often personal and sensitive information is freely and publicly provided to a range of nodes in the network who are barely a friend of the individual. This was found specifically when 90.8% of university students using Facebook disclosed an image, 87.8% of users revealed their birth date, 39.9% listed a phone number and 50.8% listed their current residence. The majority of users also disclosed their dating preferences, current relationship status, political views, high school attended, hometown and various preferences (e.g. books and movies) (Gross & Acquisti 2005). An extension of this research revealed similar information disclosure tendencies but also found that certain types of information were consistently not provided, including mailbox information, current address, and phone numbers (Govani & Pashley 2005).

Similar results were found when participation of other social networking websites, including Facebook, MySpace and Friendster was analysed. 90% of an undergraduate sample participated in a social networking website, with Facebook being the most popular followed by Friendster and MySpace. A large number of these university students were sharing particular personal information illustrating a disconnect between the value students put to traditional identity information (such as name and social security number) and new types of identity information (sexual orientation, drinking habits and political views) (Stutzman 2005).

Online information disclosure can be seen in other socially-based internet domains, such as online 'web blogs'. Web blogs are online personal journals that can be viewed by other online users. 92% of blog authors provided a name and more than half (54%) provided explicit demographic information such as age, occupation and geographic location (Herring, Scheidt, Bonus, and Wright 2004). This is significant given blogs are dominated by youth, with 52% of all blogs being developed and maintained by teenagers (Henning 2003).

Teen 'bloggers' reveal a considerable amount of personal information. This included first name (70%), age (67%), and contact information (61%) in the form of email, an instant messenger user name, or a link to a personal web page. Less disclosed information included a birth date (39%) or full name (20%). Relationship information was also provided in 49% of blogs (Huffaker & Calvert 2005).

Reasons for information disclosure

Several reasons have been put forward for why users reveal information about themselves on social networking websites. One potential reason is *signalling* (providing selective information to present oneself in a positive light or to be seen in a certain way) and the benefit of this may outweigh the costs of possible privacy invasions for social network website users (Donath & Boyd 2004). In the case of MySpace, users may, for instance, post photographs of themselves at certain events, or disclose what type of music or movies they like in order to create a particular individual online image. As George (2006) conveyed "It's an opportunity to present yourself in a way you want others to see you."

There may also be a focus on the displays of connections (i.e. who you are 'friends' with) and the associated reputation created for the user. As O'Murchu *et al* (2004) suggested "members of sites are eager to sign up and increase their visibility within a network, and to get as many people to join their network making themselves look popular and important."

The idea of *peer pressure* driving the extent of information disclosed by a user should also be considered (Govani & Pashley 2005, Gross & Acquisti 2005). When a particular student's peers and friends were users and were sharing certain types of

information, the student may feel obligated to do so as well. “People expect that the more information they give, the more they gain from the network” (George 2006). There can be a difficulty in resisting “the overwhelming urge to anonymously check up on old high-school acquaintances” keeps users addicted to the site, looking up people and sharing their information with other users (Whelan 2005). Peer pressure could play a role in driving the level of information disclosure of a social networking website user.

Users may overly *trust* a social networking website and its members, supported by examples cited in the literature, where students on Facebook have made sexual or drug references that have led to unforeseen parent discovery or police action (Govani & Pashley 2005, Gross & Acquisti 2005). In the context of Facebook, users may feel that they are offered a sense of protection, given the website was restricted initially to university students, but fail to realise how public their online profiles could be. Users may have more trust of other users because of how much information others share, and therefore act carelessly when sharing information (Govani and Pashley 2005). “Students post ‘simple jests’ and ‘thoughts of the moment’” (Schweitzer 2005) which may suggest that users place too much trust in Facebook.

Design interface is another potential driver; particularly given users of Facebook reveal more information than a university directory (including more personal and social information), because the website prompted users to do so (Stutzman 2005) Both Facebook and MySpace have a range of information fields on a default profile, which encourages the user to complete it. Such fields can encompass a large range and can include for instance, name, occupation, income, hometown, height or phone number.

The literature also suggests that *evaluation of privacy risks* and *relaxed attitudes* drive disclosure. Users do not consider the full risks of the information they reveal (Govani & Pashley 2005). In Govani & Pashley’s instrument’s open ended question addressing these concepts, students recorded responses such as “had nothing to hide” and “they don’t really care if other people see their information” as reasons for information disclosure (2006). The magnitude of the perceived costs of privacy under certain conditions will not deter online behaviour that the individual admits is risky (Acquisti 2004). Even ‘sophisticated’ individuals may under certain conditions become “privacy myopic.” Therefore, when using MySpace, users may evaluate the privacy risks that is appropriate but may still disclose to a level that is not optimal.

Although Gross & Acquisti identify the above drivers, the magnitude of such drivers on the level of information disclosure (i.e. a causal relationship) has not been explored; that is the direction this study pursued via the research model below. The six identified drivers were hypothesised to explain information disclosure – a composite variable based on the amount and sensitivity of the information disclosed by the users.

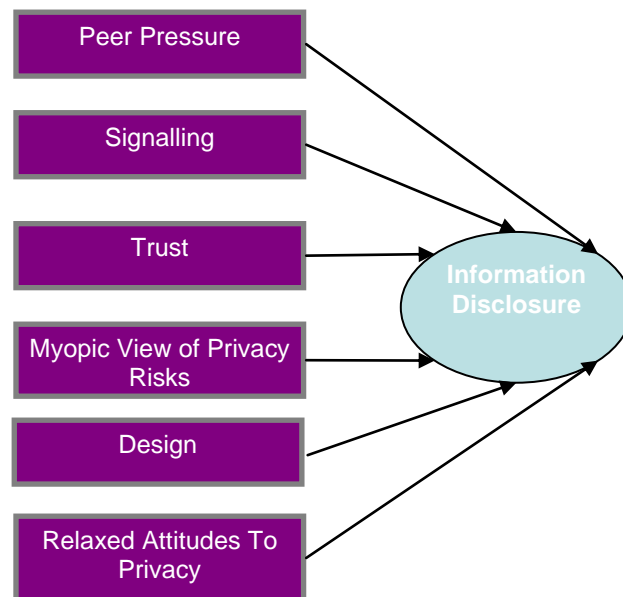


Fig 1 Research Model

Parent Awareness

Parents in a variety of domains can be unaware of their children's activities, as illustrated both in the press and in the literature. In April 2007, two Australian teenage girls in Melbourne committed suicide after several indications of their desire to do so on their MySpace profile. "Monitoring children's internet use is the responsibility of their parents, Prime Minister John Howard said", following the deaths of these two girls (Fairfax Digital 2007b). The literature also supports this: "Most public initiatives, however, still rely on parents shouldering the major responsibility for controlling their children's access to the Internet" (Livingstone & Bovill 2004).

Parents may not be paying sufficient attention to what their children are doing online, for a number of reasons. First, parents may lack technological knowledge and technical skills to properly supervise (Livingstone & Bovill 2004). Secondly, they may choose to respect their child's online privacy but fail to recognise that social networking websites are public areas or thirdly, they are simply unaware of the related dangers (Willard 2006). Similarly Wallace (1999) identified parents may lack the understanding in guiding their children. As Davidson and Martellozzo (2005) put it "Parents are frequently less computer literate than their children and feel unable to supervise their online activities.....many parents and carers are unaware of the risks their children can encounter when online by allowing them unlimited and unsupervised access to the Internet".

Evidence of parental lack of awareness is present in the literature relating to a variety of activities. One such activity is adolescent alcohol consumption (Beck, Shattuck, Haynie, Crump, and Simons-Morton 1999). There are also references of parent unawareness in the internet domain, particularly shown in a UK study of children and their parents' usage of the internet (refer to table 1).

Table 1 (adapted from Livingstone & Bober 2004)

	% of Children who reported...	% of Parents who believed their child had seen...
Pornography	57	16
Sexual or nasty comments	31	7
Provided personal information	46	5

Additionally, 10% of parents reported they don't know what their child does on the internet. (Livingstone & Bober 2004). Similarly in the US, only 33% of teens reported that they believe their parents monitor their internet activity (Lenhart 2005).

The call for parents to be more involved in their child's technology use was also made apparent in a discussion on Australian television show, *Difference of Opinion* (2007). When discussing the challenges of the digital revolution, one panellist answered "I think that is the greatest concern and this is probably where we need to be targeting the awareness to parents the parents are not connected. They are not connected to those forums that these kids are using.I love the Internet and I love the creativity that My Space provides kids..... but we - as an older generation who have provided these tools to these kids, we cannot abrogate responsibility now and say "Here it is, see you later". We have to get connected, I think."

Given the reasoning from the media and findings in literature regarding parent lack of awareness of other activities, it was believed that similar trends would be found in parent knowledge of MySpace usage by their children.

In summary then, this study aims to determine answers to two questions:

1. What influences children to disclose information on MySpace? and
2. What do the parents know about what there children are doing?

Methodology

The primary method of data collection for this study was a questionnaire administered to Sydney high school children aged between 12 and 18. The questionnaire was developed, mostly from existing literature and previous studies, principally Stutzman (2005), Donath and Boyd (2004), Govani and Pashley (2005) and Gross and Acquisti (2005), pre-tested on a small group of children of varying ages for ambiguity and understanding, pilot tested for validity and reliability and then administered via paper-based surveys in several high schools across Sydney and distributed to children using public libraries. The N for the main study was 263, representing a 49% response rate. Only children who used MySpace were included in the study.

In order to assess the degree of bias inherent in self-reporting, a small group of older students were asked to supply their MySpace websites so the researcher could form an opinion on how truthful the children had been in their responses – the result of this test was satisfactory.

In addition, two focus groups were established and employed, one of parents who were asked to classify (in terms of concern) the items of information children were disclosing and one of children who were given the results of the analysis and asked for comment and feedback in order to confirm the findings and add a degree of richness to the study.

The parent focus group was used to gather supplementary data relating to information disclosure. The parent focus group was formed for two purposes:

1. To determine what information disclosed on MySpace by children was considered concerning or sensitive information; and
2. Identify parent expectations of acceptable online information disclosure behaviour

Cronbach's Alpha scores were computed for each of the variables for the information disclosure model (see table 2). Cronbach's alphas ranged between .5892 and .7073. A low of 0.7 is generally regarded as a lower acceptable band for alpha scores (DeVellis 1991). DeVellis however, highlights that it is not unusual to see published scales with lower alphas. He suggested that alpha scores below 0.6 was unacceptable, 0.6 to 0.65 was undesirable, 0.65 to 0.7 was minimally acceptable, 0.7 to 0.8 was respectable and above 0.8 was very good. The low alpha score for trust could be attributed to the fact that the construct was made up of only three measures, as the researcher aimed to strike a balance between instrument length (and therefore indirectly impacting response rate) and reliability of measures.

Table 2: Cronbach's Alpha scores for Information Disclosure Model

Construct	Cronbach's Alpha
Signalling (SIG)	.6522
Peer Pressure (PEER)	.6666
Relax Privacy Attitudes (RELAX)	.7445
Website Interface Design (DESIGN)	.6978
Trust (TRUST)	.5892
Myopic Privacy Risks (PRISK)	.7073

Independent variables for the information disclosure model were also verified for multicollinearity. Correlations between all independent variables were run and analysed for inappropriate values. No relationships were found to exist between independent variables (i.e. with an r equal to or above 0.7).

Results

The proposed information disclosure model was analysed using stepwise regression. Each of the six drivers (PEER, SIG, DESIGN, TRUST, RELAX and PRISK) and their related measures were loaded into the model against the dependent variable *Information Disclosure*.

This dependent variable made use of categorised weighted scores factoring in quantity and sensitivity of information disclosed. The weightings ranged from 1 to 7 and were based on the categories set out on the information concern scale created by the parent focus group. For example the information item *full name* was placed in the highest bracket and given a weighting of 7. The total score was then categorised into groups on a 1 to 5 scale, which was used as the dependent variable.

The results of the stepwise regression indicate that three factors influenced how much information a MySpace user disclosed: Peer Pressure, Website Interface Design and Signalling. These factors explain 11.6 % of the variance in information disclosure. Refer to tables 3 and 4 for the model results.

Table 3: Stepwise Regression for Information Disclosure

Model	R	R Square	Std Error of the Estimate	R Square Change	F Change	Sig. Change	F
1	.247	.061	1.13689	.061	16.429	.000	
2	.306	.093	1.11947	.032	8.905	.003	
3	.341	.116	1.10760	.023	6.408	.012	

Predictors: (Constant), PEER1

Predictors: (Constant), PEER1, DESIGN2

Predictors: (Constant), PEER1, DESIGN2, SIG1

Dependent Variable: info dis weighting categories

Table 4: Stepwise Regression Independent Variable Outputs for Information Disclosure

Coefficients							
Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(constant)	1.610	.283		5.690	.000		
PEER1	.144	.060	.155	2.382	.018	.838	1.193
DESIGN2	.161	.055	.175	2.901	.004	.966	1.035
SIG3	.172	.068	.163	2.531	.012	.856	1.169

A Pearson’s correlation was run between Privacy Value (‘It is important to me to protect my personal information’) and the Information Disclosure weighted score. There was a small (as classed by Cohen 1988) but negative correlation between privacy value and information disclosure (-.182, p=.004). Therefore MySpace users who attribute a higher level or value to their personal privacy were less likely to disclose as much information on their MySpace profile. In addition t-tests were run to determine whether information disclosure significantly differed between age groups and gender. A significant difference in the amount disclosed between older (those 15 and above) and younger teens was evident (t = 2.295, p =.023), with younger children disclosing more. There was no significant difference for gender.

The classification of information by sensitivity or concern gives an indication of what parents would deem as acceptable information disclosure behaviour for their children, ranging from the *dangerous* band to the *safe* band. Additionally the focus group formulated a threshold indicating the level of information disclosure that they would let their child behave up until; 4% of the sample would have disclosed information below the threshold. Almost all children provided information which the parents considered dangerous.

Based on the data that MySpace users reported:

- 54% of parents were aware of what MySpace was;
- 38% were aware of the functions and capabilities of MySpace; and
- 34% had viewed their child’s MySpace profile.

(Refer to tables 5, 6 and 7)

Table 5: Parent Awareness of MySpace

<i>Do either one of your parents know what MySpace is?</i>		
	Frequency	Percent
Invalid	5	1.9
I am not sure	54	20.5
n	61	23.2
y	143	54.4
Total	263	100.0

Table 6: Parent Awareness of MySpace Functions

<i>Are either one of your parents aware of the type of things you do on MySpace?</i>		
	Frequency	Percent
Invalid	8	3.0
I am not sure	74	28.1
n	82	31.2
y	99	37.6
Total	263	100.0

Table 7: Parents that view child's MySpace profile

<i>Have either one of your parents ever viewed your MySpace profile?</i>		
	Frequency	Percent
Invalid	7	2.7
I am not sure	35	13.3
n	133	50.6
y	88	33.5
Total	263	100.0

Discussion

Information disclosure of MySpace users was identified to be driven by three factors: peer pressure, website interface design and signalling. Trust, myopic evaluation of privacy risks and relaxed privacy attitudes did not load as drivers into the information disclosure regression model.

Peer pressure (*"Because all my friends are sharing information"* as included in the survey instrument) – a teen MySpace user may observe that his/her friend has published a significant amount of information on their profile and therefore be driven to do the same. The interactivity and fun may also be increased for the user if their friends in the same environment have information rich profiles. There are potentially other explanations such a 'me too' mentality or competition with ones' friends.

Website interface design (“*I put that information because there was a place/box to enter it*”) was the second independent variable to load in the regression model but had the largest beta value. The MySpace user is offered several information fields when initially creating the account, for example an ‘about me’ section, a field for relationship status, a field for favourite music etc. The MySpace user is driven to fill in these fields because they are there; almost as if the website is making a recommendation to post the information. The user is more likely to fill it in rather than leave it blank possibly because they mistakenly believe it is mandatory or possibly because they would rather complete answers. When the user first signs up “*It’s template driven*” (focus group member 3).

The signalling driver (“*I want to people to see me in a certain way on MySpace ...*”) suggests that the more the user desires to portray him/herself in a certain light, the more likely he/she is to disclose a variety of information to support the desired perception. For example if a teen wanted to highly identify herself as a “rock chick” she would want to post substantial information about rock music, photographs portraying herself in rock style clothing and identifying heroes such rock musicians etc. As Boyd (2006) identifies, teens begin in ‘identity production’ during high school years and it is their peers and the media that have a significant influence.

MySpace can be used as a medium for identity production (Boyd 2006): “The dynamics of identity production play out visibly on MySpace. Profiles are digital bodies, public displays of identity where people can explore impression management. Because the digital world requires people to write themselves into being, profiles provide an opportunity to craft the intended expression through language, imagery and media. Explicit reactions to their online presence offer valuable feedback. The goal is to look cool and receive peer validation” (Boyd 2006). Further research could explore each of these drivers in more detail.

The focus group presented similar ideas. When discussing the concept of why the focus group members make their MySpace profiles information rich, members stated:

“my MySpace [profile] has to be perfect”, “I want to show the inner workings of Elizabeth”, and “you can see from my layout that I am easy going”. (Focus group members 2, 3 and 4)

Thus all these members were emphasizing the role played of wanting others to perceive themselves and their profiles in a certain way.

The regression model also indicated that trust, relaxed privacy attitudes and myopic evaluation of privacy risks played no role in determining the level of information disclosed by the participant. The lack of effect of trust may be because users may actually not trust the MySpace website or its users, but still go ahead and disclose information despite this, due to the overwhelming social pressures to do so (which did load as a driver). As a focus group member commented:

“I trust my own skills but I don’t trust MySpace.... I know what people can do on the internet” (focus group member 1).

It was expected that the more relaxed the user was about privacy and the more privacy myopic, the more information the user was likely to disclose. The results of the data analysis were therefore unexpected. However, the results indicate that perhaps privacy plays no role in an individual’s instantaneous decision when interacting with the application at a certain point in time. The user in an overall way considers privacy and related risks but when making immediate decisions as they interact with MySpace (should I put photographs from that party on my profile now?), the user takes no note of their privacy in this decision. The teen focus group indicated that they were well aware of the risks of the internet and MySpace, but somehow it was disconnected with their MySpace activities:

“Most people are pretty aware of what people can do on the internet” and “We’ve been educated to think like that (about privacy risks)” (Focus group member 1 and 5).

MySpace users who attribute a higher value to their personal privacy were less likely to disclose as much information on their MySpace profile. This indicates that those young MySpace users who show concerns about personal privacy are acting accordingly when disclosing information on their profile i.e. these users are well aware of how they are behaving. Or, in the words of one of the high school teachers, “education works”. This is particularly important for the younger children as evident from their tendency to disclose more information.

Turning to parental awareness, with the prominence and coverage in the media, it would be expected that most parents would be aware of the MySpace phenomenon. It is concerning that a little under half were not. It appears that 64% of parents had not viewed their child’s MySpace profile. This figure can be expected to be accurate given the child would normally need to be present. These results are consistent with general patterns regarding the knowledge of parents and their respective child’s internet behaviour.

This high percentage of parents who have not viewed their child's profile, could be attributed to several reasons. Firstly parents may want to give their child their own space. As Boyd (2006) pointed out, social networking websites are a place for teens to socialise and live their lives away from the adult world. Secondly parents lack the technical skills to the point that the child is the internet expert in the household and therefore can not adequately provide guidelines. Such findings call parents to be more active in their child's internet activities but to do this they need greater understanding of what social networking websites set out to accomplish.

Limitations and Concluding Remarks

The authors believe that this study has been a useful first step in exploring this rapidly emerging and important topic. A clear limitation to this study is the low R^2 value and the reliance that can be placed on the proposed model. The R^2 values may be a result of the weightings given to the categories by the parent focus group, they may indicate that the identified drivers are not completely reflecting sensitivity or they may indicate that sensitivity is too complex a concept to be fully explained by these drivers. In any case, it is clear that further work on this model is required. Nevertheless, the authors consider that it provides a good base for further examination of the disclosure of information on social networking websites.

Perhaps the most important findings are first, the indication that children who value privacy in the real world also value it in cyber-space and are less likely to disclose sensitive information. Second, younger children seem to be more vulnerable in this area showing a tendency to disclose more information. Third, there seems to be a "disconnect" between what parents see as safe and appropriate and what the children are doing. It is possible that the parents do not know enough about the internet medium; possible that the children communicating through the internet are not being made fully aware of what is considered desired behaviour; and finally, that children and parents are not communicating and fully understanding each other's point of view. All of these findings indicate there is an urgent need and a compelling reason for parents (and perhaps teachers) to take a much stronger interest in their children's activity in cyber-space.

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