Chapter #5

PRIVACY AND DISCLOSURE IN AN ONLINE WORLD

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ABSTRACT
The purpose of this study was to examine factors that influence an individual's choice to share personal information online. Age, gender, personality, overall media exposure, internet trust, and perceived risks and benefits were examined in relation to a willingness to share personal information that differed in sensitivity (address, medical records, credit card) and differed in target audience (social media, online store, general public). A total of 202 adults participated in this survey. The results indicated that willingness to share personal information on social media was predicted by having higher scores on extraversion, agreeableness, and negative emotionality, as well as higher scores on perceived purchase benefits and total media exposure. In terms of willingness to share personal information with an online store, total media exposure was a significant predictor along with higher extraversion and lower conscientiousness scores. Finally, willingness to share personal information with the general public was predicted by overall media exposure. Participants generally believed that there were risks involved in sharing personal information, but these risks were considered to be slight. As well, they only slightly disagreed when asked if the internet could be trusted, and were neutral on whether there were purchase benefits to providing personal information.

Keywords: privacy, personal information, personality, social media use.

1. INTRODUCTION

E-commerce transactions have become increasingly more popular during the global COVID-19 pandemic. To provide services, online stores require personal information such as credit card numbers, addresses and names. However, increasingly, people are willing to share personal information on other platforms such as social media, where access to this private information is not always necessary.

The purpose of this study was to examine factors that influence an individual's choice to share personal information online. Specifically, the role of personality, overall media exposure, internet trust, and perceived risks and benefits were examined in relation to a willingness to share personal information that differed in sensitivity (high school grades, medical records, bank account balance) and differed in target audience (social media, online store, general public).

Researchers studying willingness to share personal information online have described what is known as the paradox effect (Brown, 2001; Norberg, Horne, & Horne, 2007). The paradox effect refers to the observation that people often state that protecting their private information is important to them, but their behaviour indicates otherwise. In an online forum, people disclose personal details that are not always necessary. What accounts for the privacy paradox? One theory that has garnered a lot of attention is privacy calculus (Culnan & Armstrong, 1999). This theory states that individuals engage in a cost/benefit analysis – if the benefits exceed the costs or risk, the individual is more likely to disclose personal information (Lwin & Williams, 2003; Thompson & Brindley, 2021). However, people will

often disclose personal details when it is not necessary and there is little or no benefit to the individual. For example, Norberg et al. (2007) reported that when shopping in "real" stores, customers often provide phone numbers when asked by salesclerks, yet this information is not necessary for the transaction to be completed, and nothing is gained by the customer.

Have we become desensitized to sharing personal information? Both and Hansen (2018) examined this question in a study that assessed whether people were willing to share personal information in exchange for cookies and cupcakes. The idea for this study came from an article written by Waldman (2014) in which she reported how a performance artist exchanged cookies for personal information at the Dumbo Arts Festival in Brooklyn, New York. The performance artist found people were willing to provide personal information such as their fingerprints, driver's license, the last 4 digits of their Social Security number, etc., in exchange for cookies. Based on this idea, Both and Hansen (2018) examined how willing people were to share personal information in exchange for baked goods. Their study was conducted in the foyer of a local library where a table was set up with baked goods, and a banner was prominently displayed that read "Questions for Cookies." Patrons who asked about the study were told that if they participated, they could earn points for volunteering personal information, and these points could be cashed in for cookies and cupcakes, depending on their score. Willing participants signed a consent form that indicated that the study was voluntary, and that it was their choice to answer any of the questions. Participants completed a short survey that asked them to provide sensitive information such as their mother's maiden name (often used as a security question for banks). They were also asked if they would show a copy of their drivers' license (which included their name, address, date of birth, eye colour, and photo). As well, they were asked if the researchers could snap their photo and take their thumbprint. Depending on the sensitivity of the information, points were allocated to each item and these points could then be redeemed for 1 cookie (1-10 points), 2 cookies (11-20 points), or 3 cookies or a cupcake (21-30 points). Surprisingly, 80% of participants earned the cupcake, and more than half the participants achieved the maximum 29-30 points. It should be noted that participants had to engage in certain behaviours (e.g., show their driver's license and have their thumbprint or photo taken). From the results of this study, it appears adults were willing to barter away their personal information in exchange for a simple cupcake, casting doubt on the privacy calculus theory.

Clearly there is more at play than a cost/benefit analysis. While many individuals will disclose personal information for loyalty cards, extent of privacy concerns, risk perceptions and trust contribute to the decision-making process (Kruikemeier, Boerman, & Bol, 2020). According to social contract theory (Fogel & Nehmad, 2009), an implied social contract exists in the mind of the consumer wherein they expect the online business to protect their private information. The more confidence or trust the consumer has in the online business, the more reliable they are perceived to be (Kruikemeier et al., 2020).

Schubert et al. (2018) found that people were more likely to share information within close relationships than with the general public, and the more sensitive the information was, the less likely they were to share. However, the context (social media versus an online store) also played a role. Thus, sensitivity of information is an important consideration along with the closeness of the relationship (family, friends, colleagues, the broader public) and the context (social media versus an online store).

Willingness to share personal information has also been examined in relation to personality. Costa and McCrae (1992) described personality in terms of five traits: neuroticism, extraversion, openness, agreeableness, and conscientiousness. These traits describe dispositions in individuals and may be a lens through which they view their social

world. Robinson (2018) found a relation between neuroticism and attitude toward disclosing personal information online. Yeh et al. (2018) found agreeableness correlated positively with privacy concerns. Bansal, Zahedi, and Gefen (2016) examined personality and context (websites that were high versus low in monetary sensitivity) in relation to willingness to disclose personal information. They found agreeableness and emotional instability correlated positively with privacy concern. Extraversion correlated negatively with privacy concern, but this correlation was dependent on the context. The authors concluded that personality traits that were socially oriented affected privacy disclosure, but context also played a role. Given the paucity of data on personality traits, further examination of their influence in willingness to share private information is warranted. As well, frequency of internet usage is often used as a covariate in analyses (e.g., Walrave & Heirman, 2013), but may be a predictor in a regression analysis. In other words, media exposure in terms of frequency of online banking and shopping may affect how willing people are to share private information.

The present study examined factors that influence an individual's choice to share personal information online. Based on prior research, personality traits, overall media exposure, internet trust, and perceived risks and benefits were assessed. These variables were examined in relation to a willingness to share personal information that differed in sensitivity (name, medical records, address, tax return) and differed in context (social media, online store, general public).

2. METHOD

2.1. Participants

The participants consisted of 202 adults between the ages of 19.0 and 54.4 years. The majority were young (*M* age = 22.46 years, *SD* = 5.77). In this sample, 80.7% identified as being women, 17.8% as men, and 1.5% as transgender. In terms of marital status, 83.7% were single, 14.8% were married or living common law, and 1.5% were divorced. Participants were mainly Caucasian (88.6%) and educated (90.1% had completed at least some university or community college courses). Participants were recruited through announcements in psychology courses at the university, and a link to the online study could be shared with others via social media.

2.2. Measures

Demographic Questionnaire. Participants were asked a series of questions regarding age, gender, marital status, education level, and ethnicity.

The Big Five Inventory – 2 (BFI-2; Soto & John, 2017). The BFI-2 is commonly used to measure five personality traits: Negative Emotionality (or neuroticism), Extraversion, Open-mindedness, Agreeableness, and Conscientiousness. Scores on this measure can range from 1 to 5, with higher scores more indicative of the trait. The measure has excellent psychometric properties, and these are described elsewhere (see Soto & John, 2017). In the current study, the internal reliability was good (Cronbach's α = .85 for Extraversion; .79 for Agreeableness; .87 for Conscientiousness; .91 for Negative Emotionality; and .82 for Open-Mindedness).

Purchase Benefits Survey (Robinson, 2018). Robinson (2018) adapted this scale based on purchase benefit questions from Gupta, Iyer and Weisskirch (2010). The measure consists of five questions, such as "*The company tailors their product offerings to my tastes."* Participants rated the importance of these benefits on a 7-point scale where

1 = *not at all important* to 7 = *extremely important*. An overall score was computed, and the scale had good internal reliability in this study (Cronbach's α = .85).

Risk Beliefs Scale (Malhotra, Kim & Agarwal, 2004). Malhotra et al. (2004) adapted this scale from Jarvenpaa, and Tractinsky (1999). The Risk Beliefs Scale consists of four questions such as "*In general, it would be risky to give personal information to online companies."* Participants rated their agreement on a 7-point scale from 1 = *strongly disagree* to 7 = *strongly agree*. A total score was computed for this scale, and the internal reliability of Cronbach's α = .86 was good.

Trust in the Internet (Robinson, 2018). Robinson (2018) adapted this scale based on internet trust questions from Dinev and Hart (2006). The scale consists of four questions such as "*The internet is a reliable environment in which to conduct business transactions or personal purchases."* Participants rated the extent to which they agreed with the items on a 7-point scale where 1 = *strongly disagree* to 7 = *strongly agree*. An overall score was computed, and the scale had good internal reliability in this study (Cronbach's α = .82).

Media Exposure Scale. For the purpose of this study, three questions asked participants how often they shop online, bank online and use Apps that ask for personal information. These questions were rated on a scale from 1 = *never*, 2 = *rarely*, 3 = *occasionally*, 4 = *frequently*, and 5 = *very frequently*. The scores from the three questions were summed to give an overall total score of media exposure.

Willingness to Share Information (adapted from Schubert et al., 2018). Shubert et al. (2018) examined how willing people were to share personal data. They varied the sensitivity of information (such as high school grades, medical records, last year's tax return, gender, education, ethnicity, current location, address) in different contexts (such as a social media website, an online store website, family, friends, a broader public). These questions and the format were adapted for the present study. Three domains were used in the present research (a social media website, an online store, and the broader public), and the sensitivity of information questions were broadened to include more items such as bank account balance, credit card information, phone number, drivers' license photo, etc. Participants rated how likely they would share their personal information for each of these questions in each of the three domains. The items were rated on a scale of 1 = *extremely unlikely* to 5 = *extremely likely*. In total, 24 questions were asked in each domain (these can be found in Table 1), and an overall average score was computed for each domain. Cronbach's α = .88 for the 24 items comprising the willingness to share information on a social media platform like Facebook or Twitter; Cronbach's α = .88 for sharing information with an online store; and Cronbach's α = .92 for sharing information with the general public.

2.3. Procedure

Participants were recruited from psychology courses at the university. They read a description of the study and were directed to Qualtrics, an online survey platform. A consent form and the demographic measure were always presented first, followed by the remaining questionnaires in random order. The entire survey took about 40 minutes to complete, and students could earn one bonus point toward their final grade (students had the option of earning bonus points through other means if they did not wish to participate in research). The survey link could also be shared on social media platforms. As an incentive to participate, all participants also had the option of being entered into a draw for a $50 Amazon gift card.

3. RESULTS

Participants only slightly agreed (*M* = 5.1 on a 7-point scale) that there were risks involved in sharing personal information. When asked if the internet could be trusted, they only slightly disagreed (*M* = 3.3 on a 7-point scale), and they were neutral on whether there were purchase benefits (*M* = 4.4 on a 7-point scale).

Table 1 presents the average scores for items on the Willingness to Share Personal Information measure by target audience (either social media, an online store, or the broader public). Based on these scores (on a scale of 1 = *Extremely Unlikely* to 5 = *Extremely Likely*), on social media, respondents indicated they were comfortable sharing personal information such as their name, gender, photo, education, ethnicity, marital status, and date of birth. They were not comfortable sharing their blood type, credit card information, address, bank account or tax information. With an online store, respondents were comfortable sharing information such as their email address, gender, and name. They were not comfortable sharing information such as their photo or mother's maiden name. With respect to the broader public, respondents were comfortable sharing information such as their gender and ethnicity but were not comfortable sharing information such as their name or phone number.

To assess whether there were statistically significant differences on willingness to share personal information by target audience, paired samples *t*-tests were computed. For example, as indicated in Table 1, the item "*would you share your email address on a social media website like Facebook or Twitter"* had a *M* = 3.26 (on a 5-point scale), indicating that participants, on average, were neutral. However, they were more likely to share this information with an online store (*M* = 4.05), and less likely to share it with the broader public (*M* = 2.86, all *ps* < .01).

Table 1.
Mean Scores for Willingness to Share Information Items by Target Audience.

Item: Would you share…	Target Audience …on a social media website like Facebook or Twitter?	…with an online store in order to serve you better?	…with a broader public?
	M	*M*	*M*
…your email address	3.26_a	4.05_b	2.86_c
…your high school grades	2.23_a	1.95_b	2.54_c
…your medical records	1.31_a	1.36_a	1.62_c
			Continued.

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Item: Would you share…	Target Audience …on a social media website like Facebook or Twitter?	 …with an online store in order to serve you better?	 …with a broader public?
…your last year's tax return	1.19_{a}	1.25_{a}	1.45_{c}
…your gender	4.28_{a}	4.06_{b}	4.24_{ab}
…your education (where you went to school; degrees earned)	3.92_{a}	2.59_{b}	3.76_{ac}
…your ethnicity	3.82_{a}	3.32_{b}	3.97_{ac}
…your current location	2.44_{ab}	2.48_{a}	2.21_{b}
…your address	1.54_{a}	3.38_{b}	1.67_{c}
…your bank account balance	1.15_{a}	1.36_{b}	1.27_{bc}
…your credit card information	1.16_{a}	3.09_{b}	1.18_{ac}
…your phone number	2.07_{a}	3.20_{b}	2.00_{ac}
…your marital status	3.97_{a}	2.61_{b}	3.66_{c}
…your date of birth	3.85_{a}	3.00_{b}	3.19_{bc}
…a photo of your driver's license	1.39	1.39	1.50
…the name of the city or town where you were born	3.73_{a}	2.64_{b}	3.16_{c}
…the name of your high school	3.98_{a}	2.19_{b}	3.34_{c}
…your name	4.35_{a}	4.06_{b}	3.95_{bc}
…the kind of car you drive	3.05_{a}	2.10_{b}	2.96_{ac}
…your mother's maiden name	2.11_{a}	1.75_{b}	2.10_{ac}
…your blood type	1.68_{a}	1.59_{a}	2.00_{b}
…the name of your first pet	3.04_{a}	2.15_{b}	3.02_{ac}
…your photo	4.25_{a}	1.89_{b}	3.13_{c}
…your thumbprint	1.21	1.28	1.22

Note. Items were rated on a scale from 1-5 (1 = *Extremely unlikely;* 2 = *Unlikely;* 3 = *Neutral;* 4 = *Likely;* 5 = *Extremely likely).* Means with different subscripts differ at the $p = .01$ level.

Overall, participants were most comfortable sharing information on social media (M = 2.71), as opposed to the general public (M = 2.58), or with an online store (M = 2.45, all ps < .001). The items in Table 1, however, indicate the nuanced differences by target group. For example, participants indicated they were more likely to share their home address with an online store, than they were with the general public or on social media. Similarly, they were also more likely to offer their credit card information to an online store but were unlikely to do so with the general public or on social media. Thus, disclosing information was affected by the sensitivity of the information, and the context (social media, online store, general public) in which it was to be released.

3.1. Hierarchical regression analyses

Three hierarchical regression analyses were conducted predicting: willingness to share personal information on social media; willingness to share personal information with an online store; and willingness to share personal information with the broader public. For each of these criterion variables, age and gender were entered on the first step to control for their effects. The five personality factors of Negative Emotionality, Extraversion, Open-Mindedness, Agreeableness, and Conscientiousness were added on the second step. Finally, purchase benefits, risk beliefs, internet trust, and media exposure were added on the third step. For each of these hierarchical regression analyses, Tolerance and VIF were within acceptable levels.

Willingness to share personal information on social media. The overall model was statistically significant and accounted for 25% of the variance on the measure of willingness to share personal information on social media (F $(_{11,185})$ = 5.66, p < .001, multiple R = .50). Age and gender were not statistically significant predictors, but the personality sores produced a statistically significant change in the model (R^2 change = .07, F_{inc} $(_{5,189})$ = 2.76, p = .02). Significant predictors were Extraversion (β = .20), Agreeableness (β = .21), and Negative Emotionality (β = .21). The variables entered on the last step of the model also produced a statistically significant change (R^2 change = .16, F_{inc} $(_{4,185})$ = 9.81, p < .001). Significant predictors were purchase benefits (β = .17), and media exposure (β = .31). The adjusted R^2 value of .21 in the overall model indicates that 21% of the variability in the willingness to share personal information on social media was predicted by higher scores on Extraversion, Agreeableness, Negative Emotionality, purchase benefits and media exposure.

Willingness to share personal information with an online store. The overall model was statistically significant and accounted for 16% of the variance on the measure of willingness to share personal information with an online store (F $(_{11,186})$ = 3.17, p = .001, multiple R = .40). Age and gender were not statistically significant predictors, but the personality scores were (R^2 change = .07, F_{inc} $(_{5,190})$ = 2.89, p = .015). Significant predictors were Extraversion (β = .20), and Conscientiousness (β = -.19). The last step of the model also produced a statistically significant change (R^2 change = .08, F_{inc} $(_{4,186})$ = 4.58, p = .001). The only significant predictor at this step was media exposure (β = .22). The adjusted R^2 value of .11 in the overall model indicates that 11% of the variability in the willingness to share personal information with an online store was predicted by higher scores on Extraversion and media exposure, and lower scores on Conscientiousness.

Willingness to share personal information with a broader public. The overall model was statistically significant and accounted for 12% of the variance in willingness to share personal information with a broader public (F $(_{11,186})$ = 2.29, p = .012, multiple R = .35). Age, gender, and personality were not statistically significant predictors. The last step of the model produced a statistically significant change (R^2 change = .05, F_{inc} $(_{4,186})$ = 2.57,

p = .039). The only significant predictor was media exposure (β = .16). The adjusted R^2 value of .07 in the overall model indicates that only 7% of the variability in the willingness to share personal information with a broader public was predicted by higher scores on media exposure.

4. DISCUSSION

This study examined factors that influence an individual's choice to share personal information online. Specifically, the role of personality, media exposure, internet trust, and perceived risks and benefits were examined in relation to a willingness to share personal information that differed in sensitivity (high school grades, medical records, bank account balance) and differed in target audience (social media, online store, general public). The results supported prior research that found sensitivity of the information and context played a role (Craciun, 2018). In terms of sensitivity, more sensitive information (such as bank account balances, tax returns, and blood type) was unlikely to be shared in any context. Thus, participants were attentive to, and discriminating amongst, the type of information shared. Overall, participants were more willing to share personal information on social media than they were with the general public or an online store. However, the type of information they would share depended on the circumstance. For example, participants indicated they were more likely to share their home address with an online store, than they were with the general public or on social media. Presumable, providing this information is necessary so the purchased item can be delivered to the correct address. Similarly, they were also more likely to offer their credit card information to an online store but were unlikely to do so with the general public or on social media. Again, credit card information in this context is necessary to make the purchase. Thus, information was disclosed that necessitated the transaction with an online store.

Personality also predicted willingness to disclose personal information, but again, it was context dependent. On social media, individuals high in agreeableness, negative emotionality, and extraversion were more willing to disclose. Individuals high on agreeableness are trusting and straightforward (Costa & McCrae, 1992). This trusting nature may make them less wary of their personal information falling into the wrong hands. Individuals high in negative emotionality can be impulsive (Costa & McCrae, 1992). This impulsiveness may lead them to offer information before they have had time to reflect on the consequences. Extraverts are outgoing, lively, seek excitement and are assertive (Costa & McCrae, 1992). Their gregarious nature makes them comfortable around others, so they may be more willing to share information. Higher scores on extraversion and lower scores on conscientiousness also predicted willingness to share personal information with an online store. Individuals who score low on conscientiousness generally do not pay attention to detail and are not very methodical (Costa & McCrae, 1992). In sum, personality traits predicted willingness to share information on social media and an online store. Personality traits did not predict willingness to share personal information with the general public, in which individuals may be completely unknown.

Purchase benefits predicted willingness to share information on social media, but not with an online store. This result appears counterintuitive. However, Kim and Kim (2018) also found that willingness to disclose personal information was influenced more by risks, than by the benefits. The larger the perceived risk, the less likely people would disclose (Myerscough, Lowe, & Alpert, 2006). However, risk was not predictive of disclosure in the current study, nor was internet trust. Risks, benefits, and trust were added in the hierarchical regression after the personality traits were entered, so they may not be

contributing anything additional to the model once personality has been taken into account. Although people understood there were risks involved, they felt these risks were slight. They only slightly disagreed when asked if the internet could be trusted and were neutral with respect to purchase benefits.

Willingness to disclose personal information was predicted by total media exposure in all contexts. The more people used the internet, the more comfortable they were sharing information. This experience may serve to lessen their concerns about privacy and risks – as people use the internet more frequently without any negative instances, the more comfortable they may become over time.

There were a number of limitations with this study. First, age and gender did not predict willingness to share personal information in this study. However, the sample was relatively young and mostly women, so this conclusion should be interpreted with caution. Future studies should be conducted on a more balanced gender distribution. As well, although the age range was 19-54 years in this study, most participants were young; therefore, replication with a wider age range and older sample is warranted to examine age differences.

Another limitation of the study is one inherent with the use of surveys. Questions on surveys may be prone to social desirable responding. Furthermore, this study was conducted online, and those individuals who chose to participate may have been more comfortable with internet use.

More research is needed to address further why people would provide sensitive information to others in cases where it is not necessary. People with more media exposure were more willing to disclose. Personality traits also predicted willingness to share personal information on social media and an online store. In both these cases, extraverts were more willing to disclose. As well, people higher in agreeableness and negative emotionality were more likely to disclose on social media, and people low on conscientiousness were more likely to disclose to an online store. Future research should examine personality traits in relation to actual behavior. The current study was a survey that asked participants how willing they were to share personal information but did not study actual behaviour. Given what we know about the privacy paradox (Brown, 2001; Norberg et al., 2007), it is likely people may disclose more information than they realize. Therefore, future studies should focus on both participants' written responses and actual behaviour.

Future research should examine online privacy in light of human interaction with artificial intelligence (AI).[1] There has been an exponential increase in research in this area (Tran et al., 2019a). The current study examined factors internal to the individual, yet online exposure increases the likelihood of personal data being mined by AI often without the knowledge or consent of the individual. As such, people may be influenced by manipulative algorithms that target their behaviour (e.g., online advertisements). Indeed, embodied conversational agents (virtual characters or avatars) communicate with users in online applied mental health settings (Provoost, Lau, Ruwaard, & Riper, 2017). AI can take large data bases (such as electronic health records) and use natural language processing to decipher written notes (Graham et al., 2019). Machine learning algorithms have been used to analyze social media posts to predict mental health outcomes (Kim, Lee, & Park, 2021). "Deep learning" can examine social media posts to look for markers of mental illness like depression (Kim, Lee, Park, & Han, 2020). While this use can have practical implications for someone in distress (Graham, et al., 2019; Tran et al., 2019b) it may be prudent to proceed cautiously given cybercrime is on the rise and the information may fall into the

[1] I would like to thank an anonymous reviewer for the ideas and suggestions in this section.

wrong hands. In a bibliometric study of AI in the field of health and medicine, Tran et al. (2019a) analyzed over 20,000 articles, and only 0.7% contained the word "ethics" in their keywords and text analysis. Thus, more studies on privacy and the interaction of humans with AI is warranted.

5. CONCLUSION

This study highlighted the role personality traits and media exposure played in participants' willingness to share information, and adds to the body of literature on the paradox effect (Brown, 2001; Norberg et al., 2007). Overall, people with higher scores on media exposure were more willing to share information on social media, with an online store, and with the general public. The personality traits of extraversion, agreeableness, and negative emotionality, along with perceived purchase benefits predicted willingness to share information on social media. Higher extraversion and lower conscientiousness scores predicted willingness to share personal information with an online store. However, highly sensitive information (e.g., bank account balance) was unlikely to be shared in any context. Participants were more willing to share personal information on social media than they were with the general public or an online store. Nevertheless, participants weren't too concerned about the risks involved in sharing information. In light of cybercrime, further research on sharing personal data and the paradox effect is warranted.

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