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## **‘Anti’-Social Media: Narcissism and Self-Control as Predictors of Facebook Self-Disclosure**

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# **‘Anti’-Social Media: Narcissism and Self-Control as Predictors of Facebook Self-Disclosure**

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## **Abstract**

The personal information shared on Facebook can expose individuals to increased risk such as cybercrime and identity theft. While the perception of risk associated with online self-disclosure is increasing, this may not translate into risk management behaviours. This study explored why individuals choose to self-disclose on Facebook, often in spite of the risks. It was hypothesised that a personality style accentuated by impulsive and anti-social behaviour would help to explain this risk-behaviour dichotomy. In other words, individuals who are more narcissistic with less self-control were predicted to expose themselves to more risk on Facebook. An online questionnaire was completed by 263 Australians. This study found that individuals who had less self-control and higher narcissism exposed themselves to significantly more risk on Facebook. Hence, this study found that narcissism and self-control play a meaningful role in the risk-behaviour dichotomy. These findings add to the body of literature on online self-disclosure.

## **Keywords**

Cyber security, Social media, Self-disclosure, Facebook, Privacy behaviour.

# 1 Introduction

Over the last decade, social media sites have become the social norm due to continued growth in the accessibility and user-base of the Internet (Wilson, Gosling, & Graham, 2012). Facebook in particular, due to its popularity and the large amount of personal information it allows users to disclose, poses potential risks for individuals both online and in the real world. While the perception of risk associated with self-disclosure on Facebook is increasing (Dey, Jelveh, & Ross, 2012), for many users, this does not translate into risk management behaviours.

Studies of Facebook have predominately looked at who uses Facebook (Backstrom, Boldi, Rosa, Ugander, & Vigna, 2012), how they use Facebook (Amichai-Hamburger & Vinitzky, 2010), and why individuals disclose information (Krasnova, Spiekermann, Koroleva, & Hildebrand, 2010). The majority of these studies have been conducted within the United States on university student samples. It is important for further research to study Facebook self-disclosure with more demographically diverse participants. Personality factors such as narcissism (K. Smith, Mendez, & White, 2014) and self-control (Yu, 2014) have shown promising associations with Facebook self-disclosure, but these findings have not been replicated. This study aimed to fill this research gap, by examining the relationship between narcissism, self-control and self-disclosure on Facebook within a demographically diverse Australian sample.

## 1.1 The Risks of Self-Disclosure on Facebook

In many ways, the integration of Facebook into daily life is positive. Facebook provides a platform for users to share information with friends and family, and remain connected all over the world, making intercontinental communication freely available for anyone with an Internet connection. Furthermore, due to its popularity, it allows businesses a powerful marketing platform, for which Facebook can be critical to their business model (Noyes, 2015). However, along with these benefits, Facebook brings with it inherent risks that derive from the representation, integration and connection of individuals online. The public sharing of personal information that Facebook actively encourages may leave its users vulnerable to cybercrime (Ramsey & Venkatesan, 2010), identity theft and targeted marketing (Steel & Fowler, 2010). Furthermore, the use of Facebook can also put individuals at risk for unintentional information leaks, online harassment, damage to reputation (Wilson et al., 2012) and crime in the real world. For example, Facebook may facilitate stalking as a result of the personal and location information provided (Darvell, Walsh, & White, 2011; Lyndon, Bonds-Raacke, & Cratty, 2011; K. Smith et al., 2014). Furthermore, research has shown that several Facebook applications gather user information and provide it to external advertising, marketing and internet tracking companies (Steel & Fowler, 2010). According to founder and co-creator of Facebook Mark Zuckerberg, the age of privacy is over (Sarrel, 2010) and with over 300 petabytes (300,000 terabytes) of user information stored in their servers (C. Smith, 2015), this may well be the case.

While there are potential risks of information being stolen or hacked from user accounts, the vast majority of information is provided willingly by the user. For the purposes of this study, self-disclosure is defined as the process by which a person voluntarily discloses personal information to others (Cozby, 1973; Wheelless & Grotz, 1976). Facebook users collectively upload over four billion pieces of content everyday (Wilson et al., 2012) along with 300 million photos (C. Smith, 2015). Due to the sensitive nature of the information represented on a user's profile, Facebook has put privacy settings in place to allow the user to control their information disclosure. The visibility of information to other users is dependent on these privacy settings. For example, these settings give users the opportunity to individually set the level at which they share different forms of information and content (i.e., public, friends of friends, just friends or private).

However, even users who choose to restrict the viewership of their page to just their approved network are dependent on people within their network practicing similar privacy precautions. Therefore, the security of the information disclosed online is, in part, controlled by the size of their online network and their network's security behaviours. In this way, an individual's overall risk can be seen as a product of both their self-disclosure behaviour and their privacy or security behaviours. For the purposes of this study, the risk associated with Facebook use will be treated as a single paradigm, consisting of both self-disclosure behaviour and privacy behaviours, by combining previously validated measures, with an emphasis on specific and tangible behaviours.

## 1.2 Risk-Behaviour Dichotomy

Previous research indicates that the decision to disclose information online is rarely a rational cognitive process by which an individual weighs up these perceived risks against benefits (Parsons,

McCormac, Pattinson, Butavicius, & Jerram, 2014). Even individuals who perceive the risk posed by sharing their personal information online may not take precautions to safeguard their information or minimise risk by limiting what they disclose (Wilson et al., 2012). While perceived risk plays a role in an individual's online self-disclosure, some studies have been unable to replicate the relationship between these two factors (Chang & Heo, 2014; K. Smith et al., 2014). Much research has focused on trying to explain why perceived risk does not more accurately predict risk-management behaviours. Demographic variables such as age (Wilson et al., 2012), gender (K. Smith et al., 2014) and the number of Facebook friends (Chang & Heo, 2014; McKinney, Kelly, & Duran, 2012) have been shown to be strongly associated with self-disclosure, with younger users disclosing significantly more and females disclosing more than males. However, these factors do not provide insight into the reason perceived risk does not predict risk-management behaviours.

Despite inconsistencies in past research, the most theoretically viable answer seems to be that, for many users, the benefits of disclosing personal information online (e.g., popularity, attention, affirmation) outweigh the risk. According to the theory of cognitive dissonance (Festinger, 1962), this creates an internal conflict due to inconsistencies between the individual's desire for security and their Facebook behaviour. This, in turn, causes the individual psychological discomfort due to a conflict in interests. To alleviate this conflict, individuals will then attempt to alter either their behaviour, or their attitudes towards the behaviour, to be consistent (Brehm, 1956). It has been argued that the mere presence of privacy settings and a privacy policy on Facebook, regardless of how they are constructed, allow the individual to perceive a sense of safety.

However, this does not explain why individuals' who perceive the risk associated with Facebook use do not necessarily act in ways to limit their risk exposure. Traditional personality frameworks such as Eysenck's (1952) 'Big Five' (i.e., Neuroticism, Extraversion, Openness to Experience, Agreeableness and Conscientiousness) have been at the forefront of research into explaining why perceived risk does not necessarily translate into risk management behaviours (Amichai-Hamburger & Vinitzky, 2010). While personality variables such as extraversion and openness (Amichai-Hamburger & Vinitzky, 2010; Ross et al., 2009) have been suggested as accounting for individual differences in Facebook self-disclosure, these findings have not been consistent (Chang & Heo, 2014). Recent studies have found associations between Facebook self-disclosure and personality variables outside of the 'Big Five', particularly narcissism (K. Smith et al., 2014) and self-control (Yu, 2014), but more research is required to validate these relationships.

### **1.3 Narcissism as a predictor of self-disclosure**

Narcissism is one of three anti-social personality traits that comprise the 'dark-triad' of personality (Paulhus & Williams, 2002), along with psychopathy and Machiavellianism. It refers to a personality trait defined by an inflated opinion of oneself, self-promotional behaviour and vanity, coupled with a desire to maintain and affirm these beliefs through interpersonal relationships (K. Smith et al., 2014). As such, narcissistic individuals generally see themselves as unique, powerful, and intelligent (McKinney et al., 2012). Sub-clinical narcissism is similar to other personality factors such as extraversion, as individuals exist on a spectrum from high to low levels of narcissism (Paulhus & Williams, 2002). Individuals with narcissistic tendencies desire social contact (Bergman, Fearington, Davenport, & Bergman, 2011). As such, people who score highly on the narcissism trait tend to employ exhibitionism and attention seeking-behaviours to maintain their inflated ego.

Narcissism is of particular relevance to social media, as social media provides a platform for self-promotional behaviours. Previous research of Facebook users has found correlations between narcissism and self-disclosure (Buffardi & Campbell, 2008; Mehdizadeh, 2010), number of friends online (Bergman et al., 2011; K. Smith et al., 2014) and frequency of use (Buffardi & Campbell, 2008; Ong et al., 2011). Furthermore, Facebook users have been shown to have significantly higher levels of narcissism and exhibitionism than individuals who do not use Facebook (Ryan & Xenos, 2011). While this is likely that narcissistic individuals may be drawn to the exhibitionist aspect afforded by social media, it has been suggested that the behaviours that Facebook encourages and rewards (e.g., self-promotion, vanity) may reinforce narcissistic tendencies in its users (Buffardi & Campbell, 2008). However, not all studies have been able to replicate relationships between narcissism and self-disclosure. This is likely to be due to the way in which they have conceptualised self-disclosure. There is sufficient inconsistency in previous research to warrant further investigation.

### **1.4 Self-Control as a predictor of self-disclosure**

The notion of self-control as a predictor of self-disclosure spurs from the earlier research on the General Theory of Crime and Self-Control Theory (Gottfredson & Hirschi, 1990), which suggests that

high impulsivity or a lack of self-control is the primary reason people engage in deviant behaviour. According to this theory, individuals with low self-control tend to have higher impulsivity, higher self-centredness and lack empathy (Gottfredson & Hirschi, 1990). Because of these attributes, it is argued that individuals' with low self-control are more likely to exhibit risk-taking behaviours. This is of particular salience to the field of social media, as the disclosure of personal and private information on Facebook can be seen as risk-taking behaviours. In particular, the disclosure of this information in spite of perceived risk can be seen as a trade-off between long and short-term goals, and a tendency to favour short-term benefits over long-term security. Yu (2014) applied this framework of self-control to self-disclosure and found that self-control explained as much as 73% of the total variance in individuals' Facebook self-disclosure. While these are promising results, this relationship has yet to be replicated and there is a need for future research, particularly on a population broader than US undergraduate students (Modic, 2012; Yu, 2014). Furthermore, self-control may mediate the relationship between Facebook Risk Exposure and narcissism. This may address some of the inconsistencies found when studying the direct association between Facebook Risk Exposure and narcissism (McKinney et al., 2012).

## 1.5 Aims and Hypotheses

There has been, to date, a lack of Australian based studies within the field of social media. Much research has also been limited in both the size and age diversity of their samples, and researchers have called for future research to address these limitations (Seidman, 2013; K. Smith et al., 2014; Yu, 2014). Furthermore, with the rapid change, expansion and diversification of Facebook, it is important to replicate previous research. While recent studies have contributed greatly to the field of social media and self-disclosure, the relationship between Facebook Risk Exposure, narcissism and self-control has not yet been explored. Furthermore, previous studies on narcissism or self-control have been conducted largely within the United States on university student samples. This study aims to address these limitations and validate previous research. It is hypothesised that:

- H1: Younger participants will have greater exposure to risk on Facebook.
- H2: Females will have greater exposure to risk on Facebook than males.
- H3: Participants with higher self-control will have lower exposure to risk on Facebook.
- H4: Participants who are more narcissistic will have greater exposure to risk on Facebook.
- H5: Participants with less self-control will have a greater number of Facebook friends.
- H6: Participants who are more narcissistic will have a greater number of Facebook friends.
- H7: The relationship between narcissism and exposure to risk on Facebook will be mediated by self-control.

## 2 Methodology

### 2.1 Participants

Participants were required to be over 18 years of age, have an active Facebook account and be fluent English speakers. This study collected data from 263 participants via an online questionnaire, of whom 163 (62%) were female, 96 (36.5%) were male and 4 (1.5%) participants did not specify gender. Participants were undergraduate psychology students who gained course credit or were recruited through Facebook and through snowballing techniques. While 41% of the participants were between 20 and 24 years of age, the sample was relatively diverse compared to previous studies, with university graduates representing the largest portion of the sample (32%). Furthermore, the sample also consisted of individuals with postgraduate degrees (14%) and individuals who had not undertaken higher education after high school (11%). Level of education was not found to have any significant relationship with any of the other factors analysed in this study and, as such, was not examined further.

### 2.2 Materials

Participants were asked to complete demographic questions including their age, gender, education level and number of Facebook friends. Of the 263 participants, 79% ( $n = 209$ ) reported their number of Facebook friends. Participants were asked to respond to the following quantitative measures:

### 2.2.1 Facebook Risk Exposure

Self-disclosure was conceptualised as a product of the information individuals disclose (i.e., self-disclosure behaviour) and the things individuals do to protect their privacy (i.e., privacy behaviour). Together, these represent an individual's exposure to risk on Facebook, and we name this measure *Facebook Risk Exposure*.

The *self-disclosure behaviours* were measured using a subset of Seidman's Self-Presentation Scale (Seidman, 2013). These were the Belongingness Behaviours-Communication scale (Cronbach's  $\alpha = .76$ ), which consists of two items on the individual's frequency of posting and commenting on other people's status, photos and Facebook pages (i.e., Timeline) and General Self-Disclosure scale (Cronbach's  $\alpha = .85$ ), which measures how frequently an individual posts particular content (e.g., photos, profile information and status). These are both measured on a 7-point Likert scale (from 1 = never to 7 = all of the time).

The *privacy behaviours* were measured in terms of how an individual utilised privacy settings and the visibility of their Timeline. Participants were provided with a list of items that Facebook allows an individual to share (i.e., work place, education, phone number, date of birth, relationship status, email, address) and asked to select whether, and to what extent, they disclose this information. Participants could report this as visible to only themselves, friends, friends of friends, everyone, or not visible at all. Participants were then asked to report on the visibility of their Facebook page using the same response options. Each item was scored from lowest level of exposure (i.e., not visible at all) to highest level of exposure (i.e., visible to everyone) and summed to represent the individuals' level of privacy behaviour (Cronbach's  $\alpha = .71$ ). This was combined with the self-disclosure behaviour measure to generate a comprehensive measure, namely, *Facebook Risk Exposure* (Cronbach's  $\alpha = .81$ ). Higher scores on this measure indicated greater exposure and thus greater risk, while lower scores indicated less risk.

### 2.2.2 Self-Control

The independent variable of Self-Control was measured using the Self-Control measure outlined in Yu (2014) and Grasmick, Tittle, Bursik Jr, and Arneklev (1993). This measure contains 24 items on impulsivity, simple tasks, risk seeking, physical activities, self-centeredness and temper. Participants responded on a 7-point Likert scale (from 1 = strongly agree to 7 = strongly disagree). A higher score on this measure indicates a higher level of Self-Control. In response to the findings of Yu (2014), this study treated Self-Control as a single factor (Cronbach's  $\alpha = .88$ ).

### 2.2.3 Narcissistic Personality Inventory

Narcissism was measured using a 20-item version of the Narcissistic Personality Inventory (K. Smith et al., 2014), which measures four of the factors for subclinical narcissism, namely, vanity, exhibitionism, superiority and entitlement (Cronbach's  $\alpha = .87$ ). Participants responded on a 7-point Likert scale (from 1 = strongly agree to, 7 = strongly disagree) where a lower score indicates greater narcissism.

## 3 Results

This study used a more comprehensive measure of Facebook self-disclosure, namely, *Facebook Risk Exposure*, which operationalised exposure to risk in terms of both self-disclosure behaviour and privacy behaviour. A Pearson product-moment correlation was conducted to examine the relationship between self-disclosure behaviour and privacy behaviour. There was a medium significant positive correlation between the self-disclosure measure and privacy behaviour measure ( $r = .24$ ,  $p < .05$ ), providing support for the use of this combined measure.

### 3.1 Facebook Risk Exposure and Demographics

The Facebook Risk Exposure measure was compared on demographic variables, namely age and gender. The initial age categories were collapsed to form three categories that were suitably sized ( $n > 20$ ) for data analysis (i.e., 18-29 years of age, 30-44 years of age and above 45 years of age). A one-way between subjects analysis of variance (ANOVA) confirmed a significant difference between the age categories,  $F(2,260) = 6.13$ ,  $p < .05$ . The effect size, calculated using eta squared, was small ( $\eta^2 = .045$ ). A Tukey HSD post-hoc test found that Facebook users who were over 45 years of age scored significantly lower on the Facebook Risk Exposure measure ( $M = 38.35$ ,  $SD = 9.47$ ) than both 18-29 year olds ( $M = 45.84$ ,  $SD = 9.66$ ), and 30-44 year olds ( $M = 46.46$ ,  $SD = 11.60$ ). These findings show partial support for Hypothesis 1, that younger individuals would have greater Facebook Risk Exposure.

It was further hypothesised that, in line with previous literature (K. Smith et al., 2014), females would have greater Facebook Risk Exposure than males. An independent samples t-test revealed no significant differences between male and female scores on Facebook Risk Exposure,  $t(257) = .52$ ,  $p = .61$ , and as such, Hypothesis 2 was not supported.

### 3.2 Narcissism, Self-Control and Facebook Risk Exposure

A correlation analysis, using the Pearson's product moment correlation coefficient, was conducted to test the hypotheses that individuals with low self-control and / or high narcissism, would score higher on Facebook Risk Exposure than individuals higher in self-control and lower in narcissism. The results of these analyses are displayed in Table 1. There was a small, negative correlation ( $r = -.18$ ) between individuals' scores on the self-control measure and Facebook Risk Exposure, which supports the hypothesis that higher self-control would be associated with less Facebook Risk Exposure. Furthermore, there was a small, negative significant correlation ( $r = -.24$ ) between an individual's level of narcissism and their Facebook Risk Exposure. This finding supported the hypothesis that higher narcissism, indicated by smaller scores on the Narcissistic Personality Inventory, would be associated with higher scores on Facebook Risk Exposure. Narcissism and self-control both exhibited similar correlations on the two sub-measures that make up the Facebook Risk Exposure measure (i.e., self-disclosure behaviour and privacy behaviour). This provides further support to the above findings.

Variable	<i>M (SD)</i>	1	2	3	4	5
1. Narcissistic Personality Inventory	88.57 (16.40)	-	.48**	-.24**	-.20	-.18**
2. Self-control	114.19 (19.38)		-	-.18*	-.15*	-.13*
3. Facebook Risk Exposure	45.30 (10.22)			-	.81**	.76**
4. Self-Disclosure Behaviour	19.46 (6.81)				-	.24**
5. Privacy Behaviour	25.83 (6.16)					-

Table 1. Means, standard deviations and correlation analysis of narcissism, self-control and Facebook Risk Exposure (\* $p < .05$  \*\* $p < .001$ , two-tailed)

It was also hypothesised that individuals with lower self-control and higher narcissism would have a greater number of friends on Facebook. Hypotheses 5 and 6 were tested using one-way ANOVAs. A. Smith (2014) found that the average number of friends for Facebook users was 334, with most users having around 200 friends. As such the data for the number of friends on Facebook was collapsed into three categories, low (0-300), medium (301-700) and high (701+). Descriptive data for these categories is shown in Table 2, where higher scores on the self-control measure represents greater self-control and lower scores on the narcissism measure represents greater narcissism.

Facebook Friends	<i>n</i>	<i>M (SD)</i>	
		Self-Control	Narcissism
0 – 300	108	115.38 (21.45)	92.60 (17.37)
301 – 700	63	116.43 (16.76)	86.02 (13.86)
701+	36	106.69 (15.38)	80.94 (14.08)
Total	207	114.19 (19.38)	88.57 (16.40)

Table 2. Self-control and narcissism by number of Facebook friends

Preliminary analysis confirmed that the individuals who did not report the number of friends they had on Facebook were not significantly different in terms of self-control or narcissism than the individuals who did respond. A one-way ANOVA found a significant difference in the self-control score as a function of the number of friends participants had on Facebook,  $F(2,204) = 3.39$ ,  $p < .05$ . Post hoc comparisons, using a Tukey HSD test, found a significant difference in levels of self-control between individuals with less than 300 friends and users with between 301 and 700 friends on Facebook ( $p < .05$ ). This provided partial support for the hypothesis that individuals with lower self-control would have more friends on Facebook. Similarly, there was a significant difference in narcissism as a

function of the number of friends participants had on Facebook,  $F(2,204) = 8.497, p < .001$ . A Tukey HSD test revealed that there were significant differences in narcissism scores between individuals with up to 300 Facebook friends and individuals with either 301-700 Facebook friends ( $p < .05$ ) or more than 700 Facebook friends ( $p < .05$ ). This partially supported the hypothesis that individuals with more friends on Facebook would be higher in narcissism than individuals with fewer friends.

### 3.3 Mediation Analysis

Lastly, it was hypothesised that the relationship between narcissism and Facebook Risk Exposure would be mediated by self-control. This suggests that self-control would affect whether narcissistic individuals have greater risk exposure on Facebook. This would help to explain why previous literature on narcissism (Bergman et al., 2011; Buffardi & Campell, 2008; K. Smith et al., 2014) has been inconsistent in the association between narcissism and Facebook Risk Exposure. Hierarchical Multiple Regression was used to test the suggested mediation model shown in Figure 1.

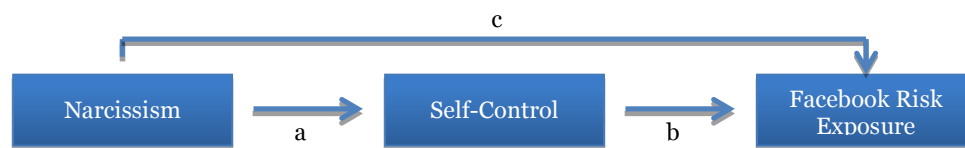


Figure 1: Mediation between narcissism, self-control and Facebook Risk Exposure

Hierarchical multiple regression evaluates mediation by comparing the variance explained in the dependent variable (i.e., Facebook Risk Exposure) by a model containing only the mediator variable (i.e., self-control) compared to a model containing both the suggested mediator and a primary predictor variable (i.e., narcissism). In this case, it tests for the ability of narcissism to predict Facebook Risk Exposure after controlling for the influence of self-control. Preliminary analyses were conducted to ensure that the assumptions of normality, linearity, multicollinearity and homoscedasticity had not been violated.

In the analysis of Hypothesis 3 and 4, statistically significant negative associations have already been shown between narcissism and Facebook Risk Exposure (pathway c) and self-control and Facebook Risk Exposure (pathway b). As noted above, there was also a statistically significant positive association between narcissism and self-control (pathway a). In conducting a hierarchical multiple regression, the relationship between self-control and Facebook Risk Exposure was tested in an initial model, and self-control explained 3% of the variance in Facebook Risk Exposure. In model 2, the relationship between narcissism and Facebook Risk Exposure (pathway c) was tested while controlling for self-control. The total variance explained by the model was 7%,  $F(2,269) = 9.23, p < .001$ . This model accounted for an additional 4% of the variance in Facebook Risk Exposure. After controlling for the self-control measure in model 2, narcissism was a statistically significant predictor of Facebook Risk Exposure ( $\beta = -.21, p < .05$ ). This provides support for the hypothesis that the relationship between narcissism and Facebook Risk Exposure is mediated by an individual's level of self-control.

## 4 Discussion

This study examined the relationship between individuals' demographic and personality factors, and Facebook use. In acknowledging inconsistencies in previous literature surrounding the umbrella term of 'self-disclosure', a dual-factor approach was used to more comprehensively operationalise the risk that individuals expose themselves to on Facebook. This measure combined individuals' self-disclosure behaviour (i.e., the information individuals disclose) and privacy behaviour (i.e., the things individuals do to protect their privacy) to capture their overall exposure to risk on Facebook. This study explored the associations between narcissism, self-control and Facebook Risk Exposure, suggesting that these factors may play a meaningful role in the risk-behaviour dichotomy seen in previous research (K. Smith et al., 2014; Yu, 2014)

The findings of this study supported Hypothesis 1, which suggested that Facebook Risk Exposure varies in relation to age. Specifically, it was found that younger participants exposed themselves to significantly higher risk on Facebook than older participants. However, Hypothesis 2, which proposed that females would have significantly greater exposure to risk on Facebook than males, was not supported. In fact, the results showed the level of Facebook Risk Exposure was very similar for both females and males. This contrasts with previous literature that found females expose themselves to more risk on Facebook in terms of privacy settings, frequency of use, and the nature of the content



disclosed (K. Smith et al., 2014; Wilson et al., 2012). This may warrant further exploration, as it may differ over time and depend on the social media platform examined.

Correlational analysis of the self-control, narcissism and Facebook Risk Exposure measure supported Hypotheses 3 and 4. As expected, there was a medium positive correlation between self-control and narcissism. This suggested that individuals who exhibited greater narcissism tended to have lower self-control. This is logical, as both measures are operationalised on a personality style emphasised by impulsive, anti-social factors and short-term focussed behaviours. Findings also indicated that individuals with lower self-control and higher narcissism exposed themselves to significantly more risk on Facebook.

Beyond the Facebook Risk Exposure measure, there was evidence to support Hypothesis 5, which suggested that individuals with a greater number of friends on Facebook would, on average, have lower self-control than individuals who had fewer friends. It was found that participants who had over 700 friends on Facebook had significantly lower self-control than individuals who had less than 700 friends. This makes sense, as self-control is associated with factors such as impulsivity, risk-seeking behaviour and self-centredness that may be indicative of individuals with a stronger desire for attention and social capital. Furthermore, it is likely that individuals who have lower self-control are more focussed on the immediate benefits of adding people to their Facebook network than the potential future risk, and as such, may be more liberal with Facebook friend requests. Similarly, support was found for the hypothesis that individuals with more friends on Facebook would tend to have greater narcissism than individuals with fewer friends. Individuals with over 700 friends exhibited significantly higher narcissism than individuals with fewer friends. These findings are consistent with previous research (Bergman et al., 2011; Yu, 2014).

Results also indicated that, while both narcissism and self-control were individually predictive of Facebook Risk Exposure, it was the combination of the two factors that was able to most accurately predict greater exposure to risk on Facebook. Individuals who were both high on narcissism and low on self-control had the greatest exposure to risk on Facebook overall. This relationship was found to account for 7% of the overall variance in Facebook Risk Exposure. While this finding is only relatively small, explaining even a small amount of the variance in a behaviour as complex as an individual's self-disclosure can be considered a meaningful contribution to the literature.

#### **4.1 Limitations and Future Directions**

This study was not able to replicate and validate the strong correlations of previous research, particularly in the case of narcissism (K. Smith et al., 2014) and self-control (Yu, 2014). There are several possible explanations for this. These differences could be due to demographic differences, as previous studies have focussed primarily on undergraduate student populations from the United States. Furthermore, participants from this sample also tended to exhibit relatively high self-control and low narcissism, as well as relatively low overall exposure to risk on Facebook. These changes may reflect the rapid pace at which Facebook has changed and developed, both in the platform itself and the public perception of it. This is a limitation not only for this study but for much of the research into social media generally, and suggests that caution is required when comparing current and past research. This also highlights the importance of using demographically diverse participants in future studies of social media.

Another limitation of this study is the use of self-report measures. While this is quite common in social media and Facebook research, the use of self-report, particularly for measures such as self-control and narcissism, may have resulted in a greater degree of social desirability bias. However, this method was used to gather as much data and as widely as possible, so in many ways there is a trade-off between the validity of a self-report measurement and the reliability of obtaining a diverse and highly generalisable sample. Future research could attempt to obtain a more objective measure of participants' Facebook self-disclosure, by asking participants for permission to view their accounts. This objective assessment of individuals' online behaviours could then be coupled with self-reported measures to obtain a more holistic understanding of Facebook self-disclosure.

This study is also limited in that it primarily focussed on two predictors of Facebook Risk Exposure, namely, self-control and narcissism. It is likely that more of the variance in Facebook Risk Exposure could have been accounted for by including further factors. This should be examined in future research.

## 5 Conclusions

Facebook has become increasingly popular over the last decade and has become an integral part of daily life, perhaps representing a fundamental shift in the way we as a society communicate and interact with one another (Butler, 2011). While the global connectivity and socialisation that Facebook promotes is in many ways positive, the large amount of personal information it displays exposes individuals to increased risk for online exploitation such as cybercrime and identity theft (Ramsey & Venkatesan, 2010). This risk can also translate into real world threats such as stalking, theft, assault, harassment and damage to reputation. While the perception of risk associated with Facebook and other online social networking sites is increasing, research has found that for some individuals, this risk perception is not enough to dissuade them from putting themselves at risk online (Wilson et al., 2012). This study has shown that, in part, this risk-behaviour dichotomy can be explained by antisocial personality traits, in continuing recent research into narcissism (K. Smith et al., 2014) and self-control (Modic, 2012; Yu, 2014). Furthermore, it was found that self-control mediated the relationship between narcissism and exposure to risk on Facebook, which provides a possible explanation for the inconsistencies in past research. This study also supported previous findings that age was associated with exposure to risk on Facebook (Chang & Heo, 2014; K. Smith et al., 2014). While the effect sizes in this study were small, they provide evidence for the relationship between narcissism, self-control and exposure to risk on Facebook. Furthermore, the significant differences in the way individuals expose themselves to risk through both self-disclosure and privacy behaviour, supports the use of a multifaceted measure of Facebook Risk Exposure that acknowledges these differences.

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