



Revisiting the social enhancement hypothesis: Extroversion indirectly predicts number of Facebook *friends* operating through Facebook usage



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ABSTRACT

An online survey of college-age Facebook users ($N = 209$) found that extroversion, narcissism, openness, and agreeableness predicted *friending* more people on Facebook. However, only extroversion continued to exert an effect when these and other personality variables were examined together in one regression model, while controlling for frequency of Facebook usage and gender. Also, a path analysis model showed that extroversion directly predicted number of Facebook *friends* and the number of months people were active on Facebook. In addition, extroversion indirectly influenced number of Facebook *friends*, operating through months active on Facebook and hours per week spent on Facebook in a parallel mediation effect. Findings offer support for the social enhancement hypothesis, which argues that extroverted people benefit the most from social media.

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1. Introduction

Researchers for decades have tried to understand how personality shapes social interactions among people. Social-networking sites, such as Facebook, offer an opportunity to study these interactions. Research has found that personality shapes how people communicate online, much as it does offline (e.g. Amichai-Hamburger & Vinitzky, 2010; Back et al., 2010). Based on this foundation, it is well established that personality has an effect in how people use social-networking sites. However, what has received less study is how this effect plays out – what path does this effect take? This current study used a survey of college-age Facebook users ($N = 209$) to begin to fill this gap by exploring a mediation model that explains how personality and Facebook usage predict number of Facebook *friends*. To create this model, this study drew on personality theory and the social enhancement hypothesis, which argues that people who are popular offline complement this popularity online (Kraut et al., 2002; Tufekci, 2010; Zywicki & Danowski, 2008). Previous research has examined similar variables (Amichai-Hamburger & Vinitzky, 2010; Ross et al., 2009; Schrammel, Koffel, & Tscheligi, 2009). However, no earlier studies have directly tested a mediation model that examines the effect of personality on *friending* mediated by how frequently people use Facebook. Therefore, this study offered new knowledge about the role personality plays in human behavior by moving beyond merely describing the influence to explaining its path in the microcosm of a social-networking site.

First, I offer a brief history of the role of *friending* on Facebook. Then I review the literature on how personality theory and the social enhancement hypothesis have been applied to social media to show support for the hypotheses and research question in this study. Then I outline how the proposed model was tested and explain how the results fit existing literature and expand knowledge of how personality influences social media use.

2. Literature review

2.1. Facebook

Social media have been around in some form since the early 1990s, even before the Internet was called the World Wide Web (Rheingold, 2000). Their goal was to enable people to form online connections with other people, a goal that continued as these sites became more technologically sophisticated (Thelwall, 2008). Facebook started as a social medium for college students in 2004 (Boyd & Ellison, 2007) but two years later was opened to the general public and now has become the number one website in the world, according to the traffic-ranking site, Alexa.com.¹ Facebook has 1.06 billion monthly active users (Tam, 2013). Two-thirds of online American adults report using it, making it the predominant social medium in the United States (Rainie, Smith, & Duggan, 2013). As such, Facebook was deemed a suitable environment in which to understand online communication because of its widespread and frequent use. College-age people were the target of this study

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¹ According to figures at <http://www.alexa.com> accessed on June 30, 2013.

because younger people are more typical users of social media (Lenhart, Purcell, Smith, & Zickur, 2010), such as Facebook.

2.1.1. Friending and Facebook usage

This study focused specifically on *friending*² – the act of forming a relational connection (Ledbetter et al., 2011) with another person on Facebook. *Friending* was examined because it is a common activity on a variety of social media (Ellison, Steinfield, & Lampe, 2007). Social media *friending* differs from offline friendships because online *friends* are often based on very weak ties, and may be essentially strangers (Gilbert & Karahalios, 2009). Another important attribute of social media *friending* is its public nature. Most social media, including Facebook, display and update the number of *friends* for any users to see. In addition, people “display their connections” through pictures and observations about politics, books they have read, or musical taste on their profiles (Donath & Boyd, 2004, p. 72). This enables people to have more power to be selective in how they present themselves and manage their public impression on social media (Walther, 2007). In addition, the action of *friending* on Facebook requires that a request be made and accepted. As a result, the number of *friends* one has on Facebook may reflect in part how actively a person sends out *friend* requests and accepts them (Lee, Moore, Park, & Park, 2012). However, the public nature of *friending* is important as well, as people can see how many *friends* another person has. Lee et al. (2012) note that this public nature of the number of *friends* may lead people to strategically accept requests with little deliberation to make themselves look popular. Therefore, the number of *friends* may reflect how people control how others see them online (Lee et al., 2012). As a result the number of *friends* may be both a gauge of popularity and provide a means for people to articulate particular attributes of their personality.

2.2. Theoretical framework

2.2.1. Social enhancement hypothesis

The social enhancement hypothesis posits that extroverted people are more motivated to expand online contacts in what has been dubbed the “rich get richer” effect (Kraut et al., 2002; Tufekci, 2010; and Zywicka & Danowski, 2008). Kraut et al. (2002) found in their seminal longitudinal study that new Internet users derived benefits from using the web, particularly if they were extroverted or outgoing. Similarly, Zywicka and Danowski (2008) found that extroverted people were more popular on Facebook but put less effort into trying to be popular than introverts, offering support for the social enhancement hypothesis. Based on this literature, extroversion was a key personality variable considered in this current study.

2.2.2. Personality and social media

For this study, four other personality variables in addition to extroversion were considered because they have been found to have an influence on how people use social media and other online communication (e.g. Amichai-Hamburger & Vinitzky, 2010; Correa, Hinsley, & Gil de Zuniga, 2010; Marcus, Machilek & Schutz, 2006). These were neuroticism, conscientiousness, agreeableness, and openness to change, which together with extroversion make up the big-five personality factors. Neurotics see the world as a threatening place; conscientious people are dependable and organized; agreeable people get along well with others, while open people find it easier to embrace change (Eysenck, 1998; Funder & Fast, 2010).

² For the sake of clarity, *friend* or *friending* was italicized when it meant an online social-media connection. This was an attempt to differentiate between the common usage of the word friend and social media friends.

A variety of relationships between personality and online communication have been found. For example, people with their own websites have been found to be less extroverted and more open to new experience than the general population (Marcus et al., 2006). Frequent social media users tend to be more extroverted and open to new experiences but also more neurotic (Correa et al., 2010). Highly extroverted people used Facebook more and made greater use of its communication tools, while people high in the trait openness shared more on Facebook and people high in the trait conscientiousness limited their online activities (Amichai-Hamburger & Vinitzky, 2010). Ross et al. (2009) also found that people high in openness used Facebook more than others. Personality also may play a role in what social medium people prefer. Hughes, Rowe, Batey, & Lee, 2012 found that extroverted and neurotic people preferred Facebook.

2.2.3. Personality and friending

When research that specifically addresses personality traits and the act of accumulating *friends* is considered, people high in openness spend more time online, so they end up accruing more *friends* (Schrammel et al., 2009). Highly extroverted people also have been found to have more Facebook *friends* (Amichai-Hamburger & Vinitzky, 2010; Schrammel et al., 2009). However, another study (Ross et al., 2009) found that extroverted people joined more online groups but did not have more *friends*.

This current study also examined narcissism, which is characterized by high self-esteem, a sense of entitlement, defensiveness, and willing to manipulate others to get what one wants (Swann & Bosson, 2010). Narcissism was included because it correlates positively with wanting a lot of Facebook *friends* (Bergman, Fearington, Davenport, & Bergman, 2011) and with being more active on social networks (Buffardi & Campbell, 2008).

Frequency of Facebook usage was controlled for because personality has been found to predict usage (e.g. Amichai-Hamburger & Vinitzky, 2010; Ross et al., 2009). In addition, gender was used as a covariate because men and women have been found to use social media differently (e.g. Brenner, 2012; Haferkamp, Eimler, Papadakis, & Kruck, 2012; Hampton, Goulet, Rainie, & Purcell, 2011; Walton & Rice, 2013).

Therefore, based on the social enhancement hypothesis and literature on social media and personality, this current study proposed support for a rich gets richer scenario. Under this scenario, extroverts would be expected to accumulate more Facebook *friends*, deriving more benefit from their social media use. In addition, openness, neuroticism, and narcissism would be expected to correlate positively with a greater number of Facebook *friends*, as has been shown in earlier research (e.g. Bergman et al., 2011; Schrammel et al., 2009). Research is less conclusive regarding agreeableness and conscientiousness. Therefore, the following hypothesis and research question were put forth:

H1. The personality traits of extroversion, openness, neuroticism, and narcissism will correlate positively with number of Facebook *friends* while controlling for gender and Facebook usage.

RQ1. Will the personality traits of agreeableness and conscientiousness correlate with number of Facebook *friends* while controlling for gender and Facebook usage?

Finally, a goal of this study was to go beyond the question of what personality traits influence *friending* on Facebook to the larger question of how this occurs. Therefore, a mediation model was proposed and tested that examined how personality traits

and Facebook usage lead to *friending* more people on Facebook. The proposed model was based both on the literature and refined based on the results of H1 and RQ1.³ Facebook usage was considered a mediator because accruing many *friends* requires time spent sending out and accepting requests. So it stands to reason that time spent on Facebook both over the course of months and on a daily basis would be influential to the process of *friending*. Therefore, it was posed:

H2. Extroversion will have a direct effect on Facebook usage and number of Facebook *friends* and an indirect effect on number of friends mediated through Facebook usage.

3. Methods

To test the hypotheses and answer the research question, a purposive online survey was conducted with college-age Facebook users as respondents. A 71-item questionnaire created on Survey Gizmo was distributed using links on the researcher's Twitter and Facebook accounts and through emails to college-age people. A total of 238 surveys were submitted, but 27 were removed from the sample because respondents had not answered a majority of the questions. Data from two additional respondents were removed because the respondents did not have their own Facebook account as required, reducing the *N* to 209. The majority of respondents were female (71.3%) and white (76.6%), and the mean age was 19.93 years (*SD* = 3.72).

3.1. Independent variables

3.1.1. Facebook usage

This concept was operationalized in two ways. Respondents were asked to estimate how many months they had been actively using Facebook, with active use defined as reading other people's status updates or posts or posting information on their own or other people's Facebook pages using any type of device. The second way this concept was operationalized was by asking respondents how many days per week and how many minutes per day they accessed Facebook during a typical week. Minutes per day and days per week were combined into a multiplicative index and then divided by 60, to form hours per week on Facebook. These two variables were considered separately because prior research has found they may measure different dimensions of social media usage (G. Chen, 2011; G. Chen, 2012; G. Chen, 2013), and, therefore, only weakly correlate. For example, some people may have a Facebook account for years but use it only infrequently on a daily basis while others may have an account for a short time but use it for longer periods each day.

On average, respondents had used Facebook for 49.46 months (*SD* = 21.29). Respondents spent on average 10.22 h per week on Facebook (*SD* = 10.39). Because of skewness, both variables were subjected to square root transformation (Tabachnick & Fidell, 2007), and all future references are to the transformed variables. Pearson's product-moment correlations (Table 1) showed a weak but statistically significant positive relationship between these variables ($r = .18$), supporting the need to view these two variables as separate dimensions of social media usage as shown in earlier studies (G. Chen, 2011; G. Chen, 2012; G. Chen, 2013).

³ Initially, gender was used as a control based on prior research that has found differences in how men and women use social media (e.g. Haferkamp et al., 2012; Hampton et al., 2011; Brenner, 2012; Walton & Rice, 2013). However, as it showed no significant effect in either the regression model or PROCESS model, it was trimmed from the model in the interest of parsimony.

3.1.2. Big-five personality traits

A 5-item personality inventory adapted from Gosling, Rentfrow, and Swann (2003)⁴ was used to measure the big-five personality traits, extroversion, agreeableness, conscientiousness, neuroticism, and openness to experiences. This measure offers a short questionnaire with test–retest reliability, a pattern of external correlates, convergence between observer and self-ratings, and convergence with longer big-five measures that are adequate for reliability but not quite as strong as with the longer measures (Gosling et al., 2003). This measure also was suitable because it has been used in previous Internet research regarding personality (Correa et al., 2010). Participants were asked to rate on a 1 (*strongly disagree*) to 7 (*strongly agree*) scale how well five characteristics that relate to each personality trait describes them. The characteristics, the traits they relate to, and descriptive statistics were: (1) extroversion: extroverted, enthusiastic, $M = 4.87$, $SD = 1.77$; (2) conscientiousness: dependable, self-disciplined, $M = 5.88$, $SD = 1.23$; (3) neuroticism: anxious, easily upset, $M = 3.67$, $SD = 1.64$; (5) openness to experiences: open to new experiences, complex, $M = 5.84$, $SD = 1.02$; agreeableness: sympathetic, warm, $M = 5.65$, $SD = 1.23$.

3.1.3. Narcissism

This was measured using an adaption of the Narcissistic Personality Inventory (NPI),⁵ which has internal and discriminant reliability similar to Raskin and Terry's (1988) 40-item NPI, so it is useful when a longer questionnaire would be impractical (Ames, Rose, & Anderson, 2006). Subjects rated on a 1 (*strongly disagree*) to 7 (*strongly agree*) how well the following statements described them: "I know that I am good because everybody keeps telling me so", "I like to be the center of attention", "I think I am a special person", "I like having authority over people", "I find it easy to manipulate other people", "I insist upon getting the respect that is due me", "I am apt to show off if I get the chance", "I always know what I am doing", "Everybody likes to hear my stories", "I expect a great deal from other people", "I really like to be at the center of attention", "People always seem to recognize my authority", "I am going to be a great person", "I can make anybody believe anything I want them to", "I am more capable than other people", and "I am an extraordinary person". Responses were averaged into an index with acceptable reliability, $M = 4.51$, $SD = 0.72$, Cronbach's $\alpha = .82$.

3.2. Dependent variable

3.2.1. Number of Facebook friends

This was operationalized by asking respondents how many *friends* they had at that moment on Facebook. On average, respondents reported 769.91 *friends* ($SD = 482.91$). Because of positive skew, this variable was subjected to square root transformation (Tabachnick & Fidell, 2007), and the transformed variable was used in the analysis.

4. Results

H1 predicted the personality traits of extroversion, openness, neuroticism, and narcissism would positively predict number of Facebook *friends*. RQ1 asked whether agreeableness and conscientiousness would correlate with number of Facebook *friends*.

⁴ The Gosling et al. (2003) scale includes two personality characteristics for each of the Big 5 Personality trait. However, in this study, each of the reverse-coded characteristics was dropped because of low reliability when formed into indices with the other measures.

⁵ The Narcissistic Personality Inventory includes eight non-narcissistic statements, but these were dropped because they did not have high enough reliability when formed into an index.

Table 1Pearson product-moment correlation coefficients for Facebook usage and personality variables, $N = 209$.

Variable	2	3	4	5	6	7	8	9
1 Active Months on Facebook ^a	.18*	.35**	.17*	.18**	.06	-.03	.08	.09
2 Hours Per Week on Facebook ^a		.25**	.06	.12	.03	-.02	.07	.11
3 Friends ^a			.31**	.47**	-.05	.12	.22**	.16*
4 Narcissism				.48**	-.10	.23**	.21**	.08
5 Extroversion					-.11	.15*	.31**	.22**
6 Neuroticism						-.09	-.18**	.10
7 Conscientiousness							.27**	.31**
8 Openness								.26**
9 Agreeableness ^a								

* $p < .05$;** $p < .01$.^a Square root transformed variable.

First, Pearson's product-moment correlations were run to examine bivariate relationships (Table 1). Number of Facebook *friends* showed the strongest positive relationship with extroversion (.47, $p < .001$), followed by narcissism (.31, $p < .001$), openness (.22, $p = .001$), and agreeableness (.16, $p = .02$), but conscientiousness and neuroticism showed no significant correlations. In addition, number of Facebook *friends* showed a moderate significant relationship with active months on Facebook (.35, $p < .001$) and a modest association with hours per week on Facebook, .25, $p < .001$.

Hierarchical Ordinary Least Squares (OLS) regression was used to test H1. Gender was used as a control based on prior research that has found differences in how men and women use social media (e.g. Haferkamp et al., 2012; Hampton et al. 2011; Brenner, 2012; Walton & Rice, 2013). Facebook use was employed as a control under the premise that more frequent users might have more *friends*, regardless of personality. Underscoring the relevance of Facebook usage as a control was the finding from the earlier analyses that *friends* and Facebook usage positively correlated. Overall, with all variables entered, the model explained 33% of the variance in having more *friends* on Facebook. In model 1, the big-five personality variables – extroversion, agreeableness, conscientiousness, neuroticism, and openness – and narcissism were entered. The overall model was significant, $R^2 = .23$, $F = 10.24$, $p < .001$ (Table 2). Results showed a moderate positive relationship between extroversion and having more *friends* on Facebook, $\beta = .38$, $p < .001$, but no other personality variables demonstrated an effect. In model 2, active months on Facebook, hours per week on Facebook, and gender were entered as controls, and the overall model remained significant, $R^2 = .33$, $F = 10.81$, $p < .001$. Extroversion remained the strongest predictor ($\beta = .34$, $p < .000$), sharing variance with active months on Facebook ($\beta = .25$, $p < .001$) and hours per week on Facebook ($\beta = .16$, $p = .01$). Results showed that extroversion was driving force in how many *friends* one has on Facebook. Narcissism, openness, and agreeableness also showed smaller effects, but these effects dropped out once extroversion was taken into account. Therefore, H1 had partial support. Results showed a minimal positive correlation between agreeableness and number of *friends*, answering RQ1.

H2 predicted extroversion would lead directly to Facebook usage and number of Facebook *friends* and indirectly to number of *friends* mediated through Facebook usage. Mediation takes place when one variable influences another variable through one or more intervening variables, called mediators (Hayes, 2012; Hayes, 2013; Lockwood & McKinnon, 1998). Earlier researchers (e.g. Baron & Kenny, 1986) suggested that mediation could only occur if an independent variable (X) affects some mediator (M) that then influences a dependent variable (Y) and that the strongest indication of mediation is when a partial influence of X on Y is reduced to being not significant when M is taken into account, as demonstrated by a Sobel test (Sobel, 1982). However, more recent

Table 2Hierarchical OLS regression of personality, Facebook usage variables, and gender on number of Facebook *friends*, $N = 209$.

Variables	Model 1		Model 2	
	<i>b</i>	β	<i>B</i>	β
<i>Personality</i>				
Narcissism	1.35 (.88)	.11	.95 (.83)	.08
Agreeableness	.31 (.48)	.04	.08 (.46)	.01
Conscientiousness	.03 (.49)	.01	.37 (.56)	.04
Extroversion	1.91*** (.37)	.38	1.77*** (.35)	.34
Openness	.54 (.56)	.07	.37 (.55)	.05
Neuroticism	.05 (.35)	.01	-.12 (.33)	-.02
<i>Facebook usage</i>				
Active months on Facebook ^a			1.44*** (.35)	.25
Hours per week on Facebook ^a			1.04* (.40)	.16
Gender ^a			.76 (1.18)	.04
Intercept	5.64		2.57	
<i>F</i> value	10.24***		10.81***	
<i>R</i> ²	0.23		0.33	
Adj. <i>R</i> ²	0.21		0.30	

Standard errors are provided in parentheses.

* $p \leq .05$.** $p < .01$.*** $p < .001$.^a Female is the reference category.^b Square root transformed variables.

scholars (e.g. Lockwood & McKinnon, 1998; Hayes, 2009; Hayes, 2012; Hayes, 2013; Zhao, Lynch, & Q. Chen, 2010) argue persuasively that testing mediation using bias-corrected bootstrapping confidence intervals provides a more reliable test of mediation. Bootstrapping is preferable to a Sobel test because a Sobel test assumes that the sampling distribution is normal, which is likely not the case (Hayes, 2009; Hayes, 2012; Hayes, 2013; Lockwood & McKinnon, 1998; Preacher & Hayes, 2004; Zhao et al., 2010). Therefore, bootstrapping provides greater statistical power because it makes no assumption about the sampling distribution and it can more accurately be applied to small-sample studies (Hayes, 2009; Hayes, 2012; Hayes, 2013; Lockwood & McKinnon, 1998; Preacher & Hayes, 2004; Zhao et al., 2010).

Bootstrapping entails resampling the original sample thousands of times and computing the indirect effect in each sample (Hayes, 2009; Hayes, 2012; Hayes, 2013; Lockwood & McKinnon, 1998; Preacher & Hayes, 2004; Zhao et al., 2010) to create a sampling dis-

tribution. This distribution is used to construct a confidence interval for the mediation effect. If this confidence interval does not include zero that indicates that mediation has occurred (Hayes, 2013; Preacher & Hayes, 2004). In this study, bias-corrected bootstrap confidence intervals based on 5,000 bootstrap samples were used to test indirect mediation effects, as recommended by Hayes (2013).

PROCESS model 4 (Hayes, 2013), a mediation modeling tool that estimates direct and indirect effect using OLS path analysis, was used to test hypothesis 2. Extroversion was entered as the predictor, active months on Facebook and hours per week on Facebook were treated as parallel mediators, and number of Facebook friends was the outcome or dependent variable. Hours per week on Facebook and active months on Facebook were treated as parallel mediators because prior research (e.g. G. Chen, 2011; G. Chen, 2012; G. Chen, 2013) suggests that they measure different dimensions of usage that may not highly correlate.

As shown on Fig. 1 and Table 3, partial support was found for the model.

People who were extroverted were more likely to spend more months actively on Facebook (.16, $p = .01$) and have more Facebook friends (2.00, $p < .001$) than less extroverted people. However, extroversion had no direct effect on hours per week spent on Facebook (.08, $p = .10$). Both active months on Facebook (1.46, $p < .001$) and hours per week on Facebook (1.10, $p = .01$) showed direct effects on number of Facebook friends. In addition, extroversion showed an indirect effect on number of Facebook friends through both active months on Facebook (.23) and hours per week on Facebook (.09), as the bias-corrected bootstrap confidence intervals for the indirect effects were entirely above zero, which constitutes statistically significant mediation effects.

5. Discussion

This study aimed to provide new insight into how personality and Facebook usage lead to likelihood to friend people on Facebook. As such, it built on earlier research that found relationships between personality and social media (e.g. Amichai-Hamburger & Vinitzky, 2010; Back et al., 2010; Haferkamp et al., 2012; Walton & Rice, 2013) by proposing and testing a mediation model of how personality and Facebook usage lead to *friending* more people. First, I will discuss the overall contribution to the study of social media that this research provides. Then I will address the theoretical implications before addressing limitations and suggesting future research.

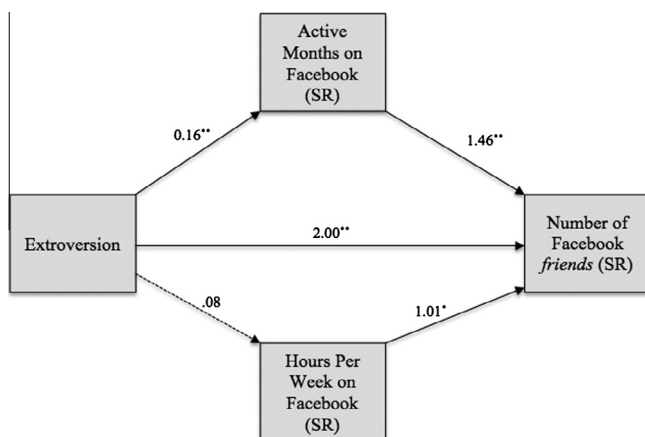


Fig. 1. OLS Path analysis model showing effects of extroversion and Facebook usage on number of Facebook friends, $N = 209$. Values shown are unstandardized OLS path analysis coefficients. SR = square root transformed variable. * $p < .01$; ** $p < .001$.

This current research confirmed earlier studies, which also found a link between extroversion (Amichai-Hamburger & Vinitzky, 2010; Correa et al., 2010; Hughes et al., 2012), narcissism (Bergman et al., 2011; Buffardi & Campbell, 2008), and openness (Ross et al., 2009; Schrammel et al., 2009) with how people use social media. As such, this study supported the social enhancement hypothesis – people who are rich in friends offline gain more online (Kraut et al., 2002; Tufekci, 2010; Zywicki & Danowski, 2008). Yet, findings of this current study go beyond merely confirming earlier research. This study showed that while extroversion, openness, narcissism, and agreeableness correlated positively with having more Facebook friends, only the effect of extroversion remained when all the personality variables were considered together. In addition, this study showed that extroversion along with how much people use Facebook were the driving forces in whether people accrued more Facebook friends. This contributed to our understanding of how personality shapes *friending* on Facebook.

However, the main contribution of this study was to show that extroversion does not act alone. A proposed mediation model with partial support found that extroversion's effect on *friending* is both direct and indirect. The indirect effects operated through active months on Facebook and hours per week spent on Facebook to influence number of Facebook friends. In other words, extroversion alone does not have the effect, but it is mediated by how many months one has been active on Facebook and how many hours per week one spends using the social medium. Earlier research has examined similar variables (e.g. Amichai-Hamburger & Vinitzky, 2010; Ross et al., 2009; Schrammel et al., 2009; Back et al., 2010). However, no earlier studies have directly tested a mediation model that examines the effect of personality traits on *friending* operating through how frequently people use Facebook, as this study did.

These findings offer a notable contribution to our understanding by explaining in part how the social enhancement hypothesis occurs on social media. While much research has examined how personality traits relate to social media use, some recent findings (Ross et al., 2009) suggest that personality plays less of a role than previous studies have found. That study found that extroversion and openness were related to Facebook use, but other personality variables were not. The findings of this current study suggest that the role of personality in the social enhancement hypothesis is complicated. In essence, personality traits cannot be considered without taking into account how traits such as extroversion may first influence how active one is on Facebook and then indirectly lead to an increase in *friending*. These findings suggest scholars should continue exploring social media use through the lens of personality theory, rather than abandon this practice because not all traits show an immediate direct effect. Based on this study, this line of research must take into account other variables such as frequency of use that may influence how personality has an effect.

5.1. Limitations and future research

Several limitations of this study should be acknowledged. The subject pool of this study was young by design – because young people are the most frequent users of social media (Lenhart et al., 2010). However, clearly results may differ if the pool of respondents had a wider age range. Also, convenience sampling was employed, so results are not generalizable. In addition, this study examined only one aspect of Facebook usage, *friending*, so the role of personality and Facebook usage were limited to that outcome in this study. This study examined only the big-five personality traits and narcissism. Clearly, other types of individual differences such as need for affiliation or self-disclosure have been found to have an effect on social media interactions (G. Chen,

Table 3OLS Path analysis showing effects of Extroversion and Facebook usage, on number of Facebook friends, $N = 209$.

	Mediators				Outcome variable	
	Active months on Facebook ^a		Hours per week on Facebook ^a		Number of Facebook friends ^a	
	Coeff.	SE	Coeff.	SE	Coeff.	SE
Extroversion	0.16**	0.06	0.09	0.06	2.00**	0.30
Facebook usage						
Active months on Facebook ^a					1.46**	0.34
Hours Per Week on Facebook ^a					1.07*	0.40
	$R^2 = 0.03$		$R^2 = 0.01$		$R^2 = 0.32$	
	$F(1,206) = 7.07^*$		$F(1,206) = 2.76$		$F(3,204) = 31.46^{**}$	

Coeff. = unstandardized OLS path analysis coefficients.

SE = standard error.

* $p < .05$.** $p < .001$.^a Square root transformed variables.

2012; G. Chen, 2013; Ledbetter et al., 2011). Future research should consider how these variables fit into this study's proposed model and other models to show direct or indirect effects on how people use social media.

This study paved the way for several other areas of research. First, clearly this study suggested that scholars should continue to examine how potential mediators may impact relationships between personality and social media use. In this case, extroversion was mediated through active use of Facebook both over months and daily use to predict *friending*. Given this finding, direct effects between personality variables and social media activities should be tested for the mediating role of frequency of social media use. Furthermore, more mediation modeling should be done to understand the indirect effects of personality, as this may illuminate why some studies have found personality to have little or no effect. It may be that only direct effects were considered, offering limited understanding. Finally, this study suggested that other aspects of social media use – beyond the number of *friends* that this research examined – should be probed using mediation modeling. This will provide greater understanding of how personality, social media usage, and other variables predict behavior online.

5.2. Conclusion

In summary, this study offered early evidence that personality and time spent on social media usage were relevant to predicting *friending* on Facebook. Specifically, this study's main contribution was to offer the beginnings of a mediation model that shows that extroversion leads indirectly to *friending* more people on Facebook operating through active months on Facebook and hours per week spent on Facebook. In essence, these findings began the process of explaining how the social enhancement hypothesis takes place rather than focusing solely on whether it has an effect or not.

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