THE INFLUENCE OF PERSONALITY AND FACEBOOK USE ON STUDENT ACADEMIC PERFORMANCE

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ABSTRACT

This paper investigates the influence of personality variables as measured by the Five-Factor Model (FFM) on Facebook use and the influence of Facebook use on student academic performance. Extraversion was positively related to student self-reported measures of the time spent on Facebook giving support to the proposition that extraverted individuals use social networking as a means of social extension. This finding contradicts the suggestion that introverts will engage in greater social media use because of the ability to compensate for their lack of social skills. The amount of time that students spend on Facebook was found to be negatively related to academic performance. The significance of these findings is discussed with recommendations for future research.

Key Words: Personality, Five-Factor Model (FFM), Facebook Use and Academic Performance

INTRODUCTION

The internet has significantly increased the potential for individuals to communicate with each other no matter where they may be located. It has also broadened the number of social relationships that an individual may carry on at any one time. Social networking sites (SNS) have become instrumental for providing free, user friendly access for communicating with others over the internet. Facebook has quickly grown to become one of the most popular SNS worldwide. Facebook currently has over 1 billion active users worldwide and on average 584 million people use Facebook daily [2]. Ellison et al. point out that the core demographic segment of 18 to 24 year olds is growing the fastest at a rate of 74% year on year [6].

Facebook was originally created as a vehicle for students to create and maintain social ties that were relevant to the university experience [6]. Today, Facebook has become the SNS of choice for high school and college students. Within the college community it is difficult to find a student who is not on Facebook. Ellison et al., report that in 2007, as many as 94 percent of undergraduate students in the United States were Facebook users [6]. Not only does Facebook have wide spread use among college students, the amount of time that students spend on Facebook is on the increase. On average, users in the aggregate spent more than 10.5 billion minutes per day on their personal computers logged on to Facebook during January of 2012. Aggregate minutes per day increased 57% and average minutes per user per day increased by 14% in January 2012 as compared to January 2011 [1].

Given that a very large percentage of college students use Facebook and the amount of time that they are spending logged on to Facebook, the question arises as whether Facebook use negatively impacts academic performance. To date, the research on the relationship between time spent on Facebook and academic performance has provided mixed results. One motivation for this study is to test whether there is a negative relationship between Facebook use and academic performance.

Given the popularity of Facebook among College students, researchers have begun to focus on individual factors that may be related to the amount of time that students spend on Facebook. One approach has been to consider the influence of personality variables on Facebook use [19]. A second motivation of this paper is to investigate whether personality variables are related to Facebook use.

LITERATURE REVIEW

Personality and Facebook Use

Personality traits are defined as an individual's dispositions or tendencies that lead to certain attitudinal and behavioral patterns across situations [3]. The Five-Factor Model (FFM) is the most widely accepted model of personality and has emerged as the unifying theory for the study of personality [8]. The FFM is based on the theory that an individual's personality may be evaluated by determining how they rank on five bipolar factors: neuroticism, extraversion, openness to experience, agreeableness and conscientiousness [8]. Each of these factors integrate numerous narrow traits that had previous been applied across numerous domains with limited success. These basic tendencies are inborn and developed throughout one's lifespan, influencing an individual's thoughts, feelings and actions [13]. Neuroticism refers to a person's emotional stability. Individuals who are high on neuroticism often feel anxious, angry, and sad and cope poorly with stress. Individuals who are low on neuroticism are stable, even tempered and manage stress well. People who score high on neuroticism may be more inclined to spend time on Facebook because they may try to make themselves look as attractive as possible [14] or alternatively because Facebook enables neurotic personalities to take longer to contemplate what they are going to say as opposed to face to face contact [14, 18]. Extraversion represents an individual's level of sociability and outgoingness. Extraverts take an energetic approach towards the outside world and can be generally described as sociable, active, assertive and expressing positive emotions. Introverts tend to be withdrawn, less active and express less positive emotions. There are two competing views of the relationship between extraversion and Facebook use. On the one hand, extroverts are predicted to spend more time on Facebook because it is another platform for them to communicate with friends and contacts made off-line. On the other hand, introverts may prefer to communicate using Facebook because it allows them to compensate for their lack of interpersonal skills [14]. Openness to experience refers to the extent to which an individual is willing to explore new situations. Individuals who are open to experience generally prefer variety, novel experiences, and are intellectually curious. Individuals who are low in openness are typically conservative, prefer uniformity and are intellectually disinterested. Individuals who score high in openness may be more inclined to spend time on Facebook because of the novel ways in which they may be able to communicate with others and their openness to new experiences [4, 14, 18]. Agreeableness reflects the extent to which an individual engages in and endorses interpersonal cooperation. Agreeable individuals are friendly to others, and tend to be social, warm and trusting whereas disagreeable individuals are less pleasant to others, argumentative, uncooperative and harsh. Individuals who score high in agreeableness tend to be amenable to entering relationships however there is no compelling reason why they would do so in an online environment [14]. Individuals who score low in agreeableness may be less inclined to use Facebook to avoid having to be sociable to others with whom they communicate [4, 18]. Conscientiousness refers to the extent to which an individual is organized, careful and shows self-control. Conscientious individuals have control over their impulses and are orderly, diligent and strive to achieve goals. Unconscientious individuals are predisposed toward acting impulsively, being disorganized and tend to procrastinate on tasks [8]. Individuals who score high on conscientiousness may spend less time on Facebook because they may perceive time spent on Facebook to avoid distraction from achieving their goals [14].

In spite of the popularity of Facebook, it is only in the last few years that research has emerged that considers the relationship between personality variables and Facebook use [5]. Most of these studies have focused on personality and the types of activities that users engage in on Facebook rather than the time spent on Facebook.

Ross et al. surveyed undergraduate and graduate students and found that personality variables were associated with some aspects of Facebook use [18]. They found that individuals high on the trait of extraversion were more likely to belong to Facebook groups than introverted individuals. Those high on the trait of neuroticism reported that the Wall was their favorite Facebook component. Openness to experience was found to be related to higher levels of being sociable through Facebook. More generally, the authors commented that "one of the most surprising outcomes from the present study was the relatively few significant findings in relation to the personality variables." Amichai-

Hamburger and Vinitsky [4] found that students who were high on extroversion had a greater number of Facebook friends but contrary to Ross et al. [18], extraversion was not associated with the use of Facebook groups. Both Ross et al. [18] and Amichai-Hamburger and Vinitsky [4] were not able to find a relationship between personality variables and the intensity of Facebook use. Ryan and Xenos [19] found that extraverted Facebook users would be more likely to use Facebook than introverted users. Moore and McElroy [14] found that personality variables are significantly related to different types of Facebook use. Extraverts tended to have a significantly wider social network than introverts. Conscientious people tended to use the Facebook wall function significantly less than other individuals and individuals high in agreeableness were more likely to post wall content about themselves. However, only neuroticism was significantly related to the time spent on Facebook. Hughes et al. [7] found that Individuals who were more socially oriented and high on neuroticism tended to be more likely to seek social contact via Facebook. Extraversion, openness and conscientiousness were found to have no significant relationship with Facebook use. Muscanell and Guadagno [15] on the other hand, found that neuroticism was not significantly related to any of the specific social networking activities that they measured. They did find that extraversion, agreeableness, openness and conscientiousness did predict specific types of social networking use.

Facebook and Academic Performance

 Limited research has been conducted concerning the relationship between Facebook use and academic performance. Much of the work that does exist may be found in unpublished manuscripts. For example, Vanden Boogart [20] in a Master's thesis found that heavy Facebook use is observed in students with lower GPA's.

Karpinski and Duberstein [10] and Kirschner and Karpinski [11] reporting findings on studies using the same data set, investigated whether higher levels of Facebook use may be related to a reduction in academic performance among college students. They found a negative relationship between Facebook use and self-reported measures of GPA and hours spent studying per week in a sample of undergraduate and graduate students attending a large public university in the Midwest United States. Interestingly, they found that the time spent on the internet did not differ much among students and that contrary to the evidence, students believed that time spent on Facebook did not impact their academic performance. The results of their study set off a media frenzy and their recommendation that "the negative consequences of [Facebook] use can alert administrators to find ways to limit access … resulting in better academic performance." Kirschner and Karpinski [10] acknowledge that there are a number of limitations with their study and call for more rigorous studies to be conducted using other analysis techniques such as regression or structural equation modeling.

Kolek and Saunders [12] reported that they found no relationship between Facebook use and academic performance. Pasek et al. [16] were very critical of previous research purporting to find a negative relationship between Facebook use and GPA on the grounds that the sample was not representative of college students at large, the measure of use were biased and the studies did not take into consideration control variables. They conducted three separate studies that included a cross-sectional sample of 1060 first-year students at a large University in Illinois. They were unable to find a robust negative relationship between grade point averages and the use of Facebook in any of the three studies. They conclude that "in contrast to recent sensational and unsubstantiated news reports that Facebook use lowers academic performance, results … indicate that the two variables are likely unrelated."

Junco [9] in a survey of 1839 university students in the northeastern United States found that Facebook use was a strong negative predictor of overall GPA but was only a weak negative predictor of time spent studying. However, the negative impact on GPA only occurred when students spent a large amount of time on Facebook and only certain uses of Facebook were negatively related to GPA. In fact some uses of Facebook were positively related to GPA. The author suggests that the connection between Facebook use, student engagement and academic outcomes is worthy of further exploration. Paul et al., [17] also found support that among undergraduate business students, academic performance deteriorates as time spent on online social networks increases. They suggest that students

should be made aware of the detrimental impact of online social networking on their potential academic performance.

RESEARCH FRAMEWORK

The purpose of this study is exploratory in nature with the intent to provide greater insights for future research. The theoretical framework depicted in Figure 1 suggests that personality variables will influence the amount of time that individuals spend on Facebook and that the amount of time that an individual spends on Facebook will be negatively related to academic performance.
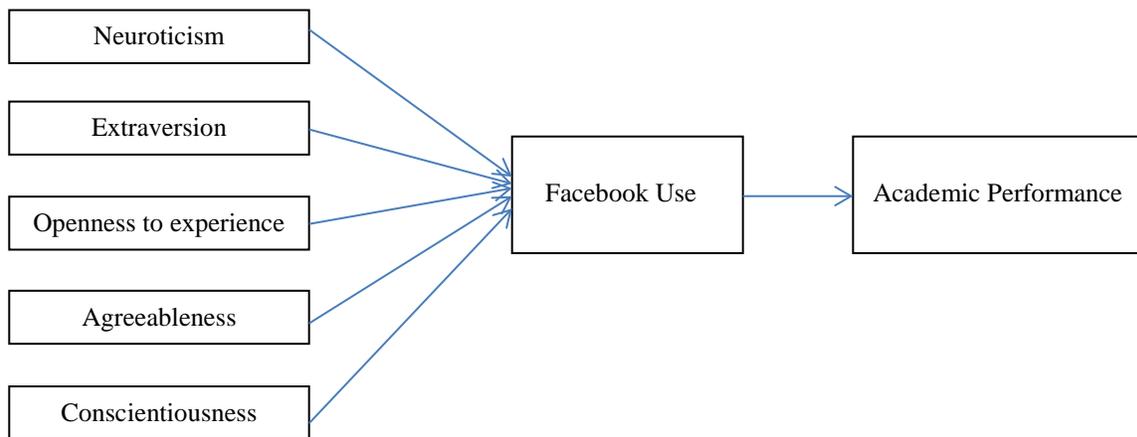
Figure 1: Research Framework

More specifically the following propositions will be investigated:

Proposition 1a: Individuals who score high on the scale of neuroticism will spend more time on Facebook than those who score low on the scale of neuroticism.

Proposition 1b: Individuals who score high on the scale of extraversion will spend more time on Facebook than those who score low on the scale of extraversion.

Proposition 1c: Individuals who score high on the scale of openness will spend more time on Facebook than those who score low on the scale of openness.

Proposition 1d: Individuals who score low on the scale of agreeableness will spend more time on Facebook than those who score high on the scale of agreeableness.

Proposition 1e: Individuals who score low on the scale of conscientiousness will spend more time on Facebook than those who score high on the scale of conscientiousness.

Proposition 2: Individuals who spend more time on Facebook will have lower academic performance.

METHODOLOGY

Data Collection

A paper-based survey was distributed to undergraduate freshman and junior college students at a private university in the northeast US. The survey was administered to multiple sections of a 200 level class to ensure that the sample would contain a cross section of all majors. Students were asked to voluntarily participate in the survey. The items

used for measuring personality factors were adopted from the FFM. Students self-reported the time that they spent on Facebook each day by selecting one of seven possible response; None; Less than 1 hour; Between 1 and 2 hours; More than 2 hours but less than 3 hours; More than 3 hours but less than 4 hours; More than 4 hours but less than 5 hours; More than 5 hours. Students also self-reported the academic performance by describing their grades as one of: Mostly A's; Mostly A's and B's; Mostly B's; Mostly B's and C's; Mostly C's and D's; Mostly D's and F's.

A total of 255 usable responses were received. The profile of the respondents is show in Table 1. Of the respondents, 63% were male, while 37% were female. Almost all of the respondents (92%) were between the ages of 18-20, and 92% were freshman or sophomores.

Table 1. Demographic profile of the respondents

		Respondents	**Percentage**
Gender	Male	160	62.7
	Female	95	37.3
Age	18-20	234	91.8
Status	Freshman	67	26.3
	Sophomore	168	65.9
	Other	20	7.8

DATA ANALYSIS AND RESULTS

In line with other research, 86% of students responded that they spend time on Facebook, however students in this study were found to spend more time on Facebook than previous research [6] [18]. Most students (41%) spent between 1 and 2 hours a day on Facebook and 80% spent between 1 and 3 hours (see Table 2). With respect to grades, most students reported getting grades of mostly A's and B's. This result may be higher than the institution average because approximately 60 students of the 255 were honors students (see Table 3).

Table 2. Time Spent on Facebook

	Respondents	**Percentage**
None	14	5.5
< 1hour	58	22.7
>=1 and <=2	104	40.8
>2 and <=3	43	16.9
>3 and <=4	21	8.2
>4 and <=5	8	3.1
>5	7	2.7

Table 3. Grade Distribution

	Respondents	**Percentage**
Mostly A's	35	13.7
Mostly A's and B's	111	43.5
Mostly B's	67	26.3
Mostly B's and C's	39	15.3
Mostly C's	2	.8

Mostly C's and D's	1	.4

In order to investigate the influence of personality on time spent on Facebook, a stepwise linear regression was performed (see Table 4). The resulting regression model was significant at the .05 level (.037) with only extraversion remaining in the regression equation. This result supports Proposition 1b suggesting that students who score higher on the personality trait of extraversion spend significantly more time on Facebook.

Table 4. Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.532	.801		1.911	.057
	Ext	.475	.227	.130	2.092	.037

a. Dependent Variable: Time

A second linear regression was performed to investigate the influence of time spent on Facebook on academic performance. The resulting regression model was significant at the .05 level (.014) supporting Proposition 2. The negative coefficient suggests that students who spend more time on Facebook have significantly lower academic performance (see Table 5).

Table 5. Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.900	.161		24.183	.000
	Time	-.116	.047	-.154	-2.472	.014

a. Dependent Variable: Grade

A second stepwise regression was performed to investigate whether personality variables had a direct influence on academic performance. The resulting regression model was not significant at the .05 level with no variables being entered into the equation. These results fail to provide evidence of a relationship between personality variables and academic performance.

DISCUSSION

This paper considered the impact of personality on undergraduate student Facebook use. Use was measured by having students self-report the number of hours that they spend on Facebook during a day. Of the personality variables included in the FFM, only extraversion was found to be related to Facebook use suggesting that the higher an individual scores on the extraversion scale, the greater amount of time the individual spends on Facebook. This supports the findings of Ryan and Xenos [19] and Moore and McElroy [14] who found a positive relationship between extraversion and Facebook use and is contrary to the results of Ross et al. [18], Amichai-Hamburger and Vinitisky [4] and Hughes et al. [7] who found no relationship between Extraversion and Facebook use. Extraversion refers to the extent to which individuals are social, cheerful, optimistic, active and talkative [14]. This finding lends support to the proposition that extraverted individuals use social networking as a means of social extension to communicate with friends and contacts [19]. It fails to support the argument that introverts tend to use Facebook more than extraverts because it allows them to compensate for their lack of social skills in face to face contact. Further study may shed light on the types of activities on Facebook that neurotic individuals are likely to engage in and the relative time allocated to each. This information may provide useful insights about why individuals who score high on neuroticism spend more time on Facebook and may suggest potential action to help improve academic performance.

The amount of time that students were engaged in using Facebook was found to be negatively related to the students' self-reported academic performance. This result supports the findings of Vanden Boogart [20], Karpinski and Duberstein [10], Kirschner and Karpinski [11] and Junco [9] and is contrary to the findings of Kolek and Saunders [12] and Pasek et al., [16]. The fact that the findings in this study lend support to the negative relationship between time spent on Facebook and academic performance suggests that further research is warranted to not only validate these findings but to gain a better understanding of how Facebook use impacts academic performance.

No relationship between personality variables and academic performance was found. This finding would lend support to the research framework which suggested that personality variables influence Facebook use which in turn influences academic performance.

While the intention of this research was exploratory in nature, there remain a number of limitations. First, the subjects were drawn from a single academic institution and may not be representative of the larger student population. Self report measures of use and academic performance were collected. A more reliable method would be to acquire actual student GPA and an accurate measure of Facebook use. Use was measured by time spent on Facebook. A better measure would be to record the time spent on actual activities on Facebook and investigate how these activities are related to academic performance. Other information such as how often the students were on Facebook while studying may shed more light on why academic performance was lower for individuals who spent more time on Facebook.

No well accepted measure of Facebook use is found in the literature. Future research should endeavor to develop and validate a comprehensive measure of Facebook use. This would permit a better comparison of research results over multiple studies. One possible approach may be to consider the instruments developed to measure internet addiction and adapt them to Facebook use. These instruments have been widely used in the research on the influence of personality and Internet addiction.

CONCLUSIONS

The major implication of this study is the finding that Facebook use is negatively related to academic performance. The nature of the relationship may be far more complex than the simple assumption that students who spend more time on Facebook also spend less time studying and completing academic work. Time on Facebook may replace activities that are not of an academic nature but none the less may have an impact on academic performance such as face to face communications with peers or the number of hours that students sleep. More research should be conducted to explore how time spent on Facebook is related to the life style of students and how the various facets of a student's life style are related to academic performance. This may shed light on what kind of interventions may be taken to help students whose involvement with Facebook may place them at academic risk.

More research needs to be conducted to determine what activities students engage in while on Facebook, how much time they spend on each activity and whether or not those different activities influence academic performance. It may not be the total time spent on Facebook that is the most important measure but rather the time spent on certain activities on Facebook that have a more direct influence on academic performance. Considering the individual activities may also provide a richer environment to study how personality variables affect Facebook use.

The difficulty conducting this research is that most studies rely on self-report measures of time spent on Facebook and the types of activities that the subjects engage in. With current technology, the ability exists to capture this data electronically but also raises considerable privacy issues.

In conclusion, the finding that the time spent on Facebook is negatively related to students' academic performance is of significant importance. The use of Facebook is widespread among students and surveys suggest that the amount of time that students spend engaged in social media is increasing each year. If this relationship holds, it may be expected that many students will not perform at their academic potential. A better understanding of the factors that influence Facebook use and the role that Facebook use plays in academic performance may shed light on what actions may be taken to help students achieve their potential.

REFERENCES

[1]   http://www.zdnet.com/blog/facebook/10-5-billion-minutes-spent-on-facebook-daily-excluding-mobile/11034

[2]   http://newsroom.fb.com/Key-Facts

[3]   Ajzen, J. (1988) *Attitudes, Personality and Behavior*. Open University Press, Stony Starford.

[4]   Amichai-Hamburger, Y., and Vinitzky, G. (2010). Social Network use and personality. *Computers in Human Behavior*, 26 1289-1295.

[5]   Buckner, J. E. Castille, C. M. and Sheets, T. L. (2012), The Five Factor Model of personality and employees' excessive use of technology. *Computers in Human Behavior*, 28 1947-1953.

[6]   Ellison, N. B., Steinfield, C., & Lampe, C. (2007), The benefits of Facebook "friends:" Social capital and college students' use of online social network sites. *Journal of Computer-Mediated Communication*, *12*(4), article 1.

[7]   Hughes, D. J., Rowe, M., Batey, M. and Lee. A. (2012), A tale of two sites: Twitter vs. Facebook and the personality predictors of social media usage. *Computers in Human Behavior*, 28 561-569.

[8]   John, O. P., Naumann, L. P. and Soto, C. J. (2008), Paradigm shift to the integrative big-five trait taxonomy: History, measurement and conceptual issues. In O. P. John, R. W. Robins, and L. A. Pervin (Eds.), *Handbook of Personality: Theory and Research* (pp. 114-158), New York, NY: Guilford Press.

[9]   Junco, Reynol, (2012), Too much face and not enough books: The relationship between multiple indices of Facebook use and academic performance.

[10]   Karpinski, A.C. and Duberstein, A. (2009). A description of Facebook use and academic performance among undergraduate and graduate students. In Poster presented at the meeting of the American Educational Research Association, San Diego, CA.

[11]   Kirschner, P.A. and Karpinski, A.C. (2010). Facebook and Academic Performance. *Computers in Human Behavior*, 26 1237-1245.

[12]   Kolek, E.A., and Suanders, D. (2008). Online disclosure: An empirical examination of Facebook profiles. *NASPA Journal*, 45(1) 1-25.

[13]   McCrae, R.R., and Costa, P.T. (1987) Validation of the five-factor model of personality across instruments and observers, *Journal of Personality and Social Psychology*, 52 81-90.

[14]   Moore, K. and McElroy, J. C., (2012). The influence of personality on Facebook usage, wall postings, and regret. *Computers in Human Behavior*, 28 267-274.

[15]   Muscanell, N. L. and Guadagno, R. E. (2012). Make new friends or keep the old: Gender and personality differences in social networking use. Computers in Human Behavior 28 107-112.

[16]   Pasek, John, Eian More, and Eszter Hargittai. (2009), Facebook and Academic Performance: Reconciling a Media Sensation with Data. *First Monday* 14.5.

[17]   Paul J. A., Baker, H. M. and Cochran J. D. (2012), Effect of online social networking on student academic performance. Computers in Human Behavior 28 2117-2127.

[18]   Ross, C., Orr, E., Sisic, M., Arseneault, M., Simmering,M., and Orr, R.(2009), Personality and Motivations Associated with Facebook Use. *Computers in Human Behavior* 25.2: 578-586.

[19]   Ryan, T., and Xenos, S. (2011). Who uses Facebook? An Investigation into the relationship between the Big-Five, shyness, narcissism, loneliness and Facebook usage. *Computers in Himan Behaviors,* 27, 1658-1664.

[20]   Vanden Boogart, M.R., (2006). Uncovering the social impacts of Facebook on a college Campus, Unpublished Masters Thesis, Kansas State University.