

Motivations to Use Facebook for New Relationships Predicts Poorer Well-Being among Extraverts but Better Well-Being among Introverts

TARA JOY KNIBBE & LAURA B. LUCHIES, PH.D.
Redeemer University College

The use of social networking websites such as Facebook has burgeoned in recent years, especially among university students. We examined the associations of university students' well-being with their reasons for using Facebook—focusing on motivations relevant to new relationships—and the ways in which these associations depend on their introversion vs. extraversion. Sixty undergraduate students reported their motivations for using Facebook, extraversion, self-esteem, and college adjustment. As hypothesized, the associations of participants' well-being with their motivations to use Facebook for new relationships differed for extraverts and introverts: Stronger motivations to use Facebook to meet new people and enhance social inclusion predicted lower well-being among extraverts but higher well-being among introverts.

Keywords: facebook, internet, well-being, extraversion, introversion

L'utilisation de sites de réseaux sociaux tels que Facebook a explosée dans les dernières années, surtout parmi les étudiants universitaires. Nous avons examiné les liens entre le bien-être des étudiants universitaires et leurs raisons d'utiliser Facebook – en mettant l'accent sur les motivations concernant de nouvelles relations. Soixante étudiants au baccalauréat ont rapporté leurs motivations à utiliser Facebook, leur degré d'extraversion, d'estime de soi, et d'adaptation à l'université. Tel que prédit, les liens entre le bien-être des participants et leurs motivations à utiliser Facebook pour de nouvelles relations n'étaient pas les mêmes chez les extravertis et les introvertis. En effet, les fortes motivations à utiliser Facebook pour rencontrer de nouvelles personnes et augmenter l'inclusion sociale ont prédit un plus faible bien-être chez les extravertis, mais un plus fort bien-être chez les introvertis.

Mots-clés : facebook, internet, bien-être, extraversion, introversion

Internet use has increased dramatically over the last decade. The Internet is highly addictive and its use affects the user's interpersonal communication and behaviour, self-concept, and psychological well-being (Harman, Hansen, Cochran, & Lindsey, 2005; Kraut, Scherlis, Mukhopadhyay, Manning, & Kiesler, 1996; Niemz, Griffiths, & Banyard, 2005). University students in the Western world are at high risk of Internet addiction because the Internet is easily accessible to them (Niemz et al., 2005). Social networking sites are some of the most popular websites on the Internet (Spraggins, 2011). According to Kim, LaRose, and Peng (2009), the most popular websites among

university students are Facebook, MySpace and YouTube, all of which are social networking sites that encourage social online activity. The average university student spends between thirty minutes and two hours on Facebook each day (Ellison, Steinfield, & Lampe, 2007; Kalpidou, Costin, & Morris, 2011; Raacke & Bonds-Raacke, 2008; Sheldon, 2008). Although Facebook found its roots in this population, it has since developed an expanded target group. People of all ages and walks of life are using Facebook and other social networking sites.

Developing one's personality is a preoccupation among university students (Figueroa-Sarriera, 1991; Kandell, 1998), and social networking sites allow their users to convey their personality however they wish. Users can highlight some aspects of their personality and censor others. Indeed, a key motive for

This work was part of an honours thesis project completed by the first author under the direction of the second author and Dr. Wayne Norman at Redeemer University. Please address correspondence to Tara Joy Knibbe (email: tarajoy.knibbe@gmail.com) or Laura Luchies (email: lluchies@redeemer.ca).

participating in social networking sites is impression management, which cannot be achieved to the same extent in face-to-face social interactions (Kramer & Winter, 2008). In short, online social networking has become an essential part of most university students' social development (Schwartz, 2011). In light of the amount of time university students spend on Facebook and the amount of influence it has on their personality development and psychological adjustment, motivations for Facebook use and their associations with psychological well-being among university students is a topic that deserves further research and has implications for larger populations (Stefanone, Lackaff, & Rosen, 2011; Wilson, Fornasier, & White, 2010).

Contradictory Evidence Regarding the Association of Facebook Use with Well-Being

There are two conflicting hypotheses in the existing literature regarding the association between Facebook use and psychological well-being, and each of these conflicting hypotheses has received some empirical support. The first is the displacement hypothesis. The displacement hypothesis states that time spent in online social interaction—which may well be used to meet new people and to enhance one's inclusion in those new relationships—displaces time spent in more beneficial face-to-face social interaction with established-relationship partners (Bonetti, Campbell, & Gilmore, 2010; Kraut et al., 1998; Nie, Hillygus, & Erbring, 2002). This decrease in real-life interaction leads to a decline in one's social support network, including one's relationship with family (Bremer & Rauch, 1998; Harman et al., 2005; Kraut et al., 1998). Moreover, online social interaction does not adequately compensate for this loss in social support. The emotional connection experienced in face-to-face social interaction is lacking during interactions on social networking sites (Joinson, 2001; Moody, 2001; Niemz et al., 2005).

Several studies have supported the displacement hypothesis by indicating that Facebook use predicts decreased well-being, including lower self-esteem and life satisfaction, as well as higher loneliness and depression (Huang, 2010; Rohall & Cotton, 2002; Stieger & Burger, 2010; Valkenburg, Peter, & Schouten, 2006; Wilson et al., 2010). For example, in a study of students' communication with their parents while at university, students who communicated with their parents by phone had more satisfying relationships with their parents than those who communicated with their parents over social networking sites. Those who used

social networking as their primary method of communication also experienced more anxiety, conflict, loneliness, and poorer overall adjustment to university (Gentzler, Oberhause, Westerman, & Nadorff, 2011). Similarly, other research found that having more Facebook friends predicts lower well-being (Schwartz, 2011; Kalpidou et al., 2011).

The second of the two conflicting hypotheses, regarding the association of Facebook use and psychological well-being, is the stimulation hypothesis. The stimulation hypothesis states that using social networking websites stimulates interaction with established relationship partners, thereby enhancing the quality of those relationships and one's overall well-being (Bryant, Sanders-Jackson, & Smallwood, 2006; Kalpidou et al., 2011; Morahan-Martin & Schumacher, 2003; Valkenburg & Peter, 2007).

Several studies have supported the stimulation hypothesis by indicating that Facebook use predicts increased well-being, including lower social anxiety and higher self-esteem, at least under some circumstances (Harman et al., 2005; Kraut et al., 2002; McKenna & Bargh, 2000; Shaw & Grant, 2002). For example, Valkenburg and colleagues (2006) reported that the more adolescents used social network sites, the more feedback they received from others. Positive feedback, in turn, improved self-esteem. Similarly, other research has found that using the Internet to communicate and maintain previously established relationships was associated with a higher self-esteem, a greater sense of community, and better adaptation to college life (Ellison et al., 2007; Madge, Meek, Wellens, & Hookey, 2009; Pempek, Yermolayeva, & Carvert, 2009; Sheldon, 2008; Weiser, 2001).

The two existing theories explaining the associations of online social networking and well-being—the displacement hypothesis and the stimulation hypothesis—are most relevant to motivations related to using social networking as a means to maintaining established relationships. That is, they posit that online social networking either takes away from or adds to time spent communicating with established relationship partners and that this, in turn, negatively or positively affects well-being, respectively. However, people are also motivated to use Facebook and other social networking sites as a means to meet new people (Sheldon, 2008). Previous research has largely neglected the role of motivations for using Facebook to establish new relationships and to feel included in those new relationships in predicting well-being. The

primary goal of the present research is to fill this gap in the existing literature by examining the circumstances under which motivations for using Facebook to develop new relationships predict decreased well-being, and the circumstances under which they predict increased well-being.

The Association of Motivations for Using Facebook for New Relationships with Well-Being Depends on the User's Personality

There is reason to suggest that the association of using Facebook for new relationships with well-being depends on the Facebook user's extent of extraversion vs. introversion. Whereas extraverts tend to prefer to spend more time in highly stimulating face-to-face social interactions, introverts usually prefer to spend more time alone and in less-stimulating situations (Hamburger & Ben-Artzi, 2000; Hardie & Tee, 2007). For instance, in one study, participants indicated their willingness to participate in a 20-30 min group discussion with three other people whom the participants did not know (Snyder & Gangestad, 1982). Participants who scored high on extraversion were much more willing to take part in this social situation than their counterparts who scored high on introversion.

Given that extraverts tend to enjoy face-to-face social interactions, we expected that the motivations for using Facebook for new relationships would be associated with decreased well-being among extraverts. Face-to-face social interaction tends to satisfy extraverts' social needs better than online interaction (Amiel & Sargent, 2004; Landers & Lounsbury, 2004), yet extraverts tend to spend more time on social networking sites and try to have more Facebook friends than introverts (Wilson et al., 2010). Given that extraverts are especially likely to have their social needs adequately met in person with established relationship partners, using Facebook for new relationships may not only be unnecessary for extraverts, but may also detract them from their more-fulfilling face-to-face encounters with others. In other words, the displacement hypothesis seems especially relevant to extraverts: To the extent they use Facebook to establish and benefit from new relationships, extraverts will have less time to devote to established relationships, thus their overall well-being will suffer.

In contrast, because introverts tend to prefer less stimulating types of social interaction, we expected that the motivations for using Facebook for new relationships would be associated with increased well-

being among introverts. Social networking allows introverts to meet their social needs in a more comfortable, less stimulating environment. Given that introverts may not have their social needs adequately met in person with established relationship partners because of their desire to avoid overly stimulating social environments, using Facebook for new relationships may provide a way in which introverts can meet their social needs. In other words, a variant of the stimulation hypothesis—but one that focuses on stimulating the formation of new relationships rather than the growth of established relationships—seems especially relevant to introverts. To the extent they use Facebook to establish and benefit from new relationships, introverts will experience a richer social network and their overall well-being will benefit.

We summarize our expectations regarding the differential association of people's motivations to use Facebook for new relationships and their well-being for extraverts and introverts in the following hypothesis: the association of people's motivation to use Facebook (a) to meet new people and (b) to increase their social inclusion with their well-being depends on their level of introversion/extraversion, such that stronger motives to use Facebook to meet people and to increase social inclusion are associated with poorer well-being among extraverts but with better well-being among introverts. To test this hypothesis, a correlational study was performed with sixty undergraduate university students.

Method

Participants

Sixty undergraduate university students attending a Christian liberal arts and sciences university in Canada were recruited to participate in this study. Participants were enrolled in either their first (50%) or second year (48%) of university (2% did not report their year of study). The mean age of the sample was 19.5 years ($SD = 6.4$). The sample was predominantly female (62% female, 38% male), Canadian (93% Canadian, 7% other), and Caucasian (96% Caucasian, 2% Asian, 2% Middle-Eastern).

Procedure

Upon their arrival to the study session, participants provided informed consent for their participation. They then completed a paper-and-pencil survey

containing the measures described below. The measures were counterbalanced using partial counterbalancing techniques to account for possible sequence effects. Participants' responses remained anonymous.

Materials

In the present work, we examined two measures of university students' psychological well-being. We analyzed how these well-being measures are related to their motivations to use Facebook for new relationships and their extent of extraversion vs. introversion. Participants reported their (a) motivations for using Facebook including two motivations most relevant to new relationships and three motivations less relevant to new relationships, (b) introversion/extraversion, and (c) well-being as operationalized by self-esteem and college adjustment.

Motivations for Using Facebook. Participants reported their reasons for using Facebook via the Five Motives Scale for Facebook Use (Peter, Valkenburg, & Schouten, 2006). Two of these motivations are especially relevant to using Facebook for new relationships. These are the motivations to meet new people (2 items; e.g., "I make new friends because of Facebook"; $r = .58$) and to enhance one's social inclusion in these new relationships and the Facebook community more broadly (3 items; e.g., "I am a member of something because I use Facebook"; $\alpha = .60$). The other three motivations within the scale are less relevant to using Facebook for new relationships. These include motives of entertainment (6 items; e.g., "I spend time on Facebook because I enjoy it"; $\alpha = .85$), maintaining established relationships (3 items; e.g., "I use Facebook to speak with my friends from real life"; $\alpha = .75$), and social compensation (3 items; e.g., "I feel less shy when I am on Facebook"; $\alpha = .85$). Participants rated each item on a 7-point scale (1 = *strongly disagree / this is not me* to 7 = *strongly agree / this is me*). In this study, we will focus on the two motivations concerning the use of Facebook for new relationships (i.e., motivation to meet new people and to enhance one's social inclusion in new relationships and the Facebook community).

Introversion/Extraversion. Participants reported their introversion/extraversion via the Gray-Wheelwrights Jungian Type Survey (Davis & Mattoon, 2006). Of the full scale's 81 items, the applicable 34 items were used (e.g., "In general company do you like to [a] Listen or [b] Talk", "In viewing a problem, do you [a] First seek a background of expe-

rience or [b] First appraise the particular time-place-person"; $\alpha = .79$). Items were scored such that higher numbers indicate greater extraversion.

Well-Being. In the present work, we examined two indirect measures of university students' psychological well-being: self-esteem and college adjustment. Prior research has examined the association of Facebook use with both self-esteem and college adjustment and has shown these constructs to be valid conceptualizations of well-being (Gentzler et al., 2011; Huang, 2010; Rohall & Cotton, 2002; Stieger & Burger, 2010; Valkenburg et al., 2006; Wilson et al., 2010).

Self-Esteem. Participants reported their self-esteem via the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965; 10 items; e.g., "I feel that I am a person of worth, at least on an equal basis with others"; $\alpha = .92$). Participants rated each item on a 4-point scale (1 = *strongly disagree* to 4 = *strongly agree*). High self-esteem has been shown to predict several important general life outcomes, including higher life satisfaction, more positive affect, and better physical health (Robins, Hendin, & Trzesniewski, 2001).

College Adjustment. Participants reported their adjustment to college via the Student Adaptation to College Questionnaire (SACQ; Baker & Siryk, 1998). The SACQ includes four subscales. The academic adjustment subscale assesses participants' coping abilities in the face of the educational requirements of university (12 items; e.g., "I find academic work to be difficult"; $\alpha = .79$). The social adjustment subscale assesses participants' ability to cope with the social demands in university (14 items; e.g., "I am meeting people and making friends at my university"; $\alpha = .88$). The personal-emotional subscale assesses how participants have adjusted psychologically and physically to university (23 items; e.g., "I feel tired a lot lately"; $\alpha = .84$). Finally, the institutional attachment subscale assesses how satisfied participants are with the university they attend (16 items; e.g., "I expect to finish my bachelor's degree at this university"; $\alpha = .85$). Participants rated each item on a 9-point scale (1 = *does not apply to me at all* to 9 = *applies very closely to me*). Because the subscales did not vary from each other enough to justify treating each subscale as a separate variable (overall $\alpha = .89$), we averaged the subscale scores to create a total college adjustment score. Good college adjustment has been shown to predict important outcomes that are relevant to university students, including lower drop-out rates, decreased

likelihood of seeking psychological services, and higher grade point averages (Baker & Siryk, 1984).

Results

We analyzed the data in three steps. First, we screened the data for missing values, outliers, and significant departures from normality. Second, we calculated descriptive statistics, including means and standard deviations for all study variables and correlations between each pair of variables. Third, we conducted a series of multiple regression analyses to examine whether participants' introversion/extraversion moderates the association of participants' motives for using Facebook with their well-being.

Preliminary Analyses

One participant did not answer one item on the college adjustment scale and four participants did not answer one item each on the extraversion scale. To account for this missing data, we calculated the total college adjustment score for the participant who did not answer one of the college adjustment scale items by averaging her responses to the remaining items. We also calculated the extraversion score for the four participants who did not answer one of the extraversion items by weighting the 33 items they did answer slightly heavier to compensate for the item they did not answer.

Preliminary analyses revealed that the motivation to use Facebook to meet people statistically significantly departed from normality at the .001 alpha level, which is the alpha level that Tabachnick and Fidell (2013) suggest for evaluating normality in small to moderate samples. Specifically, the motivation to use Facebook to meet people was positively skewed, $z = .41, p < .001$. We square root transformed this variable to achieve greater normality. After the transformation, this variable exhibited neither significant skewness nor significant kurtosis. We conducted all subsequent analyses using both the non-transformed and the transformed versions of the motivation to use Facebook to meet new people variable. Because all patterns of significance were identical regardless of whether the non-transformed or transformed version was used, and to simplify interpretation of our moderational hypothesis, we report the results of the analyses using the non-transformed version below.

We identified one univariate outlier on the motivation to use Facebook for social inclusion variable but no multivariate outliers at the .001 alpha level, which is the alpha level that Tabachnick and Fidell (2013) suggest for identifying outliers. To reduce the impact of the outlier, we changed the raw score of this outlier from its original value of 6.33 to 5.67, which is one unit larger than the next most extreme score on this scale (Tabachnick & Fidell, 2013). We conducted all subsequent analyses using both the original and the modified score of this outlier. Because all patterns of significance were identical regardless of whether the original or modified score was used, we report the results of analyses using the original score below. We report skewness and kurtosis statistics for all study variables in Table 1.

Descriptive Analyses

Means and standard deviations of all study variables and correlations of all pairs of variables are presented in Table 1. Most relevant to the current investigation is that neither self-esteem nor college adjustment were significantly correlated with the motivation to use Facebook to meet new people or the motivation to use Facebook to enhance one's social inclusion—the two predictors named in our hypothesis. However, the association of these two predictors with well-being may be moderated by introversion/extraversion as we hypothesized. We examine this possibility next.

Multiple Regression Analyses

Predicting Well-Being from the Meeting People Motive and Introversion/Extraversion. As stated in our hypothesis, we predicted that the association of participants' motivation to use Facebook to meet new people with their well-being depends on their level of introversion/extraversion, such that a stronger motive to use Facebook to meet people is associated with poorer well-being among extraverts but with better well-being among introverts. To test this portion of our hypothesis, we conducted two multiple regression analyses predicting participants' self-esteem and college adjustment, from their meeting people motive, extraversion, and the meeting people motive \times extraversion interaction term. All variables were standardized ($M = 0, SD = 1$) before analysis (to create Figures 1 and 2, in which the outcome variables are presented in their raw metric, we re-ran the analyses with the outcome variables in their raw metric).

Table 1

Summary of Intercorrelations, Means, Standard Deviations, Skewness and Kurtosis of Study Variables

Variable	1	2	3	4	5	6	7	8
1. Meeting people motivation	—							
2. Social inclusion motivation	.28*	—						
3. Entertainment motivation	.24 [†]	.56***	—					
4. Maintaining relationships motivation	-.14	.15	.47***	—				
5. Social compensation motivation	.35**	.41**	.50***	.20	—			
6. Extraversion	.12	.13	.25 [†]	.09	.03	—		
7. Self-esteem	-.04	-.22	.17	.22 [†]	-.13	.21	—	
8. College adjustment	.10	-.03	.18	.13	.08	.15	.54***	—
<i>M</i>	2.03	2.61	3.81	5.34	2.67	19.45	3.14	6.38
<i>SD</i>	1.32	1.09	1.37	1.32	1.36	5.69	0.60	0.90
Skewness	1.28	0.32	0.03	-1.00	0.73	-0.66	-0.56	-0.59
Kurtosis	0.73	-0.24	-0.77	0.81	-0.38	0.48	-0.19	0.09

Note. Motivations for using Facebook were assessed on a scale ranging from 1 to 7, extraversion was assessed with 34 forced-choice items, self-esteem was assessed on a scale ranging from 1 to 4, and college adjustment was assessed on a scale ranging from 1 to 9. [†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

As illustrated in Figure 1 Panel A, the analysis predicting participants' self-esteem revealed a significant interaction between the meeting people motive and extraversion, $\beta = -.44$, $t(56) = -2.60$, $p = .012$. This interaction indicates that the association of the meeting people motive for using Facebook with self-esteem depends on participants' level of introversion/extraversion, supporting our hypothesis. To explore the nature of this interaction, we conducted simple effects tests (Aiken & West, 1991) for participants high (1 *SD* above the mean) and low (1 *SD* below the mean) in extraversion. Among extraverts, a stronger

motive to use Facebook to meet new people predicted lower self-esteem, $\beta = -.40$, $t(56) = -2.22$, $p = .030$ (see the dotted line). Among introverts, in contrast, a stronger motive to use Facebook to meet new people predicted marginally higher self-esteem, $\beta = .48$, $t(56) = 1.98$, $p = .053$ (see the solid line). Therefore, the association of the social inclusion motive and self-esteem differs significantly between extraverts and introverts in the hypothesized manner. Furthermore, this association is statistically significantly negative for extraverts and marginally positive for introverts.

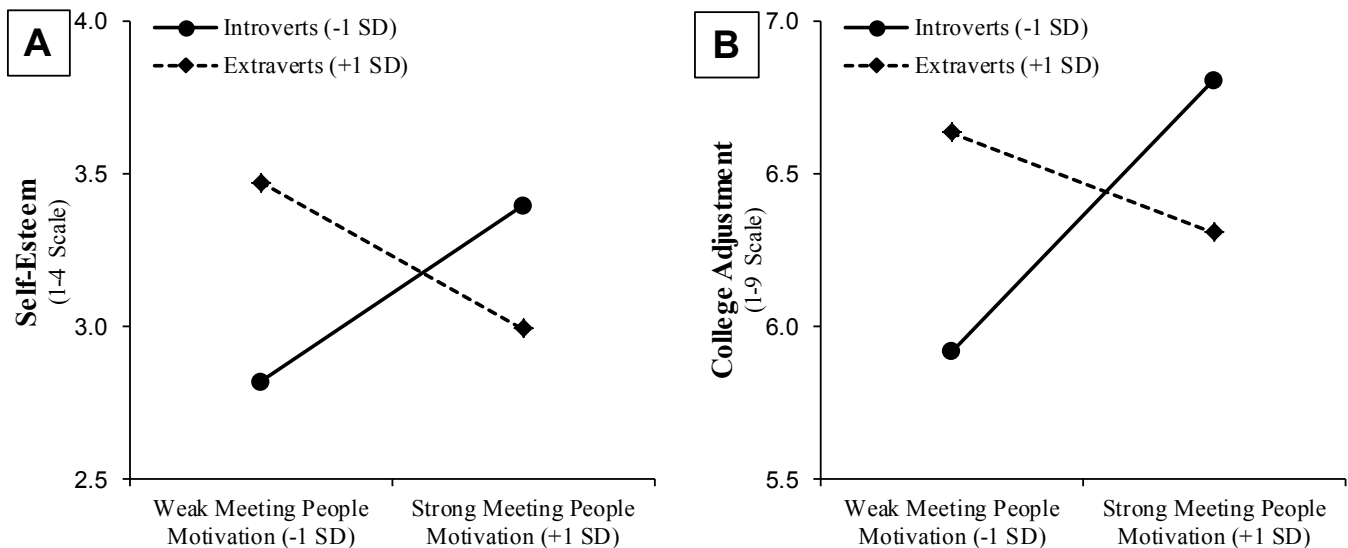


Figure 1. Predicting self-esteem (Panel A) and college adjustment (Panel B) from the meeting people motivation for using Facebook and introversion/extraversion.

As illustrated in Figure 1 Panel B, the analysis predicting participants' college adjustment revealed a marginally statistically significant interaction between the meeting people motive and extraversion, $\beta = -.34$, $t(56) = -1.93$, $p = .058$. This suggests that the association between the meeting people motive for using Facebook with college adjustment may depend on participants' level of introversion/extraversion, supporting our hypothesis. To explore the nature of this marginal interaction, we conducted simple effects tests (Aiken & West, 1991) for participants high (1 *SD* above the mean) and low (1 *SD* below the mean) in extraversion. The simple effect for extraverts was not statistically significantly different from zero, $\beta = -.18$, $t(56) = -0.98$, $p = .332$. Among introverts, however, a stronger motive to use Facebook to make new friends predicted marginally higher self-esteem, $\beta = .49$, $t(56) = 1.97$, $p = .054$ (see the solid line). Therefore, the association of the meeting people motive and college adjustment marginally differs between extraverts and introverts in the hypothesized manner. Furthermore, this association is marginally positive for introverts, although it is not significantly different from zero for extraverts. The portion of our hypothesis regarding the motivation to use Facebook to meet new people was supported by both measures of well-being, although the critical test for college adjustment was only marginally significant.

Predicting Well-Being from the Social Inclusion Motive and Introversion/Extraversion. We also predicted that the association of participants' motivation to use Facebook to increase their social inclusion with

their well-being depends on their level of introversion/extraversion, such that a stronger motive to use Facebook to increase social inclusion is associated with poorer well-being among extraverts but with better well-being among introverts. To test this portion of our hypothesis, we conducted two multiple regression analyses predicting participants' self-esteem and college adjustment, from their social inclusion motive, extraversion, and the social inclusion motive \times extraversion interaction term. All variables were standardized ($M = 0$, $SD = 1$) before analysis.

As illustrated in Figure 2 Panel A, the analysis predicting participants' self-esteem revealed a statistically significant interaction between the social inclusion motive and extraversion, $\beta = -.33$, $t(56) = -3.01$, $p = .004$. This indicates that the association between the social inclusion motive for using Facebook and self-esteem depends on the participants' level of introversion/extraversion, supporting our hypothesis. To explore the nature of this interaction, we conducted simple effects tests (Aiken & West, 1991) for participants high (1 *SD* above the mean) and low (1 *SD* below the mean) in extraversion. Among extraverts, a stronger motive to use Facebook to increase social inclusion predicted lower self-esteem, $\beta = -.58$, $t(56) = -3.59$, $p = .001$ (see the dotted line). The simple effect for introverts was not statistically significantly different from zero, $\beta = .08$, $t(56) = 0.50$, $p = .625$. Therefore, the association of the social inclusion motive and self-esteem differs significantly between extraverts and introverts in the hypothesized manner. Furthermore, this association is statistically

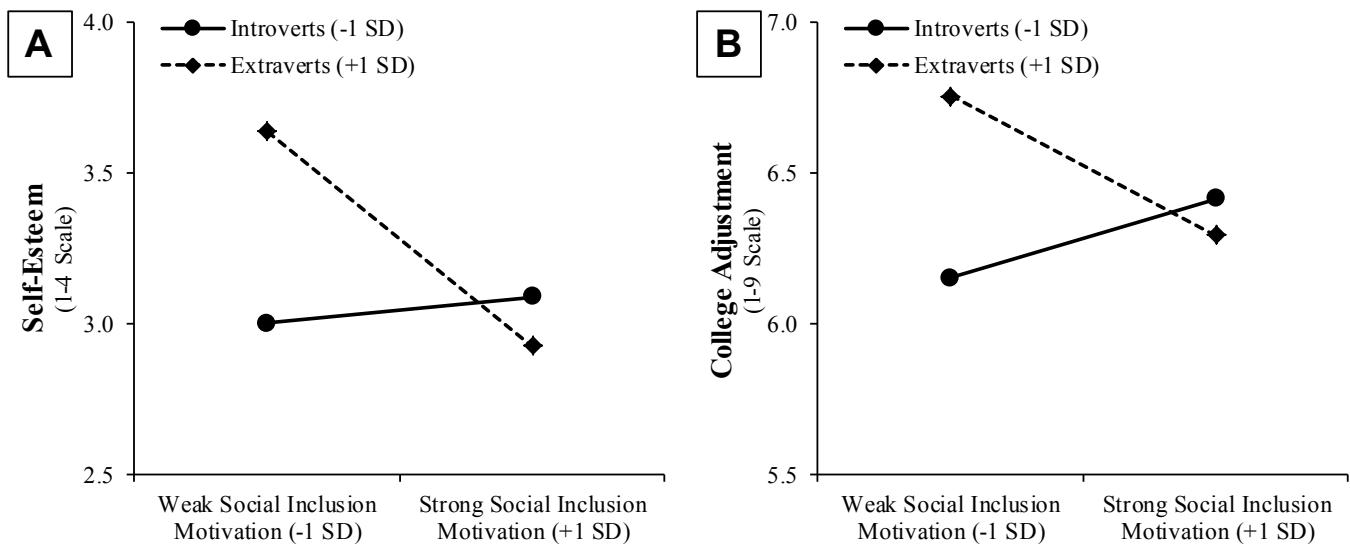


Figure 2. Predicting self-esteem (Panel A) and college adjustment (Panel B) from the social inclusion motivation for using Facebook and introversion/extraversion.

significantly negative for extraverts, although it is not statistically significantly different from zero for introverts.

As illustrated in Figure 2 Panel B, the analysis predicting participants' college adjustment revealed a marginally statistically significant interaction between the social inclusion motive and extraversion, $\beta = -.20$, $t(56) = -1.70$, $p = .095$. This suggests that the association of the social inclusion motive for using Facebook with college adjustment may depend on participants' level of introversion/extraversion, supporting our hypothesis. To explore the nature of this marginal interaction, we conducted simple effects tests (Aiken & West, 1991) for participants high (1 *SD* above the mean) and low (1 *SD* below the mean) in extraversion. Neither simple effect was statistically significantly different from zero, $\beta = -.25$, $t(56) = -1.42$, $p = .161$ and $\beta = .16$, $t(56) = 0.88$, $p = .397$, for both extraverts and introverts. Therefore, the association of the social inclusion motive and college adjustment differs significantly between extraverts and introverts in the hypothesized manner. However, this association is not statistically significantly different from zero for extraverts or for introverts. In sum, the portion of our hypothesis regarding the motivation to use Facebook to increase social inclusion was partially supported for both measures of well-being, although the critical test for college adjustment was only marginally significant.

Predicting Well-Being from Other Motives and Introversion/Extraversion. As explained in the Introduction, the primary goal of our work is to examine reasons for using Facebook that are relevant to the establishment of new relationships (i.e., the meeting people motive) and to the benefit of having new relationships (i.e., the social inclusion motive). However, we conducted six additional multiple regression analyses predicting participants' self-esteem and college adjustment, from their entertainment, maintaining relationships, and social compensation motives, extraversion and the corresponding motive \times extraversion interaction term. All variables were standardized ($M = 0$, $SD = 1$) before analysis. None of the six interactions between the motives and extraversion approached statistical significance, $ps > .14$. Therefore, the associations of well-being with motivations for using Facebook for entertainment, maintaining relationships, or social compensation—all of which are not relevant to using Facebook for new relationships—did not depend on participants' level of introversion/extraversion.

Discussion

We investigated the associations of people's motivations for using Facebook with their well-being and, most importantly, how these associations differ for extraverts and introverts. We predicted that the association of people's motivation to use Facebook to meet new people and to increase their social inclusion with their well-being depends on their level of introversion/extraversion. It is to the extent that stronger motives to use Facebook to meet people and to increase social inclusion are associated with poorer well-being among extraverts, but with better well-being among introverts. Overall, the results supported our hypothesis. We discovered that the associations of using Facebook to meet new people and to enhance one's social inclusion with both self-esteem and college adjustment were in the opposite direction for extraverts and introverts. Our results suggest that extraverts who use Facebook to meet new people or to enhance their social inclusion tend to have lower self-esteem and poorer adjustment to college. Conversely, introverts who use Facebook to meet new people or to enhance their social inclusion tend to have higher self-esteem and better adjustment to college.

Limitations and Strengths

This research is limited by the size and nature of its participant sample. Specifically, the relatively small sample size, especially for conducting tests of a moderating hypothesis, such as ours, presents the possibility of Type II errors. That is, we may not have detected associations among variables that actually exist due to lack of statistical power. Thus, if a larger sample had been examined, at least some of the marginal interaction effects and some of the nonsignificant and marginal simple effects may have been statistically significant. In addition, we limited our investigation to first and second year university students. Kalpidou et al. (2011) found that third and fourth year university students exhibited different associations between Facebook use and psychological well-being than first and second year students did. Students in secondary education also frequently use online social networking sites. Thus, the conclusions of our work may be strengthened by examining third and fourth year university students, secondary education students or university-aged students who do not attend university.

This work also has several strengths. Specifically, our results help clarify the contradictory results of prior research examining Facebook use and

psychological well-being. Our findings suggest that the displacement hypothesis, which states that time online takes away from more beneficial face-to-face social interactions with established relationship partners, is most applicable for extraverts who thrive on face-to-face interaction (Nie et al., 2002). However, a variant of the stimulation hypothesis, which states that time online incites the creation of new relationships, is more applicable for introverts who do not always feel comfortable in stimulating social interactions (Pempek et al., 2009). Thus, by examining reasons for using Facebook that are most relevant to new relationships, the present research not only fills a gap in the existing literature, but also helps explain the conflicting results of prior work.

Broader Implications and Directions for Future Research

Because not two individuals are exactly alike, the link between people's use of Facebook and their well-being varies from person to person. Social networking sites such as Facebook are designed with a target profile in mind that attempts to consider the majority of the population. Some individuals may fit closely with that profile, but others may vary drastically from it. Much of the past research on the effects of Facebook reported results for the population at large, failing to examine the potential moderating role of an individual's personality. Our work has important implications for the millions of Facebook users. Specifically, extraverted individuals should be wary of overusing Facebook. To the extent they use Facebook to establish new relationships, they will have less time to spend in the face-to-face social situations they find most fulfilling. Introverted individuals, in contrast, should use Facebook more freely, as a means to establish new relationships and to maintain old ones. To the extent introverts use Facebook to establish new relationships, they will be able to create additional social connections in a situation they find more comfortable.

Further exploration should be made into the impact of other aspects of personality as potential moderating variables on the effects of Facebook on well-being. For example, traits that are related to—but are more specific than—introversion/extraversion might yield similar or even stronger results than the findings of the present research. These personality traits might include the tendency to experience loneliness and social anxiety (e.g., Russell, Peplau, & Cutrona, 1980). If future research finds that using Facebook for new rela-

tionships predicts enhanced well-being among the chronically lonely and socially anxious, perhaps interventions aimed at reducing loneliness and social anxiety should employ online social networking activities aimed at establishing new relationships. Future research should also explore whether our findings can be generalized to the use of other social networking sites, such as Twitter or Tumblr, that seem to promote surface social contact as well as other forms of technology designed to promote more in-depth online social connection and communication, such as Skype and instant messaging. To the extent that methods of online communication, such as Skype and instant messaging, help people maintain established relationships and provide a more stimulating situation than social networking sites do, such as Facebook, using them may predict enhanced well-being among extraverts. If future research supports this idea, perhaps introverts should spend more time on social networking sites to establish new relationships, whereas extraverts should spend more time using other forms of online communication to maintain established ones.

Future research should examine different populations that use Facebook for specific reasons related to their position in society. For example, among individuals who have recently moved to different cities or schools, it may be that using Facebook to meet new people would be beneficial for their well-being regardless of personality. Similarly, a population that is socially isolated—paediatric inpatients or the elderly in long-term care—may experience increased well-being because their face-to-face social interaction is circumstantially limited.

Conclusion

Social networking use among university students is an underexplored, yet important, topic for research that has implications for the general population. This study contributes to the scope of research on social networking, and helps explain the contradictory evidence in support of conflicting theories regarding the association of Facebook use with well-being. Specifically, our work identified extraversion vs. introversion as the key to explaining the circumstances under which using Facebook for new relationships predicts poorer or better well-being. To the extent they use Facebook to meet new people and to enhance their social inclusion, extraverts experienced poorer well-being whereas introverts experienced better well-being. Our research shows that, by adjusting their use of Facebook for new relationships in opposite directions, both

extraverts and introverts can meet their social needs in a manner that fits their personality and, thereby, can experience higher self-esteem and better college adjustment.

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