Testing the direct and nonlinear effects of intensity of Facebook use on the formation and maintenance of social capital in Latin America

Abstract

Previous studies assume, explicitly or implicitly, a linear relationship between intensity of Facebook use and the formation and maintenance of social capital. However, some recent findings suggest that relationship can be curvilinear (S-shaped). This paper tests quadratic and cubic models to explore the shape of the relationship between intensity of Facebook use and the formation and maintenance of social capital. The moderating effects of self-esteem and satisfaction with life on this relationship are also examined. Hypotheses were tested using hierarchical regression analysis and a sample of 530 students in an understudied region - Latin America. Results show a positive linear relationship between intensity of Facebook use and bridging and bonding social capital but reject the hypothesis that a curvilinear relationship may exist between intensity of Facebook use and the formation and maintenance of social capital. Additionally, the results suggest that satisfaction with life and self-esteem does not moderate the effects of Facebook intensity on social capital in Latin America. This study finds an additive relationship between student characteristics (e.g., age, self-esteem, satisfaction with life) and using Facebook, that is, the relationships between social capital and Facebook use did not vary by student characteristics in Latin America.

Key words: Facebook intensity; Social capital; Social network sites; Self-esteem; Satisfaction with life.

INTRODUCTION

Facebook is the most popular social media in the world (Duffett, 2015). Previous studies have demonstrated that intense Facebook use is closely related to the formation and maintenance of social capital among students in the U.S. (Ellison et al., 2007; 2014), Norway (Brandtzæg, 2012), South Africa (Johnston et al., 2013), and in the Netherlands (Antheunis et al., 2014). These countries are individualist societies. Researchers have yet to examine the relationship between Facebook use and social capital among students from other cultures. Latin American countries are highly collectivist cultures. However, too little is known about the potential of intensity of Facebook use in Latin America because there is no research that analyzes its effect in the region. Consequently, the first objective of this research is to examine the effects of Facebook use on the formation and maintenance of social capital in Latin America.

Ellison et al. (2007) found evidence that self-esteem and satisfaction with life (two well-known and validated measures of subjective well-being) may operate as moderators of the relationship between Facebook use and social capital. That is, people with lower self-esteem and/or lower satisfaction with life appeared to benefit more from their use of Facebook than those with higher self-esteem and/or higher satisfaction with life. There is no research that analyzes the moderating effects of self-esteem and satisfaction with life on this relationship in Latin America. Thus, the second objective of this research is to examine these moderating effects in the region.

Recent findings suggest that the relationship between Facebook intensity and the formation and maintenance of social capital can be curvilinear (S-shaped). For example, Lampe et al. (2013) show that light users report less bonding social capital than either heavy users or non-users. Other studies suggest that excessive use of Facebook can damage the formation and maintenance of social capital (e.g., Bohn et al., 2014; Clayton et al., 2013; Tandoc et al., 2015). However, previous studies assume, explicitly or implicitly, a linear relationship between intensity of Facebook use and the formation and maintenance of social capital (Antheunis et al., 2014; Brandtzæg, 2012; Ellison et al., 2007; 2014; Johnston et al., 2013). Different functional forms have different implications. A linear relationship implies a constant (marginal) return, such that any improvement in intensity of Facebook use has the same effect on social capital. In contrast, an S-shaped relationship suggests a convex relationship (increasing returns) for light Facebook users but a concave relationship (decreasing returns) for heavy Facebook users. Studies have not examined the potential existence of a curvilinear relationship. The third objective of this research is to bridge this gap.

In this study, hypotheses were tested using a sample of 530 participants and hierarchical regression analysis. Results show a positive linear relationship between intensity of Facebook use and bridging and bonding social capital but reject the hypothesis that a curvilinear relationship may exist between intensity of Facebook use and the formation and maintenance of social capital. Additionally, the results suggest that satisfaction with life and self-esteem does not moderate the effects of Facebook intensity on social capital in Latin America.

LITERATURE REVIEW

Social capital

Although social capital is an elastic term with a variety of definitions, there is general consensus that it refers broadly to the benefits received from social relationships. Social capital is the sum of the resources that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition (Bourdieu and Wacquant, 1992). Putnam (2000) distinguishes between bridging social capital and bonding social capital. The former is linked to what network researchers refer to as weak ties (e.g., acquaintances, coworkers, strangers), which are loose connections between individuals who may provide useful information or new perspectives for one another but typically not emotional support (Granovetter, 1982). Alternatively, bonding social capital is found between individuals in tightly-knit, emotionally close relationships, such as family and close friends. Ellison et al. (2007) introduce an additional dimension of social capital that speaks to the ability to maintain valuable connections as one progress through life changes. This dimension (maintained social capital) explore whether online network tools enable individuals to keep in touch with a social network after physically disconnecting from it.

Social capital and intensity of Facebook use

Internet has been linked both to potential increases and decreases of social capital. Example of this is found in the study of Nie (2001) who argued that Internet use detracts from face-to-face time with others, which might diminish an individual's social capital. However, researchers have claimed that online interactions may supplement or replace in-person interactions, mitigating any loss from time spent online (Wellman et al., 2001). Computer-

mediated interactions have had positive effects on community interaction and involvement (Hampton and Wellman, 2003; Kavanaught et al., 2005). Additionally, social network sites can eliminate geographical and social barriers (Barg et al., 2002, Tidwell and Walther, 2002). Therefore, the use of social network sites such as Facebook could allow individuals to approach new people who could not connect with them in the conventional way (Horrigan, 2002, Parks and Floyd, 1996). Donath and Boyd (2004) hypothesize that social network sites could greatly increase the weak ties one could form and maintain, because the technology is well-suited to forming and maintaining such ties cheaply and easily.

Previous studies have demonstrated that intense Facebook use is closely related to the formation and maintenance of social capital among students in the U.S. (Ellison et al., 2007; 2014), Norway (Brandtzæg, 2012), South Africa (Johnston et al., 2013), and in the Netherlands (Antheunis et al., 2014). Researchers have yet to examine the relationship between Facebook use and social capital among students from other cultures such as Latin America. There may well be cultural factors that moderate the effects of Facebook use on the formation and maintenance of social capital. Hofstede (2001) reported that the U.S. is the most individualist of the countries studied with a score of 91. Similarly, Norway (69), South Africa (65), and the Netherlands (80) score high on this dimension and are thus individualist societies. In contrast, Latin American countries are highly collectivist cultures with low individualism scores (Argentina 46, Brazil 38, Chile 23, Colombia 13, Costa Rica 15, Ecuador 8, El Salvador 19, Guatemala 6, Mexico 30, Panama 11, Peru 16, Uruguay 36, Venezuela 12). The fundamental issue addressed by individualism dimension is the degree of interdependence a society maintains among its members. Collectivist societies encourage social harmony and bonding within their in-groups (family and close friends) and also are more likely to exhibit greater trust for their in-groups and to perceive a greater difference between their in-groups and out-groups (Triandis, 1995). In collectivist cultures, trust, emotional bond, and obligations embedded in in-groups could motivate people to use multiple channels to maintain contact with their in-groups, both on and off social media (Haythornthwaite, 2005). Additionally, in collectivist cultures the relationship of the individual to the in-group tends to be stable, and even when the in-group makes highly costly demands the individual stays with it. On the other hand, in individualist cultures people often drop those in-groups that are inconveniently demanding and form new in-groups (Triandis et al., 1988). In order to examine the effects of intensity of Facebook use on the formation and maintenance of social capital in Latin America, the following hypothesis is proposed:

H1. In Latin America, intensity of Facebook use will be positively associated with a) bridging, b) bonding, and c) maintained social capital.

The gains and losses associated with intensity of Facebook use may vary depending on conditions that differ from one person to another. Online social network sites may be of particular utility for individuals who otherwise have difficulties forming and maintaining both strong and weak ties. Some research has shown, for example, that the Internet might help individuals with low psychological well-being due to few ties to friends and neighbors (Bargh and McKenna, 2004). Self-esteem and satisfaction with life are two well-known and validated measures of subjective well-being. Ellison et al. (2007) found evidence that self-esteem and satisfaction with life may operate as moderators of the relationship between Facebook use and social capital. That is, people with lower self-esteem and/or lower

satisfaction with life appeared to benefit more from their use of Facebook than those with higher self-esteem and/or higher satisfaction with life. Empirical studies have not examined these moderating effects in Latin America. In order to examine these moderating effects in Latin America, the following hypothesis is proposed:

H2. In Latin America, the relationship between intensity of Facebook use and a) bridging, b) bonding, and c) maintained social capital will vary depending on the degree of person's self-esteem.

H3. In Latin America, the relationship between intensity of Facebook use and a) bridging, b) bonding, and c) maintained social capital will vary depending on the degree of person's satisfaction with life.

Some recent findings suggest that the relationship between intensity of Facebook use and the formation and maintenance of social capital can be curvilinear (S-shaped) (e.g., Bohn et al., 2014; Clayton et al., 2013; Lampe et al., 2013; Tandoc et al., 2015; Youn et al., 2013). If quadratic and cubic terms had been omitted, nonlinearity would not have been detected in previous studies even when it does exist. Confirming a curvilinear relationship between intensity of Facebook use and the formation and maintenance of social capital supports a contingent view (i.e., intensity of Facebook use could be more effective in some circumstances than in others). This study tests an S-shaped relationship (which is first convex and then concave) with reference to the link between intensity of Facebook use and the formation and maintenance of social capital.

Intensity of Facebook use may exhibit different types of returns to scale in different ranges. There could be increasing returns at relatively low Facebook use levels. Thus, at relatively low Facebook use levels, the formation and maintenance of social capital rises more than proportionally with increasing intensity of Facebook use (law of increasing returns). Lampe et al. (2013) made a distinction between non-users, light and heavy Facebook users. Light users reported less bonding social capital than either heavy users or non-users. In other words, those who become members of Facebook but do not use it in an intense manner reported less bonding social capital. It may be that participating at a very low level means increased time and effort costs on the part of the users without increases in social capital. Lampe et al. (2013) comment that future work should explore this notion of a threshold effect - the level of activity at which social capital benefits are realized. After surpassing the threshold, the formation and maintenance of social capital could rises more than proportionally with increasing intensity of Facebook use.

To the right of the inflection point, increasing intensity of Facebook use increases the formation and maintenance of social capital less than proportionally (law of diminishing returns). Increasing intensity of Facebook use could be ineffective for heavy Facebook users for several reasons. First, people may be stressed by too many connections, and thus not willing to increase their weaker ties over time (Bright et al., 2015). Second, Facebook users spend more time to maintain friends with whom they have strong ties (Luarn and Chiu, 2015). Third, Brooks et al. (2011) show that there is no relationship between the frequency of contacting family and close friends on Facebook with students' bonding social capital. Finally, although interactivity is touted as a hallmark of newer media, online users spend a considerable amount of time just watching others. In fact, Facebook users spent more time observing content on Facebook than actually posting content (Pempek et al.,

2009). However, reading profile information and status updates of other people without actively interacting with them can still provide content for conversation grounding and can reveal users' similarities. Therefore, consuming undirected messages, which allows users to keep in touch, may relate to social capital as well (Antheunis et al., 2015).

Excessive use of Facebook can damage the formation and maintenance of social capital for several reasons. First, Bohn et al. (2014) show that exaggerated posting and friending behavior are likely to deteriorate social capital. They conclude that very high posting frequencies are responded to negatively by friends.

Second, Brandtzæg (2012) show that users of social network sites reported increases in loneliness. Moreover, policy makers and researchers (Tandoc et al., 2015; Youn et al., 2013) have hypothesized that heavy use of online social networks such as Facebook and mobile technologies may contribute to the increase in incidence of depression.

Third, Facebook has been the subject of research related to jealousy and surveillance behaviors. Clayton et al. (2013) determined that the overuse of the Facebook may result in emotional and physical cheating, breakup, and divorce. Valenzuela et al. (2014) show that using social network sites is negatively correlated with marriage quality and positively correlated with experiencing a troubled relationship and thinking about divorce.

Finally, excessive use of social network sites has been associated with compulsive use, which may create psychological, social, school and/or work difficulties in a person's life (Kuss and Griffiths, 2011; Qiaolei, 2014). Rosen et al. (2013) show that the negative effects of teens overusing social media include making them more prone to vain, aggressive and anti-social behavior. Additionally, people tend to divide the world between friends and enemies. Social network sites might lead to the creation of hate groups as can sometimes be seen on Facebook (Johnston et al., 2013; Kokkinos et al., 2016). In order to explore the shape of the relationship between intensity of Facebook use and the formation and maintenance of social capital, the following hypothesis is proposed:

H4. In Latin America, the effect of intensity of Facebook use on a) bridging, b) bonding, and c) maintained social capital follows an S-shaped function, which is first convex and then concave.

METHOD

To test the hypotheses, a survey of undergraduate students in the Faculty of Economics and Business at the University of Chile is carried out. As the U.S., Chile has a high Facebook penetration rate (ratio of Facebook users in relation to the total number of population) (the U.S. 52.9%, Chile 55.6%). Indeed, Chile has the highest Facebook penetration rate in Latin America (Argentina 47.9%, Brazil 32.0%, Colombia 37.9%, Ecuador 33.9%, Mexico 33.4%, Peru 32.7%, Uruguay 49.4%, and Venezuela 34.0%). (Internet world stats, 2015; MVF, 2015) Additionally, Chile offers an ideal context in which to understand the effects of intensity of Facebook use on the formation and maintenance of social capital in Latin America because Chile has Hofstede's scores close to the average for Latin America (Hofstede, 2001). Consequently, using a sample of Chilean students will control the Facebook penetration rate and isolate the effects of culture.

In addition to demographic measures, the study relied on sets of measures drawn from Ellison et al. (2007). Independent and control measures included general Internet use (1 item), Facebook use (9 items; e.g., "Facebook has become part of my daily routine"),

and two measures of psychological well-being: self-esteem (7 items; e.g., "I feel that I have a number of good qualities") and satisfaction with life (5 items; e.g., "I am satisfied with my life at University of Chile"). The dependent measures are bridging social capital (9 items; e.g., "At University of Chile, I come into contact with new people all the time"), bonding social capital (5 items; e.g., "There are several people at University of Chile I trust to solve my problems") and maintained social capital (5 items; e.g., "If I needed to, I could ask a high school acquaintance to do a small favor for me"). These variables were assessed using the same survey items as Ellison et al. (2007). All materials were translated into Spanish using a double translation procedure, which has been proved as one of the best ways to provide validity to this process (McGorry, 2000). In the initial sample of students, 97% were registered Facebook members while in the MSU study (Ellison et al., 2007) 94% of students were registered Facebook members. Questionnaires were distributed among the students to be completed privately. A cover letter explained the data collection process and assured the respondents of confidentiality. Honest responses were encouraged by stressing to participants that there were no wrong or right answers. A total of 530 Facebook members completed the survey. The final sample is representative of undergraduate students of the Faculty of Economics and Business at the University of Chile in relation to gender and the average age of the students. The characteristics of the respondents are reported in Table 1.

<< Table 1 here >>

RESULTS

The reliabilities of the multiple-item scales were examined. This examination allowed us to confirm Cronbach's alphas greater than the acceptable levels of .70 (Nunnally, 1978) for Facebook intensity (.78), self-esteem (.78), satisfaction with life (.83), bridging social capital (.87), bonding social capital (.72), and maintained social capital (.80). The independent and control variables employed in the study were mean-centered before creating the interaction, quadratic, and cubic terms to minimize multicollinearity (Cohen et al., 2003). The data was employed in a series of hierarchical regression analyses to estimate the path coefficients for the hypothesized relationships. Hierarchical regression was selected over structural modeling because the complexity of the model. In each regression, demographic, subjective well-being and Internet use factors were controlled in order to see if usage of Facebook accounted for variance in social capital over and above these other variables. The results of the hypotheses tests are shown in Tables 2, 3, and 4. To begin, the variance inflation factors (VIFs) for each regression coefficient range from a low of 1.004 to a high of 6.519, suggesting that the variance inflation factors in each regression are at acceptable levels (Hair et al., 2006).

Bridging social capital

As Table 2 summarizes, the Model 1 regression analysis results indicate that the control variables explain 38.6% of the variance in bridging social capital. Adding the linear term of Facebook intensity in Model 2 increased the R^2 value by 1.6% ($\Delta F = 12.409$, $p < .01$). Thus, Model 2 shows that Facebook intensity is positively related to bridging social capital, in support of H1a.

Model 3 show that H2a and H3a are not supported because data do not allow the assertion that the effect of Facebook intensity on bridging social capital is moderated by self-esteem and/or by satisfaction with life (See Table 2; *p*s > .10).

This study proposed in H4 an S-shaped function between Facebook intensity and the formation and maintenance of social capital, which this study tests with a cubic regression model. The linear, quadratic, and cubic terms are all relevant for testing the proposed S-shaped relationship between Facebook intensity and the formation and maintenance of social capital. This type of relationship receives support if the coefficient for the quadratic term is negative and the coefficient for the cubic term is negative. The results show that the quadratic and cubic terms of Facebook intensity were not significant (*p*s > .10). Adding the quadratic term of Facebook intensity in Model 4 does not contributes to explain the variance ($\Delta F = .011$, $p > .10$). Adding the cubic term of Facebook intensity in Model 5 contributes only an additional 0.3% to explain the variance ($\Delta F = 2.250$, $p > .10$). Consequently, H4a is not supported.

<< Table 2 here >>

Bonding social capital

As Table 3 summarizes, the Model 1 regression analysis results indicate that the control variables explain 21.1% of the variance in bonding social capital. Adding the linear term of Facebook intensity in Model 2 increased the R^2 value by 1.0% ($\Delta F = 5.797$, $p < .05$). Thus, Model 2 shows that Facebook intensity is positively related to bonding social capital, in support of H1b.

Model 3 show that H2b and H3b are not supported because data do not allow the assertion that the effect of Facebook intensity on bonding social capital is moderated by self-esteem and/or by satisfaction with life (See Table 3; *p*s > .10).

The results show that the quadratic and cubic terms of Facebook intensity were not significant (*p*s > .10). Adding the quadratic term of Facebook intensity in Model 4 contributes only an additional 0.1% to explain the variance ($\Delta F = .682$, $p > .10$). Adding the cubic term of Facebook intensity in Model 5 contributes only an additional 0.2% to explain the variance ($\Delta F = .941$, $p > .10$). Consequently, H4b is not supported.

<< Table 3 here >>

Maintained social capital

As Table 4 summarizes, the Model 1 regression analysis results indicate that the control variables explain 12.9% of the variance in maintained social capital. Adding the linear term of Facebook intensity in Model 2 increased the R^2 value by only 0.2% ($\Delta F = 1.241$, $p > .10$). Thus, Model 2 shows that Facebook intensity is not related to maintained social capital. Consequently, H1c is not supported. This result suggests that Facebook use in Latin America is not enough to enable individuals to keep in touch with a social network after physically disconnecting from it.

Model 3 show that H2c and H3c are not supported because data do not allow the assertion that the effect of Facebook intensity on maintained social capital is moderated by self-esteem and/or by satisfaction with life (See Table 4; *p*s > .10).

The results show that the quadratic and cubic terms of Facebook intensity were not significant (*p*s > .10). Adding the quadratic term of Facebook intensity in Model 4 contributes only an additional 0.3% to explain the variance ($\Delta F = 1.774$, $p > .10$). Adding the cubic term of Facebook intensity in Model 5 contributes only an additional 0.3% to explain the variance ($\Delta F = 1.431$, $p > .10$). Consequently, H4c is not supported.

<< Table 4 here >>

DISCUSSION

This is the first study to examine curvilinear (S-shaped) effects of Facebook intensity on the formation and maintenance of social capital. Additionally, analyzing the case of Latin America is highly relevant because there is no research that analyzes the direct and nonlinear effects of Facebook intensity on the formation and maintenance of social capital in the region. Results show a positive linear relationship between intensity of Facebook use and bridging and bonding social capital but reject the hypothesis that a curvilinear (S-shaped) relationship may exist between intensity of Facebook use and the formation and maintenance of social capital. Contrary to Ellison et al. (2007), the results show that in Latin America, satisfaction with life and self-esteem does not moderate the effects of Facebook intensity on the formation and the maintenance of social capital. Thus, data supports the idea that the effects of Facebook intensity on social capital does not depend on student characteristics in Latin America.

The study makes significant contributions by examining the implications for social capital of using Facebook by undergraduate students in Latin America. The results suggest that in the region, Facebook intensity is useful for increasing bridging and bonding social capital (the formation of social capital), but not to increase maintained social capital (the maintenance of social capital). Overall, the findings of this study should ease the concerns of those who fear that Facebook has negative effects on social capital. The results suggest that promoting Facebook use in Latin America improves social capital regardless of student characteristics. This study finds an additive relationship between student characteristics (e.g., age, self-esteem, satisfaction with life) and using Facebook, that is, the relationships between social capital and Facebook use did not vary by student characteristics in Latin America.

Different functional forms have different implications for policymakers and administrations (e.g., governments, schools, universities). A linear relationship implies a constant (marginal) return, such that any improvement in Facebook intensity has the same effect on social capital. Therefore, investing more time and energy at every level of Facebook intensity is equally important in terms of improvements on social capital. If undergraduate students need to broaden their social networks and gain diverse information, the results suggest that they need to invest more time and energy in using Facebook. The prevalence of social network sites makes them important tools for students to develop social capital.

As an important implication of this study, the results suggest that future research can adopt a linear relationship between intensity of Facebook use and the formation and maintenance of social capital. Additionally, the results suggest that investigating Facebook intensity in isolation may not compromise researchers' ability to understand the effects of Facebook intensity on the formation and maintenance of social capital in Latin America. However, researchers should reexamine these issues using richer data (e.g., longitudinal data). Additionally, possible differences between cultures make it essential to develop studies that measure, compare, and analyze the different levels of Facebook intensity and formation and maintenance of social capital among cultures and their possible causes. This article attempts to encourage similar research in Latin America and other regions that confirms or refutes the results presented in this work. Additionally, this study could be

replicated with other social network sites, such as Twitter, Instagram, or LinkedIn, which would help examine the extent to which the results are generalizable to other social network sites.

References

Antheunis, M. L., Vanden Abeele, M. M., & Kanters, S. (2015). The Impact of Facebook Use on Micro-Level Social Capital: A Synthesis. *Societies*, 5(2), 399-419.

Antheunis, M. L., Schouten, A. P., & Krahmer, E. (2014). The Role of Social Networking Sites in Early Adolescents' Social Lives. *The Journal of Early Adolescence*, doi: 10.1177/0272431614564060

Bargh, J., & McKenna, K. (2004). The Internet and social life. *Annual Review of Psychology*, 55(1), 573–590.

Bohn, A., Buchta, C., Hornik, K., & Mair, P. (2014). Making friends and communicating on Facebook: Implications for the access to social capital. *Social Networks*, 37, 29-41

Bourdieu, P., & Wacquant, L. (1992). *An Invitation to Reflexive Sociology*. Chicago: University of Chicago Press.

Brandtzæg, P. B. (2012). Social networking sites: Their users and social implications—A longitudinal study. *Journal of Computer-Mediated Communication*, 17(4), 467-488.

Bright, L. F., Kleiser, S. B., & Grau, S. L. (2015). Too much Facebook? An exploratory examination of social media fatigue. *Computers in Human Behavior*, 44, 148-155

Brooks, B., Welser, H. T., Hogan, B., & Titsworth, S. (2011). Socioeconomic Status Updates: Family SES and emergent social capital in college student Facebook networks. *Information, Communication & Society*, 14(4), 529-549.

Clayton, R. B., Nagurney, A., & Smith, J. R. (2013). Cheating, breakup, and divorce: is Facebook use to blame?. *Cyberpsychology, Behavior, and Social Networking*, 16(10), 717-720.

Cohen, J., Cohen, P., West, S., and Aiken, L. (2003), *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences*. Mahwah, NJ: Lawrence Erlbaum Associates.

Donath, J., & Boyd, D. (2004). Public displays of connection. *BT Technology Journal*, 22(4), 71

Duffett, R.G. (2015). Facebook advertising's influence on intention-to-purchase and purchase amongst Millennials. *Internet Research*, 25(4), 498-526

Ellison, N. B., Vitak, J., Gray, R., & Lampe, C. (2014). Cultivating social resources on social network sites: Facebook relationship maintenance behaviors and their role in social capital processes. *Journal of Computer-Mediated Communication*, 19(4), 855-870.

Ellison, N., 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, 1143−1168

Granovetter, M. S. (1982). The strength of weak ties: A network theory revisited. In P. V.

Hair, J., Black, B. B., Anderson, R., & Tatham, R. (2006). Multivariate data analysis (6th ed) Upper Saddle River, NJ: Prentice-Hall.

Hampton, K., & Wellman, B. (2003). Neighboring in Netville: How the Internet supports community and social capital in a wired suburb. *City & Community*, 2(4), 277–311.

Haythornthwaite, C. (2005). Social networks and Internet connectivity effects. *Information, Community & Society*, 8(2), 125-147.

Hofstede, G. (2001), *Culture's Consequences: Comparing Values. Behaviors Institutions and Organizations Across Nations*, 2nd ed., Sage Publications Inc, Thousand Oaks, CA.

Horrigan, J. B. (2002). Online communities: Networks that nurture long-distance relationships and local ties. Pew Internet and American Life Project. Retrieved June 26, 2007 from http://www.pewinternet.org/pdfs/PIP_Communities_Report.pdf

Internet world stats (2015). Facebook users in the world. Facebook Usage and Facebook Growth Statistics By World Geographic Regions, Retrieved July 8, 2015 from http://www.internetworldstats.com/facebook.htm

Johnston, K., Tanner, M., Lalla, N., & Kawalski, D. (2013). Social capital: the benefit of Facebook 'friends'. *Behaviour & Information Technology*, 32(1), 24-36

Kavanaugh, A., Carroll, J. M., Rosson, M. B., Zin, T. T., & Reese, D. D. (2005). Community networks: Where offline communities meet online. *Journal of Computer Mediated Communication* 10(4), article 3.

Kokkinos, C. M., Baltzidis, E., & Xynogala, D. (2016). Prevalence and personality correlates of Facebook bullying among university undergraduates. Computers in Human Behavior, 55, 840-850.

Kuss, D. J., & Griffiths, M. D. (2011). Online social networking and addiction—a review of the psychological literature. *International Journal of Environmental Research and Public Health*, 8(9), 3528-3552

Lampe, C., Vitak, J., & Ellison, N. (2013, February). Users and nonusers: Interactions between levels of adoption and social capital. In *Proceedings of the 2013 conference on Computer supported cooperative work* (pp. 809-820). ACM.

Lin, N. (2001). *Social Capital: A Theory of Social Structure and Action*. New York: Cambridge University Press.

Luarn, P., & Chiu, Y. P. (2015). Key variables to predict tie strength on social network sites. *Internet Research*, 25(2), 218-238.

Mathwick, C., Wiertz, C., and de Ruyter, K. (2008), "Social Capital Production in a Virtual P3 Community", *Journal of Consumer Research*, 34 (6), 832-849

McGorry, S.Y. (2000), "Measurement in a cross-cultural environment: survey translation issues", *Qualitative Market Research: An International Journal*, Vol. 3 No. 2, pp. 74-81.

Muniz, A. M. and O'Guinn, T.C. (2001), "Brand Community", *Journal of Consumer Research*, 27 (March), 412-432

MVF (2015). Lead generation and internet marketing in Chile. Retrieved July 3, 2015 from http://www.mvfglobal.com/chile

Nie, N. H. (2001). Sociability, interpersonal relations, and the Internet: Reconciling conflicting findings. *American Behavioral Scientist*, 45(3), 420-35.

Nunnally, J. (1978), *Psychometric Theory*, 2nd ed., McGraw-Hill Publishers, New York, NY.

Parks, M. R., & Floyd, K. (1996). Making friends in cyberspace. *Journal of Computer Mediated Communication*, 1(4), article 4.

Pempek, T. A., Yermolayeva, Y. A., & Calvert, S. L. (2009). College students' social networking experiences on Facebook. *Journal of Applied Developmental Psychology*, 30(3), 227-238.

Putnam, R. D. (2000). *Bowling Alone*. New York: Simon & Schuster.

Qiaolei, J. (2014). Internet addiction among young people in China: Internet connectedness, online gaming, and academic performance decrement. *Internet Research*, 24(1), 2-20.

Rosen, L. D., Whaling, K., Rab, S., Carrier, L. M., & Cheever, N. A. (2013). Is Facebook creating "iDisorders"? The link between clinical symptoms of psychiatric disorders and technology use, attitudes and anxiety. *Computers in Human Behavior*, 29(3), 1243-1254.

Tandoc, E. C., Ferrucci, P., & Duffy, M. (2015). Facebook use, envy, and depression among college students: Is facebooking depressing?. *Computers in Human Behavior*, 43, 139-146.

Tidwell, L. C., & Walther, J. B. (2002). Computer-mediated communication effects on disclosure, impressions, and interpersonal evaluations: Getting to know one another a bit at a time. *Human Communication Research*, 28(3), 317–348.

Triandis, H. C. (1995), *Individualism and Collectivism: New Directions in Social Psychology*. Boulder, CO: Westview Press.

Triandis, H. C, Bontempo, R., Villareal, M. J., Asai, M., & Lucca, N. (1988). Individualism and collectivism: Cross-cultural perspectives on self-ingroup relationships. *Journal of Personality and Social Psychology*, 54, 323-338

Valenzuela, S., Halpern, D., & Katz, J. E. (2014). Social network sites, marriage well-being and divorce: Survey and state-level evidence from the United States. C*omputers in Human Behavior*, 36, 94-101

Wellman, B., Haase, A. Q., Witte, J., & Hampton, K. (2001). Does the Internet increase, decrease, or supplement social capital? Social networks, participation, and community commitment. *American Behavioral Scientist*, 45(3), 436

Youn, S. J., Trinh, N. H., Shyu, I., Chang, T., Fava, M., Kvedar, J., & Yeung, A. (2013). Using online social media, Facebook, in screening for major depressive disorder among college students. *International Journal of Clinical and Health Psychology*, 13(1), 74-80.

Table 1. Sample demographics

	Mean or %	S.D.
Gender:		
male	58%	
female	42%	
Age	21.2	1.94
Income[1]	3.63	1.86
Years in school	2.79	1.45
Secondary school (type of school dependency):		
Municipal (public)	14%	
Private, subsidized	29%	
Private, non-subsidized	57%	
Home residence:		
Santiago	71%	
Other cities	29%	
Hours of Internet use per day[2]	3 hours 34min.	1:23

Notes: [1]represents annual household income (in Chilean pesos); 1 = under $5,000,000, 2 = $5,000,000-$10,000,000, 3 = $10,000,001-$17,500,001, 4= $17,500,001-$25,000,000, 5 = $25,000,000-$37,500,000, 6 = $37,500,001 or more; [2]converted from ordinal scale using mid-point of response category (e.g., 1–2 hours = 1 hour 30 minutes).

Table 2. Regressions predicting the amount of bridging social capital

Variables		Model 1	Model 2	Model 3	Model 4	Model 5
Control variables						
Female		-.054	-.060	-.058	-.058	-.062
Age		-.230**	-.213**	-.207**	-.207**	-.200**
Income		.058	.061	.060	.060	.063
Years in school		.078	.061	.056	.056	.050
Home residence: Santiago		-.005	-.004	-.005	-.005	.000
Secondary school (type of school dependency): Municipal (public)		.041	.028	.030	.030	.034
Secondary school (type of school dependency): Private, subsidized		.082*	.073	.072	.072	.075
Hours of Internet use per day		.017	-.011	-.012	-.012	-.013
Self-esteem		-.045	-.036	-.041	-.055	-.044
Satisfaction with life		.592**	.567**	.567**	.567**	.575**
Independent variables						
Facebook intensity	H1a: +		.133**	.125**	.127**	.196**
Moderator variables						
Facebook intensity x Self-esteem	H2a: -			.037	.038	.049
Facebook intensity x Satisfaction with life	H3a: -			-.016	-.018	-.035
Quadratic term						
Facebook intensity^2	H4a: -				.005	-.062
Cubic term						
Facebook intensity^3	H4a: -					-.137
Maximum VIF value		2.147	2.165	2.202	2.203	6.519
R^2		.386	.402	.404	.404	.407
Adjusted R^2		.373	.388	.387	.386	.387
R^2 change			.016	.001	.000	.003
Partial F value			12.409**	.483	.011	2.250

Note: Standardized regression coefficients are reported. * $p < .05$, ** $p < .01$

Table 3. Regressions predicting the amount of bonding social capital

Variables		Model 1	Model 2	Model 3	Model 4	Model 5
Control variables						
Female		.066	.061	.056	.057	.055
Age		-.115	-.102	-.112	-.112	-.106
Income		.012	.013	.013	.014	.016
Years in school		.197**	.185**	.184**	.184**	.179**
Home residence: Santiago		.073	.074	.079	.080	.083*
Secondary school (type of school dependency): Municipal (public)		-.052	-.063	-.060	-.059	-.056
Secondary school (type of school dependency): Private, subsidized		-.014	-.022	-.013	-.013	-.011
Hours of Internet use per day		.085*	.061	.073	.068	.069
Self-esteem		.186**	.194**	.203**	.199**	.196**
Satisfaction with life		.321**	.301**	.291**	.289**	.295**
Independent variables						
Facebook intensity	H1b: +		.105*	.107*	.126*	.176*
Moderator variables						
Facebook intensity x Self-esteem	H2b: -			-.052	-.069	-.081
Facebook intensity x Satisfaction with life	H3b: -			-.046	-.037	-.027
Quadratic term						
Facebook intensity^2	H4b: -				.044	-.007
Cubic term						
Facebook intensity^3	H4b: -					-.104
Maximum VIF value		2.147	2.165	2.202	2.203	6.519
R^2		.211	.221	.226	.227	.229
Adjusted R^2		.194	.202	.204	.204	.204
R^2 change			.010	.005	.001	.002
Partial F value			5.797*	1.576	.682	.941

Note: Standardized regression coefficients are reported. * $p < .05$, ** $p < .01$

Table 4. Regressions predicting the amount of maintained social capital

Variables		Model 1	Model 2	Model 3	Model 4	Model 5
Control variables						
Female		.052	.049	.044	.046	.049
Age		-.207**	-.200**	-.214**	-.215**	-.222**
Income		.066	.066	.066	.068	.065
Years in school		.220**	.214**	.218**	.219**	.226**
Home residence: Santiago		-.019	-.018	-.013	-.011	-.016
Secondary school (type of school dependency): Municipal (public)		-.099**	-.104*	-.104*	-.101*	-.105*
Secondary school (type of school dependency): Private, subsidized		-.106**	-.110*	-.102*	-.102*	-.104*
Hours of Internet use per day		-.026	-.037	-.026	-.035	-.035
Self-esteem		.206**	.213**	.225**	.218**	.221**
Satisfaction with life		.124**	.114*	.106*	.103*	.096*
Independent variables						
Facebook intensity	H1c: +		.051	.062	.094	.030
Moderator variables						
Facebook intensity x Self-esteem	H2c: -			-.072	-.056	-.069
Facebook intensity x Satisfaction with life	H3c: -			-.030	-.059	-.043
Quadratic term						
Facebook intensity^2	H4c: -				.076	.143
Cubic term						
Facebook intensity^3	H4c: -					.134
Maximum VIF value		2.147	2.165	2.202	2.203	6.519
R^2		.129	.132	.138	.141	.144
Adjusted R^2		.111	.111	.114	.115	.116
R^2 change			.002	.006	.003	.003
Partial F value			1.241	1.685	1.774	1.431

Note: Standardized regression coefficients are reported. * $p < .05$, ** $p < .01$