# Social network sites, marriage well-being and divorce: Survey and state-level evidence from the United States

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## ARTICLE INFO

## ABSTRACT

This study explores the relationship between using social networks sites (SNS), marriage satisfaction and divorce rates using survey data of married individuals and state-level data from the United States. Results show that using SNS is negatively correlated with marriage quality and happiness, and positively correlated with experiencing a troubled relationship and thinking about divorce. These correlations hold after a variety of economic, demographic, and psychological variables related to marriage well-being are taken into account. Further, the findings of this individual-level analysis are consistent with a state-level analysis of the most popular SNS to date: across the U.S., the diffusion of Facebook between 2008 and 2010 is positively correlated with increasing divorce rates during the same time period after controlling for all time-invariant factors of each state (fixed effects), and continues to hold when time-varying economic and socio-demographic factors that might affect divorce rates are also controlled. Possible explanations for these associations are discussed, particularly in the context of pro- and anti-social perspectives towards SNS and Facebook in particular.

## 1. Introduction

On May 17, 2012 Facebook became the first social network site to hold a public offering, valuing the company at $104 billion, the largest valuation to date for a newly listed public company (Tangel & Hamilton, 2012). Few months later, Facebook—created with the vision to make the world more connected and help users to discover what's going on in their world—announced to have more than one billion active users (Facebook, 2013). Despite its professed mission to help people to connect each other, the company has been accused of damaging the relationship of thousands of couples. Circumstantial evidence, including information described in the popular media and law firms, suggests that Facebook may be responsible for causing divorce in one out of five divorces in the U.S. (Gardner, 2013).

The first report was in 2009, when an executive of Divorce-Online in the U.K., Mark Keenan, found that the word "Facebook" appeared in 989 of the company's 5000 most recent divorce petitions (Keenan, 2009). Similarly, a 2010 survey by the American Academy of Matrimonial Lawyers (AAML) found that four out of five lawyers reported an increasing number of divorce cases citing

"evidence" derived from Facebook (AAML, 2010). Further, websites have been developed to aid in detection of cheating on the social network site. FacebookCheating.com, for instance, provides tips on how to catch a spouse having an extramarital affair using the social network site.

Anecdotal evidence notwithstanding, the issue of whether Facebook affects negatively marriage satisfaction and increases the likelihood of divorce is an empirical claim that to our best knowledge has not been put to test yet. This study is a first step towards meeting that goal. It does so in two ways. First, it analyzes the aggregate-level relationship between Facebook penetration and divorce rates across 43 U.S. states between 2008 and 2010 controlling for a host of variables, including stable differences across states. Second, using individual-level survey data of a representative sample of married individuals in the U.S., it examines the relationships between using social network sites (SNS) such as Facebook and indicators of relationship satisfaction, also controlling for potential confounds.

To be clear, both data sets can provide solid evidence of the existence of an association between Facebook use and marriage quality and, in the case of the state-level data, some evidence of the temporal ordering of the variables. However, the study does not establish a cause-and-effect relationship because that would require longitudinal and/or experimental data. In fact, as we explain below, a negative correlation between Facebook and

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marriage well-being can be explained by either a causal link or through self-selection. Therefore, the current study is a necessary, though not sufficient, step towards understanding the role of SNS, especially Facebook, in marriage well-being.

Following, we review extant claims on the relationship between SNS and marriage quality. Afterward, we present the data and methods employed to test this association. Further, we report the findings of the individual- and aggregate-level statistical analyses. Finally, we discuss the implications and limitations of the study, and present directions for future research.

### 1.1. Theoretical overview

A negative relationship between SNS use and marriage well-being could be explained by two, very different, perspectives: (1) Using SNS weakens marriage and causes divorce (the negative effect hypothesis); or (2) divorcees and people in troubled relationships use SNS such as Facebook more often (the self-selection hypothesis). Whereas both views predict an association between using the social networks site and marriage dissatisfaction, their implications for the social effects of Facebook and other SNS are opposite. In the first case, SNS are conceived as an anti-social media. In the second, SNS are perceived as a pro-social force that helps people with a bad marriage experience to find social support. In the next two sections, we review the rationale of each perspective.

### 1.2. The case for negative effects

Before trying to explain why using sites like Facebook may be negatively associated to marriage satisfaction, it is relevant to summarize prior research on the basis of strong, satisfying marriages (Bergner & Bridges, 2002; Davis, 1985; Roberts, 1982). Manning (2006) has noted that a long-term romantic relationship entails seven characteristics: (a) investment in the well-being of the beloved, (b) respect, (c) admiration, (d) sexual desire, (e) intimacy, (f) commitment, (g) exclusivity, and (h) understanding. Bergner and Bridges (2002) hold that when one or more of these aspects are violated by a romantic partner, the other partner is likely to feel unloved, causing that spouse to reevaluate the relationship.

There are many reasons why Facebook and SNS in general might be negatively affecting one or more of these characteristics and, consequently, marriage quality. First, excessive use of social media has been associated with "dependency" or compulsive use (Raacke & Bonds-Raacke, 2008), creating psychological, social, school and/or work difficulties in a person's life (Kuss & Griffiths, 2011). Lee, Cheung, and Thadani (2012) describe social features that could be highly problematic. Citing research by Sickface-book.com, an anti-Facebook blog, the authors argue that over 350 million users suffer of Facebook Addiction Disorder (FAD). The term, introduced by American psychologists, has been considered by some an addiction since individuals who use social network sites (SNS) excessively present several addictive symptoms such as neglect of personal life, mental preoccupation, escapism, mood modifying experiences, tolerance, and concealing the addictive behavior (Kuss & Griffiths, 2011).

Second, SNS create an environment with potential situations that may evoke feelings of jealousy between partners, harming the quality of their relationship (Elphinston & Noller, 2011). Moreover, SNS facilitate users reconnecting with a variety of people with whom they have had a past relationship (Ellison, Steinfeld, & Lampe, 2007), creating the potential for jealousy in current relationships. Similarly, SNS also support users' maintenance of relationships that may otherwise be only transitory, but could become problematic when juxtaposed to the marital relationship. Elphinston and Noller (2011) explain that exposing one's partner to all of these individuals, many of whom may be unknown to

the partner, may increase the potential for jealousy and suspicion. Further, Muise, Christofides, and Desmarais (2009) corroborated empirically this jealousy-provoking information between partners using Facebook, which instead creates a feedback loop whereby heightened jealousy leads to increased surveillance of a partner's Facebook page, causing even more suspicion between the partners, which ultimately affects negatively the relationship (for online surveillance behaviors within married couples, see also Helsper & Whitty, 2010).

Third, previous research has noted that substantial decline in partner search costs could lead to higher levels of divorce (Kendall, 2011). Kendall explains that when people manage more information about others and it is easy to search for partners after marriage, the expected benefit from a new match may outweigh the cost of dissolving the old one, fuelling divorce rates. Facebook in particular has a series of unique affordances that has helped to reduce these searching costs and consequently may contribute to cheating. First, Facebook's search options and capabilities make cheating easier. If someone is trying to find another person, it is possible to search by name, email address, company/workplace, or common friends, and even get narrow results by indicating only hometown or school, making it still easier to find, for example, an ex. Similarly, with the "event" invitations feature, it is easy for users to monitor and determine if a certain person of potential interest will be attending a particular event.

The mutual and suggested friends features may also facilitate potential cheating since users can search through their friends' friends to find someone in whom they may be interested. Facebook also suggests friend based on mutual friends and interests, consequently, if the user is already predisposed to being interested in someone else, it is more likely they will become close friends with them and open a venue for an extramarital or separation.

In addition, Facebook allows users to have multiple profiles: a person could have a profile for family and friends which lists them as married but also a secondary profile which lists them as single and being interested in forming relationships. Consequently, Facebook and other SNS make easier finding another romantic partner for those so inclined to do so.

### 1.3. The case for self-selection

The discussion summarized earlier is consistent with a causal relationship between SNS and marriage quality. But there is a counterargument: individuals in unhappy marriages may use SNS such as Facebook more often because it proves beneficial to them and, thus, it is self-selection what would explain the negative correlation between SNS use and marriage well-being. In this instance, individuals may turn to services like Facebook more frequently after they get divorced for social support and/or to enhance their (newly single) social lives. Thoits (1982) defines social support as the degree to which a person's basic social needs are gratified through interaction with others. Consistent with this definition, several studies suggest that groups formed in Facebook are acting as these "support" places where users go to find emotional support (Ellison, Steinfield, & Lampe, 2011), sense of belonging (Bender, Jimenez-Marroquin, & Jadad, 2011), and encouragement (Greene, Choudhry, Kilabuk, & Shrank, 2011), in addition to instrumental aid (Newman, Lauterbach, Munson, Resnick, & Morris, 2011). Other research suggests that online services, in general, can provide social support when a personal or family transition occurs (Mikal, Rice, Abeyta, & DeVilbiss, 2013).

Previous research has also associated SNS use with bonding social capital (i.e., emotional support from close friends). Ellison and her colleagues (2007) argue that given the searching capabilities afforded by SNS to form groups based on individuals with related interests and needs, Facebook makes it easier to find others in

similar situations and get emotional support, social support, a sense of belonging and companionship. In fact, compared with other Internet users, Facebook users report significantly higher levels of social support (Hampton, Sessions Goulet, Rainie, & Purcell, 2011). Additionally, SNS may reduce the coordination costs associated with interacting both directly and indirectly with individuals and groups of users, supporting relationship maintenance behaviors among close friends, which, in turn, could enable individuals to increase the social and emotional support they may receive in case of need (Vitak, Ellison, & Steinfield, 2011). For instance, Facebook's numerous communication channels (e.g., status updates, wall posts, inbox messages, chat) are helpful for individuals looking for some forms of support and for engaging in generalized reciprocity by responding to others' requests. As Hampton et al. (2011) explained to put the finding that Facebook users get more support into perspective, "someone who uses Facebook multiple times per day gets about half the boost in total support that someone receives from being married or living with a partner" [p. 35].

In conclusion, both the negative effect perspective and the self-selection perspective predict that there is a negative relationship between Facebook use and marriage well-being. This study seeks to empirically test the existence, size, and sign of this relationship as a first step towards understanding the role played by SNS on marriage. Absent a statistically discernible association between SNS use, marriage well-being and divorce rates, any claim about the socially negative effects of Facebook on marriages is unfounded. On the other hand, if an association is established, then future research can address the causality quandary.

## 2. Methods

Borrowing from the work of Kendall (2011) on Internet access and divorce rates, we followed a two-pronged approach of conducting aggregate- and individual-level data analyses of SNS and Facebook use, marriage quality indicators and divorce rates in the United States. Whereas cross-sectional survey data allows us to control for a larger variety of confounds and to create a richer battery of psychological variables related to marriage well-being, state-level data can be used to specify statistical models that incorporate the time ordering of the variables of interest.

### 2.1. State-level data

Considering that Facebook became available to any person worldwide in 2006, all state-level data was compiled annually from 2008 to 2010 (the most current year with official state-level divorce data available). The key dependent variable was the state-level divorce rate as measured by Bitler, Gelbach, Hoynes, and Zavodny (2004) and Kendall (2011), which is calculated as the count of new divorces in a state accumulated between January and December of each year as measured by the National Center for Health Statistics (NHCS) divided by the number of married women in a state at the same year as measured by the Annual Demographic Supplement of the Current Population Survey (CPS). Unfortunately, six states (California, Georgia, Hawaii, Indiana, Louisiana and Minnesota) do not report divorce data to the NHCS and thus had to be excluded from the analysis. Nevada and Washington, D.C., were excluded, too, because they were extreme outliers (Nevada doubled the average state-level divorce rates, whereas in D.C. the population of Facebook users almost doubled the population of residents). In addition, considering that divorce rates are positively skewed, in the estimations the variable was transformed using the natural logarithm.

Facebook penetration rate was a composite of two measures. For each state, the total number of Facebook accounts in each state

as registered by the World Internet Stats website (www.internet-worldstats.com) in 2008, 2009 and 2010 was divided by the states' U.S. Census population estimates for the same years. This measure does not, of course, provide information on which individuals (married or not) use Facebook. Therefore, this measure captures the availability of Facebook within the population, rather than Facebook access of married individuals only. While this may be thought as a limitation of the study, it has the advantage of being a more exogenous measure than married individuals' Facebook usage.

In addition, a number of covariates related to both divorce rates and Facebook penetration were used in the statistical models. Internet access was measured as the proportion of people in a state relative to the state's population that use the Internet at any location, as measured by the Internet Use Supplement of the CPS. Income was measured as the real per capita personal income of a state in a given year measured in 2005 U.S. dollars, as reported by the U.S. Bureau of Economic Analysis. The unemployment rate was the state's annual average unemployment rate, obtained from the Bureau of Labor Statistics. The rest of the control variables were all taken from the American Community Survey conducted by the Census Bureau. Level of education was measured as the share of the state population in a given year with a Bachelor's degree or higher. Race and ethnicity was measured as the share of the state population at a given year that self-identified as African American and Hispanic. The mean household size was the average number of people living in a single household located within the state, and age distribution was gauged as the proportion of the states' adult population (aged 18–64) relative to the states' total population. Table 1 shows descriptive statistics of all state-level variables analyzed.

### 2.2. Individual-level data

A secondary analysis of survey data was employed to study the individual-level relationship between SNS use and marriage well-being. The survey was conducted online on a probability sample of adults aged 18 to 39 by Knowledge Networks (KN) on behalf of the University of Texas at Austin's Population Research Center (http://www.prc.utexas.edu/nfss/index.html), which is not responsible for the analyses and interpretations presented here. To our knowledge, this is the only publicly available representative survey in the U.S. that contains questions about both SNS use and indicators of marriage well-being. Participants were recruited via random-digit-dialing and address-based sampling methods. Data were collected between July 2011 and February 2012. Due to the objectives of the current study, only data from the subsample of married individuals ($N = 1160$) were analyzed. To make the results generalizable to the population of married individuals in the U.S., all calculations presented here employ KN's postratification weights.

Four dependent variables gauging different aspects of marriage satisfaction were created. Current marriage quality was an additive scale ($\alpha = .96$) of responses to six items asking the respondent's level of agreement with statements such as "We have a good relationship" and "My relationship with my partner is very healthy." Happiness in current marriage was measured asking the respondent to rate on a scale from 1 to 10 the degree of happiness in his/her marriage. A scale of trouble in the current marriage ($\alpha = .75$) was computed by averaging three items on the frequency with which the respondent has thought the relationship is on trouble. Lastly, the likelihood of divorce was gauged with a dichotomic variable asking whether in the past year the respondent has thought about leaving his/her spouse.

The key independent variable, SNS use, was measured with a question on how much time the respondent spends on a typical

**Table 1**
Descriptive statistics for state-level data.

| | M | Mdn | SD | Min | Max | Valid N |
|---|---|---|---|---|---|---|
| Divorces per 100 married couples | 1.777 | 1.762 | 0.370 | 0.963 | 2.716 | 129 |
| Ln (divorces per 100 married couples) | 0.553 | 0.567 | 0.215 | -0.037 | 0.999 | 129 |
| Facebook penetration rate | 0.236 | 0.203 | 0.146 | 0.028 | 0.594 | 129 |
| Share with Internet access | 0.697 | 0.700 | 0.057 | 0.550 | 0.803 | 129 |
| Real per capita personal income ($2005) | 35,771.061 | 35,182.404 | 5,348.820 | 27,671.532 | 52,048.401 | 129 |
| % With Bachelor's degree or higher | 0.200 | 0.193 | 0.040 | 0.112 | 0.310 | 129 |
| % Of unemployment | 0.074 | 0.074 | 0.023 | 0.030 | 0.134 | 129 |
| % Who are African American | 0.099 | 0.069 | 0.090 | 0.005 | 0.374 | 129 |
| % Who are Hispanic | 0.091 | 0.065 | 0.093 | 0.004 | 0.437 | 129 |
| Average household size | 3.075 | 3.040 | 0.179 | 2.700 | 3.880 | 129 |
| % Aged 18–64 years | 0.627 | 0.627 | 0.015 | 0.589 | 0.668 | 129 |

weekday "on social networking sites like Facebook, Twitter, or MySpace." Responses were measured on a 7-point scale ranging from "not at all" to "four hours or more." At the time of the survey, Facebook had 145.5 million unique visitors in the U.S., compared to Twitter's 32.8 million and MySpace's 33.1 million (Martin, 2013).

As was the case with the state-level data, and based on prior research (Bitler et al., 2004; Kendall, 2011; Lehrer, 2008) a battery of control variables were measured to account for potential confounds: whether the respondent ever had extramarital sex, whether he or she lived together with both parents while growing up, unemployment, total household income, educational attainment, religiosity, and number of children. In order to control for respondents who use SNS more frequently because they happen to have more spare time, time spent on television and Internet access at home were gauged with separate variables. Lastly, a set of demographic variables were included as covariates: age (in years), race and ethnicity. Descriptive statistics of all variables are displayed in Table 2.

## 3. Results

### 3.1. State-level data findings

For the analysis we pooled the data to form a panel and then ran a set of fixed-effects regression models. This type of estimator, contrary to pooled OLS regression, allows us to control for all time-invariant differences across the states that may be related to divorce rates and Facebook usage, which are not controlled for in the models, through the inclusion of a state-specific constant.

Thus, regression coefficients are obtained from variance in Facebook penetration within states over time.

Table 3 shows the results of four different models. The first model shows that Facebook penetration is a positive predictor of divorce rates. In substantive terms, a 20% annual increase in the share of a state's population with a Facebook account (i.e., the median growth rate of Facebook in the period under study) is associated with a 2.18% increase in the divorce rate. This relationship becomes more robust when a series of time-varying variables related to divorce rates are added, as shown in model 2. In this case, the model predicts that a 20% annual increase in Facebook penetration rates is associated with an average 4.32% growth in divorce rates. In model 3, we take advantage of the longitudinal nature of the state-level data and include a lagged term of the dependent variable as an explanatory variable. In this case, the model still controls for all unobserved time-constant differences among states but adds past factors not directly observed that shape current divorce rates (i.e., factors filtered through the lagged term). Again, the correlation between Facebook penetration and divorce rates is positive and statistically significant. In this case, a 20% increase in the share of Facebook users in a given state is associated with a 4.00% increase in the divorce rate in the following year. This relationship holds in Model 4, which adds a set of covariates. Thus, under diverse specifications, the state-level data shows that Facebook penetration rates and divorce rates across the states have a positive, statistically significant relationship. As noted before, this should not be interpreted as a causal effect necessarily. It does, however, suggest the need to further probe the relationship using individual-level data.

**Table 2**
Descriptive statistics for individual-level data.

| | M | Mdn | SD | Min | Max | Cronbach's α | Valid N |
|---|---|---|---|---|---|---|---|
| Scale of current marriage quality | 4.113 | 4.333 | 0.943 | 1.000 | 5.000 | 0.962 | 1109 |
| Degree of happiness in current marriage | 7.604 | 8.000 | 2.147 | 1.000 | 10.000 | | 1153 |
| Scale of trouble in current marriage | 1.592 | 1.333 | 0.548 | 1.000 | 3.000 | 0.753 | 1134 |
| In the past year, respondent has thought about leaving spouse | 0.238 | 0.000 | 0.426 | 0.000 | 1.000 | | 1156 |
| Frequency of SNS use | 2.730 | 2.000 | 1.656 | 1.000 | 7.000 | | 1144 |
| Internet access at home (yes) | 0.880 | 1.000 | 0.324 | 0.000 | 1.000 | | 1160 |
| Household Income | 12.610 | 13.000 | 3.823 | 1.000 | 19.000 | | 1158 |
| Educational attainment | 3.025 | 3.000 | 0.923 | 1.000 | 4.000 | | 1160 |
| Currently unemployed (yes) | 0.070 | 0.000 | 0.255 | 0.000 | 1.000 | | 1160 |
| Race/ethnicity (African American) | 0.083 | 0.000 | 0.276 | 0.000 | 1.000 | | 1160 |
| Race/ethnicity (Hispanic) | 0.174 | 0.000 | 0.379 | 0.000 | 1.000 | | 1160 |
| Number of children | 1.383 | 1.000 | 1.430 | 0.000 | 5.000 | | 1119 |
| Age | 31.726 | 32.000 | 4.917 | 18.000 | 39.000 | | 1160 |
| Religious attendance | 2.290 | 2.000 | 2.027 | 0.000 | 5.000 | | 1152 |
| Lived with both parents entire time until age 18 (yes) | 0.441 | 0.000 | 0.497 | 0.000 | 1.000 | | 1160 |
| Time spent watching TV | 4.280 | 4.000 | 1.590 | 1.000 | 7.000 | | 1147 |
| Ever had extramarital sex (yes) | 0.186 | 0.000 | 0.389 | 0.000 | 1.000 | | 1147 |

**Table 3**
Regression analysis of divorce rates in 43 U.S. states (2008–2010).

| | Dependent variable: ln (divorces per 100 married couples) | | | |
|---|---|---|---|---|
| | Model 1 fixed effects | Model 2 fixed effects with covariates | Model 3 fixed effects with lagged DV | Model 4 fixed effects with lagged DV and covariates |
| Facebook penetration rate | 0.109*** (0.033) | 0.216*** (0.064) | 0.199*** (0.049) | 0.238*** (0.087) |
| Internet access | | 0.272 (0.215) | | 0.704** (0.274) |
| Ln (real per capita personal income) [$2005] | | −0.685 (0.627) | | −0.678 (1.447) |
| Share with Bachelor's degree or higher | | −1.108 (0.752) | | −1.210 (0.853) |
| Unemployment rate | | −1.053 (0.688) | | −3.898* (2.178) |
| Share who are African American | | 2.021 (3.860) | | −1.456 (4.043) |
| Share who are Hispanic | | −0.301 (0.856) | | 0.929 (1.029) |
| Mean household size | | −0.373*** (0.132) | | −0.445** (0.179) |
| Share aged 18–64 years | | 0.063 (0.857) | | −0.448 (1.318) |
| Ln (divorces per 100 married couples) [lagged] | | | −0.547*** (0.160) | −0.449*** (0.139) |
| (constant) | 0.527*** (0.008) | −5.625 (6.681) | 0.785*** (0.093) | −9.599 (14.853) |
| Adjusted $R^2$ | 0.916 | 0.930 | 0.949 | 0.959 |
| (Observations) | (129) | (129) | (86) | (86) |

*Notes*: The data set is comprised of 129 state-level (excluding District of Columbia) observations for 2008, 2009, and 2010. Of the possible 153 observations, 24 are unusable due to missing data on the number of divorces. Data from Nevada and Washington, D.C., extreme outliers in marriage patterns and Facebook penetration, are also excluded. Entries report regression coefficients with robust (HAC) standard errors in parentheses.
* $p < 0.10$.
** $p < 0.05$.
*** $p < 0.01$ (two-tailed).

## 3.2. Individual-level data findings

Following, we present the results of the analysis of the survey sample of married individuals aged 18–39 years. Contrary to the state-level data, the survey data allows us to measure the association between SNS use and a host of psychological variables related to marriage well-being. Also, the statistical power is greater, which allows for the inclusion of additional covariates.

Table 4 shows the estimates of four regression models, one for each dependent variable studied, along with a host of demographic, economic, and social factors that prior research and theory suggest are related to marriage well-being, SNS and Facebook use. The expectation was that the key predictor variable, frequency of SNS use, would be negatively related to marriage quality and marriage happiness and, conversely, positively associated to

experiencing trouble in the marriage and to having thought about separating.

The first model shows that frequency of SNS use is a negative, statistically significant predictor of the index of marriage quality, although the relationship is rather weak. Holding all other variables constant at their means, a respondent that does not use SNS scores 4.22 in the scale of current marriage quality—a 6.96% difference with a respondent who uses SNS four hours or more (score = 3.87). More robust is the negative relationship between the SNS use and degree of happiness in current marriage (second model). In this case, the model predicts that a nonuser is 11.40% more happy with his/her marriage than a heavy user (predicted score of 7.99 vs. predicted score of 6.85 on a 1 to 10 scale). The nature of these associations—that using sites like Facebook more frequently is associated with diminished marriage wellbeing—is

**Table 4**
Regression analysis of indicators of Marriage Satisfaction among U.S. married individuals (2011).

| | Dependent variables | | | |
|---|---|---|---|---|
| | Scale of current marriage quality (range: 1–5) OLS regression | Degree of happiness in current marriage (range: 1–10) OLS regression | Scale of trouble in current marriage (range: 1–3) OLS regression | In past year respondent has thought about leaving spouse (range: 0–1) Logistic regression |
| Frequency of SNS use | −0.058** (0.018) | −0.190*** (0.040) | 0.035*** (0.010) | 0.146** (0.048) |
| Internet access at home (yes) | −0.069 (0.095) | −0.306 (0.207) | 0.086 (0.052) | 0.731* (0.284) |
| Household Income | 0.009 (0.009) | 0.028 (0.020) | −0.004 (0.005) | −0.037 (0.025) |
| Educational attainment | 0.007 (0.038) | −0.066 (0.082) | −0.049* (0.021) | −0.237* (0.101) |
| Currently unemployed (yes) | −0.185 (0.122) | −0.342 (0.261) | 0.013 (0.064) | 0.009 (0.321) |
| Race/ethnicity (African American) | −0.061 (0.109) | 0.023 (0.238) | 0.052 (0.060) | 0.357 (0.291) |
| Race/ethnicity (Hispanic) | −0.119 (0.076) | −0.468** (0.166) | 0.093* (0.041) | 0.751*** (0.195) |
| Number of children | −0.055* (0.022) | −0.047 (0.047) | 0.026* (0.012) | −0.017 (0.058) |
| Age | −0.012 (0.006) | −0.032* (0.013) | 0.002 (0.003) | 0.010 (0.017) |
| Religious attendance | 0.009 (0.015) | 0.076* (0.032) | −0.014 (0.008) | 0.007 (0.042) |
| Lived with both parents entire time until age 18 (yes) | 0.093 (0.061) | 0.155 (0.131) | −0.099** (0.032) | −0.356* (0.171) |
| Time spent watching TV | 0.001 (0.019) | 0.033 (0.041) | 0.007 (0.010) | −0.016 (0.053) |
| Ever had extramarital sex (yes) | −0.387*** (0.076) | −1.030*** (0.164) | 0.338*** (0.041) | 1.522*** (0.183) |
| (Constant) | 4.704*** (0.227) | 9.286*** (0.492) | 1.463*** (0.121) | −1.767** (0.617) |
| Adjusted $R^2$ | 0.059 | 0.084 | 0.148 | 0.136 |
| (Observations) | (1047) | (1084) | (1070) | (1083) |

*Notes*: Entries report regression coefficients with standard errors in parentheses. Data is about married individuals aged 18–39 years. Adjusted $R^2$ for Model 4 is Cox and Snell.
* $p < 0.10$.
** $p < 0.05$.
*** $p < 0.001$ (two-tailed).

confirmed by the last two models. Regressing the index of trouble in the current marriage on SNS use and a battery of control variables yields that a one-unit increase in SNS use is associated with a .035 increase in marriage trouble. In substantive terms, moving from the lowest to the highest score on the SNS use measure—and holding all other variables constant—is associated with a 7% increase in the index of trouble in current marriage.

The last model is a logistic regression predicting the likelihood that the respondent has thought about leaving his or her spouse in the last 12 months. The model shows that the SNS measure is a strong, positive predictor of thinking about such course of action. The predicted probabilities of average respondents who differ only in SNS use show that the likelihood of thinking about separating is 16.34% for a nonuser and 31.93% for a heavy user. The individual-level analysis, thus, is consistent with the results of the state-level analysis: use of SNS such as Facebook is associated with lower marriage satisfaction and a higher likelihood of divorce or, conversely, respondents in troubled relationships use SNS, including Facebook, more often.

## 4. Discussion

We explored the relationship in the U.S. between SNS use and relationship satisfaction among a nationally representative sample of married individuals, as well as the association between Facebook penetration and divorce rates at a state-level. Survey results revealed a positive correlation between more frequent use of SNS and the variables that reflected lower marriage quality, marriage unhappiness, experiencing a troubled relationship, and thinking about separating. This was consistent with state-level analyses, in which we found that across the U.S., the diffusion of Facebook between 2008 and 2010 is positively correlated with divorce rates, a relationship that held in the presence of numerous control variables.

Two possible explanations may account for this negative correlation. From a self-selection perspective, this phenomenon can be understood by the fact that it is not so much that social network services such as Facebook causes problematic relationships between couples or cause divorce, but that divorcees and individuals in unhappy marriages use Facebook and SNS more often because it proves beneficial to them by providing emotional support. According to this first view, Facebook would be fulfilling its *raison d'être* (or at least its vision) as it connects people with friends, family, and other strong ties. That means that divorcees or people going through difficult moments in their marriage would choose this social network site to communicate with their close contacts, trying to found the psychological well-being that often flows from bonding social capital.

There are various reasons to explain why SNS, particularly Facebook, would be useful to facilitate reciprocity, emotional support, and companionship from close contacts. Online services such as Facebook have several features that support relationship maintenance among close friends, which, in turn, could enable individuals to accrue bonding social capital. The multiple communication channels reduce the coordination costs and simplify the process through which individuals can request some form of support (Vitak et al., 2011). Similarly—and based in our results—it is possible to argue that also SNS present several affordances that might lead users to connect with people that are going through similar problems in order to receive emotional support.

Importantly, Facebook has exploited the use of collaborative filtering systems (user-to-user interactions) to increase the amount of social interaction between users. Unlike content-based recommendation methods, collaborative recommender systems try to match people with similar interests and then make recommendations on this basis. Under these collaborative models, the system automatically retrieves and filters data by considering the feedback given by other users to the documents. On the other hand, social media in general and Facebook in particular have facilitated the creation of a "profile culture" where millions of users have generated their own persona on the web (Utz, 2010). Hometown, phone number, email, language, football team, favorite book, best movie, political affiliation, religion, marital status, type and number of friends, job, preferred networks, photos, and videos are but a fraction of the huge amount of data that users may utilize to define themselves. In this way—and powered by collaborative systems—, SNS can today tie millions of geographically dispersed users who have common elements in their profiles. Consequently, individuals are grouped based on commonalities and it is possible to expect that divorcees may use the same recommendations developed by these platforms in order to look for people in similar situations and get support from them. Such a mechanism afforded by social network sites could also explain why individuals may turn to Facebook more frequently after they get divorced for social support and/or to enhance their (newly single) social lives.

Another explanation for the positive relationship between experiencing a troubled relationship or divorce and SNS use, following the self-selection perspective, is that this social network site may be useful for reducing uncertainty following the termination of a romantic relationship. In contrast to traditional communication, SNS such as Facebook allow people to reduce uncertainty covertly. Tong and Walther (2011) explain that Facebook obviates direct communication between ex-partners or mutual friends by allowing individuals to gather information through social search of profiles and newsfeeds. This according to the authors, allows ex-partners to avoid the social disapproval from friends in their network that could arise from direct question-and-answer strategies, while still being able to reduce their own uncertainty in a less detectable way. In fact, Tong and Walther (2011) found that after breaking up, ex-partners rely on Facebook to monitor their ex's social activities, to detect if their ex has a new romantic partner, and to communicate directly with their ex. Thus, the termination of a relationship may lead users to spend more time in Facebook in order to monitor their ex-partner's behavior.

From a cause-and-effect perspective, SNS may reduce marriage well-being through habituation or addiction, sparking feelings of jealousy between partners, or facilitating having extramarital affairs. We offered three different reasons to explain this relationship. First, excessive use of social media has been associated with compulsive use, which may create psychological, social, school and/or work difficulties in a person's life. These phenomena, in turn, may trigger marriage unhappiness and, ultimately, divorce. Second, Facebook in particular creates an environment with potential situations that may evoke feelings of jealousy between partners, harming the quality of their relationship. And third, we noted that services like Facebook have unique affordances that may help partners to reduce searching costs for extra-matrimonial affairs and consequently may contribute to cheating. Consequently, it is important to note that based on the data we analyzed it is also plausible to argue that the capabilities of Facebook also enable certain negative social consequences such as cheating or deteriorating a marriage. In fact, previous research has shown that pervasive technology often leads to unintended consequences, such as infidelity and threats to privacy (Iachello & Hong, 2007; Hand et al., 2013; Mileham, 2007; Pankoke-Babatz & Jeffrey, 2002). As Debatin, Lovejoy, Horn, and Hughes (2009) explain, specific privacy concerns of online social networking include inadvertent disclosure of personal information, damaged reputation due to rumors and gossip, unwanted contact and harassment or stalking, surveillance-like structures due to backtracking functions, use of personal data by third-parties, and hacking and identity theft.

However, absent longitudinal and experimental data, the current study cannot determine the causal direction of these associations. It may well be that for some individuals Facebook and SNS use in general creates opportunities that may end up in divorce whereas for individuals who have recently divorced or are experiencing a bad marriage, Facebook provides social and emotional support. The media effects perspective and the self-selection perspective are not mutually exclusive, thus, future research needs to address the possibility of reinforcing spirals. Furthermore, the key theoretical issue would not be the relationship between particular features and particular outcomes, but rather how people use this social network site and what they try to accomplish with it. This approach would be consistent with what the literature in communication has called the "rational actor" perspective (Markus, 1994), which holds that impacts result not from the technology itself but from the choices individuals make about how to use it. According to this perspective, there would be "good uses" that result in positive social outcomes, within the constraints imposed by technological characteristics, and "bad uses" that result in negative social outcomes.

Markus (1994) argues that this perspective should lead researchers to understand under what conditions it would be rational for users to behave in ways that result in negative effects. Following this logic, the approach suggests two broad answers. First, "bad uses" of electronic communication technology might be rational when users want to achieve "negative social impacts" using it. For instance, if users in this particular case would not have a good marriage and they would want to "escape" from their spouses and achieve some social distance in their relationships with them, Facebook would offer them a good alternative for that. Following this logic, partners may spend more time in this social network connecting with friends in order to avoid communicating with their respective spouses.

Markus (1994) explains that "bad uses" might be also rational when, despite the fact that they generate negative social effects, they also produce benefits that outweigh these negative effects. One insight of this perspective is that even though partners may be aware of the negative social effects of Facebook, such as experiencing a troubled relationship, this may be the outcomes deliberately intended by the social media users since they are really thinking about cheating. That means that users may continue to engage in a behavior that has the potential for negative impacts, because it has other, positive effects that users desire to achieve.

As rational actors, spouses may know that particular uses of SNS and Facebook, such as lurking their ex partners behaviors and activities, entail risks and potential problems at home. However, they may also value the benefits of using social media in these ways, such as the ability to escape from their marriages in order to feed their fantasies. In such cases, the rational actor perspective suggests that users, who are aware of the potential negative consequences that their actions may have, will take active measures to minimize them. Markus (1994) explains that humans have a unique ability to anticipate that an action they plan to take has the possibility of negative consequences, and accordingly they employ measures to counteract, or compensate, for these consequences.

## 5. Limitations

There are a variety of limitations that affect the validity and generalizability of the data. One of these is that the data on individual actions is taken from self-reports. Although effort was made to be sure the sample was representative, doubtless there are sources of distortion due to social desirability biases and other forms of inaccuracies endemic to this methodology. Also, the survey is cross-sectional, which cannot address issues of temporal order,

whereas the state-level analysis is based on a coarse measure of Facebook use, assesses marriage quality using divorce rates only, and covers three years only. As more publicly available data on divorce rates becomes available, the current study should be replicated in order to test the robustness and generalizability of its findings.

## 6. Conclusion

The data presented in this study provide evidence that Facebook use is correlated with reduced marital satisfaction and divorce rates. Although it may seem surprising that a Facebook profile, a relatively small factor compared to other drivers of human behavior, could have a significant statistical relationship with divorce rates and marital satisfaction, it nonetheless seems to be the case. This relationship holds up at both the individual and state levels. If the preliminary findings in this study are sustained, it would represent an important step forward in the study of SNS and human behavior. It would also raise profound questions about the role of social media in daily lives. Finally, it would spur new lines of research in understanding the role of Facebook in divorce and marital satisfaction, prompting a host of policy-oriented research endeavors by social scientists.

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