Brief Report

It's all about Extraversion: Why Facebook friend count doesn't count towards well-being

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A R T I C L E   I N F O

Article history:
Available online 6 September 2014

Keywords:
Well-being
Life Satisfaction
Happiness
Personality
Extraversion
Social networks
Social relationships
Facebook

A B S T R A C T

Social relationships are assumed to be among the most important sources of well-being. However, previous studies showing that objectively measured social network size contributes to well-being have not included personality traits. We investigated, in a sample of Facebook users (N = 4701), whether the effects of Extraversion on well-being are mediated by a larger network. Although network size was initially associated with heightened well-being, this association was rendered insignificant when Extraversion was controlled for. Extraversion had a direct positive effect on ratings of Life Satisfaction and Happiness, but none of this effect was mediated by Facebook network size. The previously reported on associations between social network size and well-being could, at least in some contexts, be an artifact of Extraversion.

1. Introduction

Social relationships are considered one of the most important sources of well-being (Argyle, 1999; Myers & Diener, 1995). Psychological research on this topic has primarily focused on perceived social support, but social networks research has shown that also structural characteristics of the network, such as number of social relationships – the focus of the present research – contribute to well-being (Zhu et al., 2013). However, both lines of research have been hampered by methodological issues related to the use of self-reports. More specifically, estimates of network size have typically relied on name-generation techniques, which are highly susceptible to methodological artifacts (Marsden, 2005; Paik & Sanchagrin, 2013). However, online social network sites (SNSs) have recently allowed researchers to circumvent this problem by providing objective estimates of network size. Studies conducted on Facebook, the most popular SNS, with over 1.3 billion monthly users as of March 2014 (Key Facts – Facebook Newsroom), and site of the present research, have confirmed that social network size contributes to well-being (Kim & Lee, 2011). However, previous research employing objective estimates of network size has overlooked the potential role of personality, known to be an important determinant of both online (Stopfer, Egloff, Nestler, & Back, 2013) and offline network size (Asendorpf & Wilpers, 1998), as well as of well-being (Weiss, Bates, & Luciano, 2008).

The Five-Factor Model (FFM; Costa & McCrae, 1992) is currently the most popular framework of personality structure. According to this model, personality traits are biologically based and highly stable psychological tendencies with intrinsic paths of development. High Emotional Stability and high Extraversion are the two FFM traits that most consistently contribute to heightened well-being. Studies relying on self-reports of social network size have shown that Extraversion contributes to well-being by leading to desired social relationships (Argyle, 1999; Zhu et al., 2013). We initially sought to replicate this result using an objective measure of network size; i.e., number of Facebook friends. However, the results of the mediation analyses that we conducted did not conform to our expectations. Instead, they prompted us to question the extent to which Facebook network size in any way contributes to greater well-being when Extraversion is controlled for.

2. Material and methods

2.1. Participants and procedure

Data on social networks was collected using a Facebook application programmed for purposes of the present research project. Potential participants were directed to our survey web-page, which straightforwardly explained the purpose of the research.
between the personality traits, as well as all other variables that we report on, are provided in the Supplementary online material.

2.2.2. Well-being

Well-being comprises both an emotional aspect of affect balance – referring to the level of positive and negative emotions – and a cognitive aspect of satisfaction with life, conceptualized as a sense of satisfaction with one’s life (Diener, 1984). The more cognitive aspects of well-being were measured with the ten-point Life Satisfaction scale from the European Social Survey: ‘All things considered, how satisfied are you with your life as a whole these days? 1 means you are “completely dissatisfied” and 10 means you are “completely satisfied”. Where would you put your satisfaction with your life as a whole?’. The mean score on the Life Satisfaction scale was 7.69 (SD = 1.43).

The more emotional aspect of well-being was measured using the four-point Happiness scale from the World Values Survey: ‘Taking all things together, would you say you are: Very happy, Quite happy, Not very happy, Or not at all happy?’. The mean score on the Happiness scale was 3.08 (SD = 0.59). No other well-being or personality measures than those reported on in the present paper were administered.

2.2.3. Number of Facebook friends

Participants granted our Facebook application the right to retrieve a full list of their Facebook friends. The average number of Facebook friends was 251.93 (SD = 173.60).

3. Results

The mediation analyses shown in Fig. 1 revealed that Extraversion predicted both number of Facebook friends and our two measures of well-being. However, the effects of Extraversion on well-being were not mediated by number of Facebook friends. Bootstrap analyses computed using percentile bootstrap estimates from 100,000 resamples (Hayes & Scharkow, 2013) yielded, in the prediction of Life Satisfaction and Happiness with Extraversion, indirect effects of –0.00 (CI = –0.02–0.02; where CI is the 95% confidence interval).
number of Facebook friends (in the prediction of Life Satisfaction and Happiness were 0.70 (CI: 0.64–0.77) and .26 (CI: 0.01–0.01), respectively. The direct effects of Extraversion in the prediction of Life Satisfaction and Happiness were 0.70 (CI: 0.64–0.77) and .26 (CI: 0.01–0.01), respectively. The indirect effects of Extraversion were thus trivial as compared to the direct effects. This finding prompted us to the question of whether number of Facebook friends in any way contributes to greater well-being when Extraversion is controlled for. We investigated this in a set of regression analyses.

In our first regression models (see Models 1 and 2 in Table 1), Life Satisfaction was predicted by age ($\beta = .07$), sex ($\beta = .09$; women were more satisfied or happy in all analyses), and number of Facebook friends ($\beta = .11$), whereas Happiness was predicted by sex ($\beta = .08$) and number of Facebook friends ($\beta = .09$). Our second set of regression models included Extraversion (see Models 3 in Table 1). In these models, Life Satisfaction was predicted by age ($\beta = .04$) sex ($\beta = .04$) and Extraversion ($\beta = .32$), but not by number of Facebook friends ($\beta = .00$). Similarly, Happiness was predicted by age ($\beta = .03$), sex ($\beta = .03$) and Extraversion ($\beta = .29$), but not by number of Facebook friends ($\beta = .00$). These results show that number of Facebook friends contributes to neither Life Satisfaction nor Happiness when Extraversion is controlled for. Our final models (see Models 4 in Table 1) show that Extraversion itself retains, albeit in reduced form, predictive power on Life Satisfaction and on Happiness even when other personality traits are controlled for, and also serve to rule out potential suppressor effects – also if entered together with all of the FFM personality traits, number of Facebook friends has no predictive power on Life Satisfaction ($\beta = .00$) or on Happiness ($\beta = .00$).

### Table 1

<table>
<thead>
<tr>
<th></th>
<th>Life Satisfaction</th>
<th></th>
<th>Happiness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
<td>Model 3</td>
</tr>
<tr>
<td>Age</td>
<td>0.05**</td>
<td>0.07**</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>Sex (woman = 1, man = 0)</td>
<td>0.09**</td>
<td>0.09**</td>
<td>0.04**</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>Number of friends</td>
<td>0.11**</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>Extraversion</td>
<td>0.32**</td>
<td>0.11</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>Emotional Stability</td>
<td>0.09</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
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<tr>
<td>Openness to experience</td>
<td>-0.03</td>
<td>-0.03</td>
<td>-0.03</td>
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<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>-0.04</td>
<td>-0.04</td>
<td>-0.04</td>
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<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>0.01</td>
<td>0.02</td>
<td>0.11</td>
</tr>
<tr>
<td></td>
<td>0.02</td>
<td>0.01</td>
<td>0.11</td>
</tr>
</tbody>
</table>

Note: Numbers in parentheses are standard deviations.

* p < .05
** p < .01
*** p < .001

Confidence Interval for the unstandardized coefficient) and –.00 (CI: –.01–.01), respectively. The direct effects of Extraversion in the prediction of Life Satisfaction and Happiness were 0.70 (CI: 0.64–0.77) and .26 (CI: 0.23–0.29), respectively. The indirect effects of Extraversion were thus trivial as compared to the direct effects. This finding prompted us to the question of whether number of Facebook friends in any way contributes to greater well-being when Extraversion is controlled for. We investigated this in a set of regression analyses.

4. Discussion

McCrae and Costa (1991) distinguished between the direct and indirect effect of personality may have on well-being. Personality traits may directly affect well-being by affecting tendencies to experience positive or negative emotions. Or the effects may be indirect, with certain traits being instrumental in creating conditions that promote happiness or unhappiness. Based on previous research, one could have expected Extraversion to have both a direct (e.g., McCrae & Costa, 1991) and an indirect effect on well-being. Regarding the indirect effect, Extraversion could have been expected to lead to desired social relationships, which in turn could have been expected to contribute to well-being (Argyle, 1999; Zhu et al., 2013). By contrast, our results suggest that Extraversion does not have such an indirect effect on well-being. Furthermore, the previously reported on associations between number of social relationships and well-being may merely be an artifact of Extraversion, which affects both number of relationships and well-being.

One reason our results differ from those of previous research could be that we had access to an objective measure of social network size; i.e., number of Facebook friends. Studies that have suggested an indirect effect of Extraversion on well-being via social relationships have relied on participants’ self-reported network size. Generally, having the same participants provide all measures may result in artifactual covariance between the measures. For instance consistency or social desirability motives may contribute such self-report bias (for a review, see Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Subjective estimates of network size are also hampered by more specific problems, such as biases related to the interpretation of the items, recall issues, and question-order effects (for a review, see Marsden, 2005). Although our assessment of social network size did not share method bias with our measures of personality and well-being, the latter two, which were both assessed by means of self-reports, were both subject to self-report biases. In order to rule out the possible effects of common method
bias, it would have been preferable to have also these constructs assessed independently (e.g. peer-ratings of personality or psychiatrist’s ratings of well-being would have been valuable additions to our data).

Another reason that our results differ from those of previous research could be that we assessed number of Facebook friendships, whereas previous studies have typically focused on offline friendships. However, we believe that our results would generalize to offline friendships. Because Facebook is used to maintain and strengthen relationships that have developed offline, not to meet new people (Ellison, Steinfield, & Lampe, 2007), number of Facebook friends is likely to be a good proxy for offline social network size. More generally, offline and online worlds have become highly similar. We thus believe that the reason that our results differ from those of previous research is that we employed an objective measure of network size, not because we assessed Facebook friendships rather than offline friendships. However, we do acknowledge that we used a very specific measure of network size, and that the results would not necessarily generalize if other measures of network size were to be used. Future research should try to find alternative, objective offline measurers of network size. Such measures could include the unique number of cell phone contacts or number of unique individuals in a cell phone text archive, or number of Holiday cards received. Future research should also employ a more diverse set of network and well-being measures. Such measures could be used to investigate alternative aspects of the social network (e.g., subjective measure of support network size, a measure of the psychological aspects of social support, such as perceived social support and satisfaction with one’s social support) and well-being (e.g., well-being measures with more breadth or reliability; non-self-report measures of well-being; separate measures of positive and negative affect).

Although the result that Facebook social network size was not associated with well-being once Extraversion was controlled for was unexpected, somewhat similar findings have been reported on in the broader literature on well-being and social activity. For instance, experience sampling research has shown that neither extraverts’ greater social activity nor their supposedly more positive affect when compared to introverts (Lucas, Le, & Dyrenforth, 2008). Such results, obtained with a very different methodology than the one we employed, could be interpreted as supporting the general conclusion that social activity – regardless of how it is conceptualized or measured – is not a strong mediator between Extraversion and well-being. However, as noted above, more research using a wider variety of network and well-being measures is necessary before such general conclusions are warranted.

Seligman (1990) contended that today’s epidemic levels of depression stem partly from impoverished social connections in increasingly individualistic Western societies. By contrast, our results suggest that number of social relationships is of little if any significance for well-being. One interpretation of this apparent contradiction could be that the quality of social relationships has deteriorated. Future research should investigate the interplay between personality traits and quality of social relationships in the prediction of well-being.

Appendix A. Supplementary material

Supplementary data associated with this article can be found, in the online version, at http://dx.doi.org/10.1016/j.jrp.2014.08.009.

References
