Does Receiving or Providing Social Support on Facebook Influence Life Satisfaction?
Stress as Mediator and Self-Esteem as Moderator

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We propose a model that assumes that receiving and providing social support on Facebook reduces stress, which subsequently improves life satisfaction. The model also hypothesizes that self-esteem moderates the relationship between receiving social support via Facebook and life satisfaction and the relationship between providing social support via Facebook and life satisfaction. Applying mediation and moderation analyses to data collected from undergraduate students taking an introductory communication course at a U.S. public university (N = 382) yielded three results. First, there was no significant indirect effect of receiving social support on life satisfaction via stress. Second, providing social support increased stress, which subsequently reduced life satisfaction. Finally, self-esteem moderates the relationship between providing social support and life satisfaction: Among students with low self-esteem, providing social support significantly improved life satisfaction; however, among students with high self-esteem, providing social support did not influence life satisfaction. Implications of the findings are discussed.

Keywords: Facebook, social support, stress, self-esteem, life satisfaction

Over the past decade, a tremendous amount of research has investigated the potential benefits of social support for critical physical and psychological health outcomes, such as life satisfaction—an important indicator of positive psychological health (e.g., Chen & Feeley, 2012, 2014; H. Kim, 2014; Segrin & Domschke, 2011; Segrin & Passalacqua, 2010). However, two gaps in the literature are salient. First, most studies have focused on receiving social support while neglecting the important role of providing social support (e.g., Chen & Feeley, 2012; H. Kim, 2014; Segrin & Passalacqua, 2010). In fact, social support implies an exchange process: Receiving social support and providing social support are generally simultaneous activities and are often inseparable (Thomas, 2010). Second, most studies tend to address the potential mediating or moderating mechanism of a single psychological construct, such as stress (e.g., Segrin & Passalacqua, 2010) or self-esteem (e.g., Kong, Zhao, & You, 2013). In fact, stress and self-esteem can influence life satisfaction simultaneously. Unfortunately, few studies have explored

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the theoretical mechanism of both stress and self-esteem on the relationship between social support and life satisfaction. The current study aims to fill these gaps in the literature.

Social networking sites permeate individuals' daily lives, providing new tools for building and maintaining relationships (Lönnqvist & grosse Deters, 2016), and Facebook remains the most popular social networking site (Duggan, 2015). Users of Facebook create an online network of people—Facebook "friends"—and they share profile information, photos, comments, status updates, and news with those friends, who might consist of close friends, family members, colleagues, acquaintances, or even strangers. Evidence suggests that Facebook can be a tool to mitigate stress (Nabi, Prestin, & So, 2013), enhance self-esteem and life satisfaction (Steinfield, Ellison, & Lampe, 2008), and improve happiness (J. Kim & Lee, 2011) and well-being (Burke & Kraut, 2016). However, the dynamics of social support exchange via Facebook and the associated mechanisms influencing health outcomes remain unknown. In the present study, we investigate how receiving or providing social support on Facebook may influence life satisfaction through the potential mediating or moderating mechanisms of stress and self-esteem.

Theoretical Frameworks

Main-Effect Model of Social Support

Different disciplines have attempted to conceptualize social support, each from its own perspective. According to the sociological perspective, social support refers to one's level of social integration or embeddedness in his or her social networks. According to the psychological perspective, social support refers to one's perceived availability of support from network members (Burleson & MacGeorge, 2002; Cohen & Wills, 1985). We investigate social support based on a communication perspective for two reasons: First, social support implies a communication process through which support is received, provided, or both; second, examining social support from a communication perspective has great potential to advance the social support literature theoretically and practically (Burleson & MacGeorge, 2002). Thus, we conceptualize social support as supportive communication, which refers to messages "produced with the intention of providing assistance to others perceived as needing that aid" (Burleson & MacGeorge, 2002, p. 374).

Two models have been widely used to explain how social support influences health outcomes. One is the main-effect model, which contends that social support is beneficial to health, regardless of individuals' levels of stress. The other is the buffering effect model, which proposes that social support is beneficial to health only when individuals experience a high level of stress (Cohen & Wills, 1985). Both models consider social support only from a support *recipient's* perspective. Further, there is no conclusive support for either model when social support is conceptualized as supportive communication received from network members. Recently, the main-effect model has gained support from several studies examining the association between social support and critical health outcomes using a communication perspective (e.g., Chen & Feeley, 2014). Thus, we adopt the main-effect model, speculating that supportive communication received from network members can boost individuals' life satisfaction, independent of stressors.

Maslow's Hierarchy of Needs

For supportive communication provided to network members, no framework has specifically addressed how providing social support can influence one's health status or other health outcomes (e.g., life satisfaction). Drawing upon Maslow's (1943) hierarchy of needs, providing social support to others may help individuals fulfill the highest level of human need—self-actualization (i.e., realizing one's full potential). As such, it is reasonable to assume that providing social support to others can enhance one's life satisfaction. That is, individuals who offer support to others are likely to be more satisfied with their overall life.

Receiving/Providing Social Support Predicts Life Satisfaction:
Stress as Mediator

Stress is defined as "a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources" (Lazarus & Folkman, 1984, p. 19). According to the main-effect model, receiving social support has the potential to diminish stress, and reduced stress can subsequently have a positive impact on health outcomes. Some studies have found support for the mediating mechanism of stress accounting for the effect of receiving support on health outcomes. For example, Segrin and Passalacqua (2010) found that perceived stress serves as a mediator between social support from network members (i.e., significant other, friends, family) and general health. Nabi et al. (2013) reported that stress played a significant mediating role between a person's perceived social support and well-being.

Among studies involving social support and life satisfaction in the context of Facebook use, some studies have focused on off-line social support and do not reflect support specifically received through Facebook (e.g., Lönnqvist & grosse Deters, 2016; Nabi et al., 2013). In contrast, J. Kim and Lee (2011) reported that perceived social support from Facebook friends is positively associated with subjective happiness. Burke and Kraut (2016) suggested that receiving "targeted, composed communication" (p. 265) through Facebook from strong ties was related to improved well-being, which is a composite measure including indicators of social support, stress, and life satisfaction. That "targeted, composed communication" may exemplify supportive messages, making the recipients of those messages feel supported.

Although these studies are informative, they did not examine receiving and providing social support simultaneously and thus might present biased findings. There is evidence that both receiving and providing social support can influence health outcomes. For example, Brown, Nesse, Vinokur, and Smith (2003) found that older couples who reported providing social support to others had a significantly reduced mortality in five years. They also found that, after providing support was considered, receiving support had no effect on mortality. Similarly, Thomas (2010) demonstrated that providing support was more beneficial to older adults' well-being than receiving support. Because these studies did not test the possible mediating role of stress, we pose the following hypotheses about the potential impact of social support on Facebook:

H1a: Receiving social support on Facebook lowers stress, which subsequently increases life satisfaction.

H1b: Providing social support on Facebook lowers stress, which subsequently increases life satisfaction.

Receiving/Providing Social Support Predicts Life Satisfaction: Self-Esteem as Moderator

Self-esteem refers to an individual's overall subjective evaluation of his or her own value or worth (Rosenberg, 1979). Self-esteem has been found to be strongly associated with life satisfaction in previous research. For example, Zhang, Zhao, Lester, and Zhou (2014) found that Chinese college students' life satisfaction was positively associated with self-esteem and social support. Similarly, Vacek, Coyle, and Vera (2010) reported that self-esteem was one of the significant predictors of several indices of subjective well-being, including life satisfaction. In addition, a study on the psychometric properties of the Satisfaction With Life Scale verified that life satisfaction is associated with self-esteem and other psychological constructs (e.g., depression, work stress; Durak, Senol-Durak, & Gencoz, 2010). Thus, self-esteem appears to theoretically and empirically contribute to life satisfaction (Kong et al., 2013).

Alternatively, some researchers have suggested a moderating function of self-esteem between some psychological constructs (e.g., social support) and well-being (e.g., Kong et al., 2013). For instance, Kong and colleagues found that when self-esteem was low, there was no difference in life satisfaction between Chinese college students with higher and lower social support; when self-esteem was high, those students with more social support reported higher levels of life satisfaction than those with less social support. Thus, it appears that self-esteem can strengthen the effect of social support on life satisfaction as a moderator (Frazier, Tix, & Barron, 2004).

Although there is clear evidence that self-esteem influences life satisfaction in off-line relationships, little research has examined the potential moderating mechanism of self-esteem on the relationship between social support via Facebook and health outcomes. Indian and Grieve (2014) reported that social support received from Facebook positively predicted life satisfaction among individuals with high levels of social anxiety, but this effect was not detected among those with low levels of social anxiety. Because social anxiety often stems from low self-esteem (Cheng, Zhang, Ding, 2015), examining the role of self-esteem may better reveal the fundamental psychological mechanisms that moderate the link between Facebook social support and life satisfaction.

All the studies mentioned investigated social support from the recipient's perspective; none examined social support from the provider's perspective. It remains unclear how findings might change if both receiving and providing social support are taken into account. Thus, we propose the following research questions:

RQ1a: Does self-esteem moderate the relationship between receiving social support on Facebook and life satisfaction?

RQ1b: *Does self-esteem moderate the relationship between providing social support on Facebook and life satisfaction?*

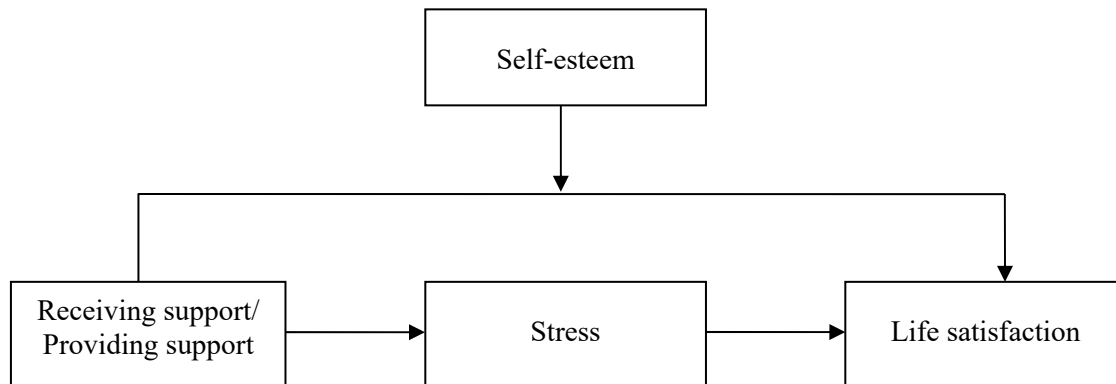Figure 1 depicts a hypothesized moderated mediating model showing the relationships among variables.

Figure 1. Hypothesized model.

Method

Participants

We used an online survey to test the hypotheses and address the research questions. After the study was approved by the institutional review board, data were collected from undergraduate students taking an introductory communication course at a public university in the United States. The course was open to all undergraduate students at the university. Participants completed an online survey in exchange for extra credit (N = 382). They ranged in age from 18 to 30 years (M = 20.17, SD = 1.85). Nearly half of the participants were men (48.1%), and 59.8% were White.

Measures

Social support received on Facebook was measured by a shortened version of the Inventory of Socially Supportive Behaviors (ISSB; Barrera, Sandler, & Ramsay, 1981). This measure took the general form, "During the last month, how often have your Facebook friends . . ." followed by eight items, including "suggested some actions you should take?" and "expressed interest and concern in your well-being?" All items were rated on a 5-point Likert scale ranging from 1 (*never*) to 5 (*very often*; M = 2.37, SD = 0.93, Cronbach's α = .94).

Social support provided on Facebook was measured by a shortened version of the ISSB (Barrera et al., 1981). This measure took the general form, "During the last month, how often have you . . ." followed by eight items, including "suggested some actions your Facebook friends should take?" and "expressed interest and concern in your Facebook friends' well-being?" All items were rated on a 5-point Likert scale ranging from 1 (*never*) to 5 (*very often*; $M = 2.38$, $SD = 0.91$, Cronbach's $\alpha = .92$).

Stress was measured by the Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983). This measure took the general form, "In the last month, how often have you . . ." followed by 10 items, including "felt nervous and stressed?" and "felt difficulties were piling up so high that you could not overcome them?" All items were rated on a 5-point Likert scale ranging from 1 (*never*) to 5 (*very often*). Some items were recoded so that higher values indicate higher stress ($M = 2.91$, $SD = 0.73$, Cronbach's $\alpha = .84$).

Self-esteem was measured by the Rosenberg Self-Esteem Scale, which is a 10-item self-reported measure of global self-esteem (Rosenberg, 1965). Examples of items include "I take a positive attitude toward myself" and "I am able to do things as well as most other people." All items were rated on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Some items were recoded so that higher values indicate higher self-esteem ($M = 3.51$, $SD = 0.78$, Cronbach's $\alpha = .84$).

Life satisfaction was measured by the Satisfaction with Life Scale, which consists of five items measuring a person's subjective evaluation of his or her life (Diener, Emmons, Larsen, & Griffin, 1985). It includes items such as "I am satisfied with my life" and "In most ways my life is close to my ideal." All items were rated on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*; $M = 3.17$, $SD = 0.80$, Cronbach's $\alpha = .88$).

Data Analysis Strategy

We employed Hayes's (2013) PROCESS macro to analyze the data. We standardized three variables (receiving social support, providing social support, and self-esteem) to reduce problems associated with multicollinearity between the interaction term and the main effects (Frazier et al., 2004). In the first model, receiving social support was entered as the independent variable, stress as the mediator, and life satisfaction as the dependent variable, controlling for providing social support. This analysis consisted of two steps. First, stress was regressed on receiving and providing social support. Second, the moderated relationship was tested by regressing life satisfaction on all predictors and the product term (receiving social support × self-esteem).

The second model was the same as the first, but with the roles of receiving and providing social support interchanged: Providing social support was entered as the independent variable, controlling for receiving social support. This analysis also consisted of two steps. First, stress was regressed on receiving and providing social support. Second, the moderated relationship was tested by regressing life satisfaction on all predictors and the product term (providing social support × self-esteem). Both models were estimated for 1,000 bootstrapped samples.

Results

Receiving Social Support as the Independent Variable

In the first step, we regressed stress on receiving social support, controlling for providing social support. The model was significant, $R^2 = .051$, $F(2, 379) = 10.12$, $p < .001$. Receiving social support was not significantly related to stress ($B = -.072$, $p = .281$).

In the second step, we regressed life satisfaction on receiving social support, providing social support, stress, self-esteem, and the interaction term (i.e., receiving social support × self-esteem). The model was significant, $R^2 = .385$, $F(5, 376) = 47.04$, $p < .001$. Stress ($B = -.103$, $p = .050$) and self-esteem ($B = .565$, $p < .001$) were significantly related to life satisfaction. Neither receiving social support ($B = .072$, $p = .220$) nor providing social support ($B = .060$, $p = .326$) was significantly related to life satisfaction.

Because receiving social support was not significantly related to stress, there should be no significant mediating relationship between receiving social support and life satisfaction through stress. This was evidenced by a nonsignificant indirect effect of receiving social support on life satisfaction via stress, $B = .007$, 95% CI [−.005, .033]. H1a was not supported.

In the second step, the interaction effect between receiving social support and self-esteem was not significant ($B = -.062$, $p = .141$). Self-esteem does not moderate the relationship between receiving social support on Facebook and life satisfaction. Thus, RQ1a was addressed.

Providing Social Support as the Independent Variable

In the first step, we regressed stress on providing social support, controlling for receiving social support. The model was significant, $R^2 = .051$, $F(2, 379) = 10.12$, $p < .001$. A positive relationship was found between providing social support and stress ($B = .234$, $p < .001$).

In the second step, we regressed life satisfaction on receiving social support, providing social support, stress, self-esteem, and the interaction term (i.e., providing social support × self-esteem). The model was significant, $R^2 = .396$, $F(5, 376) = 49.37$, $p < .001$. Stress ($B = -.109$, $p = .036$) and self-esteem ($B = .556$, $p < .001$) were significantly related to life satisfaction. Neither receiving social support ($B = .090$, $p = .127$) nor providing social support ($B = .045$, $p = .450$) was significantly related to life satisfaction.

We found a significant indirect effect of providing social support on life satisfaction via stress, $B = -.025$, 95% CI [−.059, −.004]. Providing social support on Facebook actually increased stress, which subsequently reduced life satisfaction. H1b also was not supported.

In the second step, the interaction between providing social support and self-esteem ($B = -.129$, $p = .002$) was significantly related to life satisfaction. Self-esteem moderates the relationship between providing social support on Facebook and life satisfaction. Thus, RQ1b was addressed.

        To illustrate the interaction between providing social support and self-esteem on life satisfaction, we plotted the regressions of life satisfaction on social support at high and low levels of self-esteem (see Figure 2). Following procedures outlined by Aiken and West (1991), we used simple slopes for the regressions of life satisfaction on social support by using the high values for self-esteem (1 *SD* above the mean) and low values for self-esteem (1 *SD* below the mean). As shown in Figure 2, the relationship between providing social support and life satisfaction was significantly positive when self-esteem was low, $B = .146$, $p = .028$, 95% CI [.016, .277]. This relationship was not significant when self-esteem was high, $B = -.056$, $p = .433$, 95% CI [$-.194$, .083]. Hence, among students with low self-esteem, providing social support significantly improved life satisfaction. In contrast, among students with high self-esteem, providing social support did not influence life satisfaction.
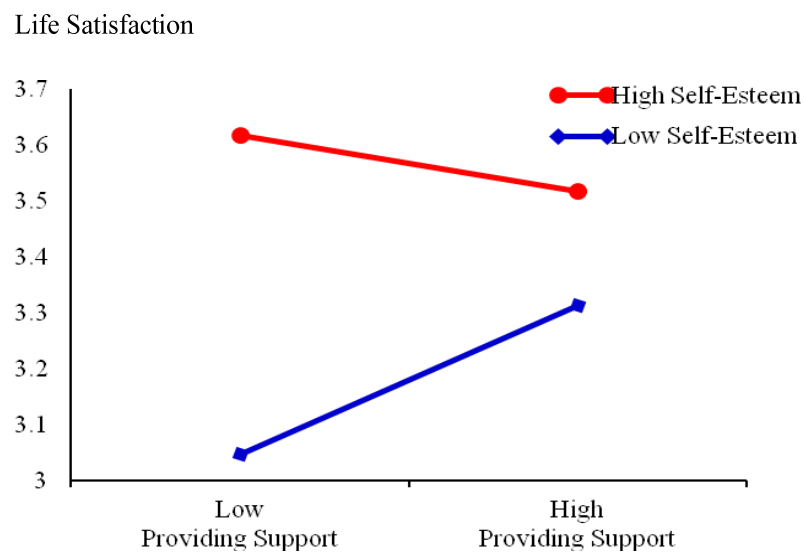

Figure 2. Effects of providing social support and self-esteem on life satisfaction.

Discussion

        This study proposes a model that assumes that receiving and providing social support on Facebook reduces stress, which subsequently improves life satisfaction, and that self-esteem moderates the relationship between receiving/providing Facebook social support and life satisfaction. Data were collected from undergraduate students taking an introductory communication course at a public university in the United States ($N = 382$). After conducting mediation and moderation analyses, we found that receiving social support had no significant indirect effect on life satisfaction via stress; providing social support led to higher levels of stress, which in turn resulted in lower life satisfaction. Self-esteem only moderated the relationship between providing social support and life satisfaction: Among students with low self-esteem, providing social support significantly improved life satisfaction; in contrast, among students with high self-esteem, providing social support did not influence life satisfaction.

An interesting finding of this study is that receiving social support on Facebook was not significantly associated with stress nor with life satisfaction. Although this finding is inconsistent with our hypotheses, previous researchers have reported a very small or a null effect of receiving social support on life satisfaction (e.g., Chen & Feeley, 2012). One possible reason for the null effect reported in the present study is that social support received through Facebook may not necessarily match the needs of the support recipient. This may be due to the fact that many Facebook friends do not know the support recipient very well, so the support they provide does not address his or her needs. A central argument of the optimal matching model (Cutrona & Russell, 1990) is that, for support recipients to successfully cope with stressors, there should be an optimal match between their needs and the assistance/aid offered by support providers. Another possible reason for our finding is that, while receiving social support on Facebook may indeed alleviate some users' stress, it may diminish some users' perceived control of life, which is an important psychological resource for life satisfaction (Chen & Feeley, 2012). Taken together, it appears reasonable that receiving social support via Facebook has a nonsignificant effect on life satisfaction.

A second important finding of this study is that providing social support on Facebook actually increased stress, which subsequently reduced life satisfaction. Although this finding is contrary to our hypotheses, there is evidence that, among caregivers, providing social support is related to lower happiness, higher depression (Marks, Lambert, & Choi, 2002), and worse general health (Hirst, 2003). One possible reason is that providing support to Facebook friends may be demanding for users, requiring them to allocate extra time, effort, and resources out of their normal routines to care for or attend to Facebook friends in need of help. Another possible reason is emotional contagion—"a process in which a person or group influences the emotions or behavior of another person or group through the conscious or unconscious induction of emotion states and behavioral attitudes" (Schoenewolf, 1990, p. 50). Experimental evidence suggests that exposure to an emotion expressed by a Facebook friend is sufficient to trigger emotional contagion (Kramer, Guillory, & Hancock, 2014). It is probable that, through the process of offering support to Facebook friends, users may consciously or unconsciously empathize with the problems or troublesome situations of those Facebook friends and thus begin to share their negative mood state (e.g., high stress). A third possible reason is the sheer number of Facebook friends a typical user has, contrasted with a much smaller number of off-line friends (Tong, Van Der Heide, Langwell, & Walther, 2008). Providing social support to such a large number of Facebook friends might be a daunting task for some users.

A third important finding of this study is that providing social support on Facebook significantly improved life satisfaction among students with low self-esteem, and providing social support on Facebook did not influence life satisfaction among students with high self-esteem. Kong et al. (2013) reported that perception of off-line social support was a significant and positive predictor of life satisfaction only among students with high self-esteem, and that this effect was not observed among students with low self-esteem. The present finding complements Kong et al.'s (2013) finding by suggesting that providing support on Facebook may be more important for life satisfaction of students with low self-esteem. Students with high self-esteem may already hold a positive view of themselves, and therefore they probably do not need the opportunities of providing support on Facebook to verify their worth. In contrast, Facebook may build friendly and comfortable communities (e.g., specific Facebook groups) where students with low self-esteem can feel they belong. Using those Facebook communities as a venue for providing

social support may foster self-validation of their own value or worth. Specifically, by providing support to others on Facebook, students with low self-esteem may be able to enhance confidence in their abilities to assist others, and accordingly increase their satisfaction with life. The finding of the moderating role of self-esteem also suggests that providing support may be a vital social learning process (Bandura, 1971) for students with low self-esteem, and Facebook communities may facilitate this learning process, making it more accessible and less intimidating. Through this learning process, students with low self-esteem may be able to develop important psychological resources (e.g., improved self-esteem), which may be difficult to obtain in their off-line social interactions.

Theoretical and Practical Implications

This study has two important implications for theoretical development on social support. First, the findings emphasize the important role of providing social support on health outcomes, which often has been omitted in previous research. Specifically, the main-effect model of social support (Cohen & Wills, 1985) may need to differentiate between receiving support and providing support in order to display a clearer picture of their unique impacts on health outcomes. Second, this study demonstrates that self-esteem has the potential to modify the relationship between providing social support and health outcomes. Thus, it is important for the main-effect model of social support (Cohen & Wills, 1985) to examine changes in this relationship in response to different levels of self-esteem.

In practice, this study cautions Facebook users of the potential negative impact of providing support, because it may increase their stress and decrease their life satisfaction. To avoid this effect, college administrators and counseling centers may want to educate students on important self-protection techniques when offering support on Facebook. It is also important for school educators to reach out to students with low self-esteem and encourage them to use Facebook to provide social support to others in need. Through a regular learning process of providing support to others on Facebook, students with low self-esteem may gradually boost their self-esteem, and hence reap psychological benefits such as improved life satisfaction.

Limitations

Several limitations of this study should be mentioned. First, measures in this study were all based on self-report. Thus, participants' scores on receiving and providing support on Facebook, stress, self-esteem, and life satisfaction might not have reflected the real values of those constructs, due to social desirability. Second, although we examined stress as a mediator and self-esteem as a moderator, some other psychological constructs, such as loneliness (Chen & Feeley, 2014) or perceived control (Chen & Feeley, 2012), may also mediate or moderate the relationship between social support and life satisfaction. Third, Facebook usage for receiving and providing social support might be very different among people of different ages or in different stages of life. Our study findings are based on a college-student convenience sample, which can limit the generalizability of those findings. Finally, the cross-sectional nature of this study constrains the causal inferences of its findings.

Conclusion

Despite its limitations, the present study contributes to the social support literature by demonstrating the important role of providing Facebook social support in influencing health outcomes (e.g., life satisfaction). Findings also caution that social support can be a double-edged sword, because offering support to Facebook friends may increase users' stress, which itself is detrimental to life satisfaction. In addition, the finding that providing support to Facebook friends increases life satisfaction among students with low self-esteem suggests that support provision may be an important social learning process for those students to validate their worth and achieve a high level of positive psychological health. Finally, the technological affordance of Facebook may facilitate the support provision process of students with low self-esteem, thereby improving their functioning and experience online as well as their overall life satisfaction. Future researchers may want to use biomarkers (e.g., saliva) to measure some psychological constructs (e.g., levels of stress), explore other potential mediators and moderators, and employ a longitudinal design when studying the relationships among receiving/providing Facebook social support, stress, self-esteem, and life satisfaction.

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