Adolescents’ depressive symptoms and subsequent technology-based interpersonal behaviors: A multi-wave study

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A R T I C L E   I N F O
Article history:
Received 1 May 2016
Received in revised form 7 February 2017
Accepted 10 February 2017
Available online xxxx

Keywords:
Adolescents
Depressive symptoms
Peer relations
Social media
Interpersonal feedback-seeking
Social comparison
Technology

A B S T R A C T
This study examined the longitudinal effects of adolescents’ depressive symptoms on engagement in technology-based social comparison and feedback seeking (SCFS) behaviors. A total of 816 adolescents (54.7% girls; Mage = 14.1 at Time 1) participated at three times points, each one year apart. Adolescents reported technology-based SCFS, depressive symptoms, and frequencies of technology use (cell phones, Facebook, and Instagram). Multiple group (by gender) latent growth curve models examined concurrent and lagged effects of depressive symptoms on SCFS, controlling for adolescent’s underlying trajectories of SCFS and overall frequencies of technology use. Results indicated that higher levels of depressive symptoms were concurrently associated with greater SCFS after accounting for adolescents’ typical patterns of SCFS. For boys only, higher depressive symptoms were prospectively associated with later increases in SCFS. Results highlight the importance of social media as a unique context in which depressed adolescents may be at risk for maladaptive interpersonal behavior.

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1. Introduction

Adolescence is a developmental risk period for depression, and evidence suggests that this risk may be due, in part, to the normative, developmental reorientation of the social landscape that takes place during this time period (Hankin & Abramson, 2001). Adolescents begin to engage in more frequent, intimate, and autonomous peer relationships during this stage (Choukas-Bradley & Prinstein, 2014) and to rely on peer feedback and experiences as a primary means of identity development and self-esteem (Harter, Stocker, & Robinson, 1996). Adolescents also experience far greater interpersonally-themed stress than do younger youth (Rudolph, 2009). While prior work has emphasized the role of interpersonal difficulties in contributing to the emergence of adolescents’ depression (Rudolph, 2009), only recently have researchers begun to examine symptoms-driven models, whereby depressive symptoms precede and predict poor peer relationships (Kochel, Ladd, & Rudolph, 2012). Remarkably little is known regarding the specific maladaptive interpersonal behaviors that may contribute to peer difficulties among those with elevated depressive symptoms, and even less is known regarding the developmental factors that may make adolescents particularly vulnerable. It may be especially important to consider these developmental factors in light of recent changes in the social worlds of adolescents. This study focuses specifically on adolescents’ interpersonal experiences online, and a set of behaviors that may be relevant to the type of experiences afforded to this social context.

1.1. Depressive symptoms and interpersonal dysfunction

For many years, research has suggested that individuals experiencing elevated levels of depressive symptoms may be especially likely to engage in maladaptive interpersonal behaviors, perhaps in an effort to augment their self-worth, or alternatively to validate their sense of low self-concept (Coyne, 1976; Hames, Hagan, & Joiner, 2013). For instance, substantial research has suggested that depressed individuals may engage in excessive reassurance seeking (ERS; Joiner & Metalsky, 2001), or the tendency to repeatedly ask others for reassurance of personal worth, leading to interpersonal rejection and poor friendship quality, and ultimately, exacerbation of depressive symptoms (Prinstein, Borelli, Cheah, Simon, & Aikins, 2005). Findings also have suggested that depressed adults and youth may be especially likely to engage in negative feedback-seeking (NFS), or the tendency to seek out criticism or negative feedback in close relationships, as well as to report high levels of sociotropy (Rudolph, 2009). Each of these behaviors contributes to dependent interpersonal stressors, or events in which depressed individuals may inadvertently contribute to their own interpersonal difficulties (Flynn & Rudolph, 2011; Rudolph et al., 2000). Depressed adolescents also have been shown to engage in higher levels of social comparisons, particularly unfavorable comparisons that result in negative self-evaluation, compared to non-depressed individuals.
In the social world of today's teens, a heavy reliance on interpersonal communication within technology-based platforms may make social comparisons and feedback- or reassurance-seeking especially easy.

1.2. Social media use and depressive symptoms

As researchers increasingly turn to symptoms-driven models to explain the ways in which depressed youth engage in maladaptive behaviors with peers, it has become necessary to examine such behaviors as they occur within the developmental contexts most relevant to modern adolescents. Social media, which has become ubiquitous in the lives of adolescents, represents one such context. On an average day, adolescents report spending almost 7 h using screen media (Rideout, 2015) and sending an average of 67 text messages (Lenhart, 2015). Adolescents report that a significant proportion of their social interactions now take place via social media, with 89% belonging to at least one social networking site and 88% engaging in regular text messaging (Lenhart, 2015). Identifying maladaptive interpersonal behaviors that occur via social media has critical implications for understanding how depressed adolescents may inadvertently contribute to their own interpersonal distress and poor peer relationships.

Within research examining social media use, there has been a growing recognition of the importance of identifying such maladaptive online behaviors in the context of adolescents’ depressive symptoms (Davila et al., 2012; Feinstein et al., 2013). Although many studies have used cross-sectional data and inferred that certain technology-based behaviors may contribute to depressive symptoms, it is equally plausible that problematic social media use may follow from prior depressive symptoms. For example, studies have indicated concurrent associations between higher levels of depressive symptoms and technology-based behaviors that include: disclosure of personal information online (Ybarra, Alexander, & Mitchell, 2005), sexting (Dake, Price, Maziarz, & Ward, 2012), cyberbullying (Ybarra, 2004), and frequent surveillance behavior, or passively browsing others’ photos or posts without actively engaging by commenting or posting (Tandoc, Ferrucci, & Duffy, 2015). In addition to cross-sectional work, a few studies have provided preliminary evidence that depressive symptoms longitudinally predict engagement in technology-based SCFS over the course of multiple years.

One potentially problematic online behavior, which may be conceptually distinct from similar offline behaviors, is technology-based social comparison and feedback seeking (SCFS; Nesi & Prinstein, 2015). This type of behavior occurs when an individual establishes comparisons with others (either in terms of appearance or feedback to instantaneously reach a vast network of peers) and seeks feedback or reassurance from their online peers. This may be facilitated by the large, public audience to whom photos and posts are displayed, the opportunity for immediate peer feedback and commentary, and the ease with which users can be accessed and scrutinized (Manago, Graham, Greenfield, & Salimkhah, 2008). Thus, we might expect adolescents who engage in offline excessive reassurance-seeking and social comparison to similarly exhibit higher levels of technology-based social comparison and feedback seeking.

![Figure 1: Final multiple group (by gender) linear latent growth curve model of technology-based social comparison and feedback-seeking (SCFS). To aid visual interpretation, frequency of technology use is not depicted; however, both depression (pictured) and frequency of technology use were included in the final model (see text).](http://dx.doi.org/10.1016/j.appdev.2017.02.002)
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