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NARRATIVE REVIEW

Are the Qualities of Adolescents' Offline Friendships Present in Digital Interactions?

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Abstract Today's youth often connect with friends online. Although decades of research have explored the core qualities of face-to-face friendships, less is known about how these qualities differ when friends interact via technology. Through a synthesis of research on friendship in digital spaces, we examine whether the core qualities of face-to-face friendships are evident in cyberspace. Six key components of friendships were identified from the large canon of research on friendships and studies that addressed these topics (i.e., self-disclosure, validation, companionship, instrumental support, conflict, and conflict resolution) were reviewed. The findings suggest that, while peer interactions in online spaces may be novel, the core qualities of friendships identified in research on offline spaces persist. Future research directions are identified.

Keywords Adolescents · Friendship quality · Social media · Texting · Instant messaging · Online interactions

Introduction

High quality, intimate, friendships are associated with social and emotional well-being (Berndt et al. 1999; Gauze et al. 1996; Ladd and Kochenderfer 1996). While the majority of studies of friendship quality explore face-to-face interactions (e.g., Bigelow and La larGaipa 1975; Douvan and Adelson 1966; Sharabany et al. 1981), many interactions between teens and their friends nowadays are mediated through technology such as computers and mobile devices (Common Sense Media 2015; Lenhart 2015a). This increase in digital peer interactions has lead to growing concerns in the media and among parents about whether adolescent friendships are now less intimate and an inadequate substitute to friendships that for the most part, took place face-to-face. Additionally, questions arise as to whether adolescent friendships, when mediated through technology, still maintain the same core qualities of face-to-face friendship.

Digital spaces are characterized by unique properties such as the potential visibility and permanence of shared information and the ease by which shared information can be duplicated (boyd 2008), which may alter the characteristics of friendship. However, it is possible that, while adolescents are engaging in novel activities (e.g., liking posts on Facebook, sending images on Snapchat that disappear after being viewed), these digital behaviors serve the same purpose and comprise of the same qualities of friendship as behaviors that have been robustly identified offline. Thus, this article will systematically connect the literature on online and digital interactions between friends to the well-established offline research describing friendship qualities in adolescence. In this review, we use the term "digital" to include both online and text/SMS interactions.

The Developmental Significance of Adolescent Friendships

Friendships, which are reciprocated, dyadic, and affectionate relationships between peers (Bukowski et al. 2009; Gifford-Smith and Brownell 2003; Rubin et al. 2006), exist across cultures (Krappman 1996). During adolescence,

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friendships become an important source of intimacy, as teens seek autonomy from their parents and depend more on their friends (Buhrmester 1996). Adolescents spend nearly a third of their waking hours with their friends (Hartup and Stevens 1997), often at school, but also in each other's homes (Crockett et al. 1984). Having friends is linked with emotional well-being (Gifford-Smith and Brownell 2003) and can buffer against the negative effects of families that are not emotionally supportive (Gauze et al. 1996), peer victimization (Hodges et al. 1997), and school transitions (Berndt et al. 1999). More stable than friendships in middle childhood, adolescent friendships are centered on loyalty, intimacy, and commitment (Buhrmester and Chow 2009; Hartup 1993; Smetana and Villalobos 2009). Betrayal of trust is often cited as a reason for why friendships end (Hartup 1993). Friends also play an important role in adolescents' identity development because self-disclosure facilitates self-exploration and understanding (Papini et al. 1990). Articulating beliefs and attitudes enable individuals to think through them more thoroughly and friends can provide feedback on them (Buhrmester and Prager 1995). Thus, friends play an important role in meeting adolescents' developmental needs.

The Qualities of Friendship

Studies of friendship have identified key qualities that distinguish friendships from other peer relationships (e.g., acquaintances). Although the number of qualities varies across studies, the six identified by Parker and Asher (1993)—self-disclosure (i.e., communicating information to another; Burhmester and Prager 1995), validation (i.e., increasing the self-worth of another by demonstrating care and wanting the other to feel special; Sullivan 1953; Parker and Asher 1993), companionship (i.e., voluntarily spending time together; Parker and Asher 1993), instrumental support (i.e., providing resources or services towards one another; Berndt 1985, 1989), conflict, and conflict resolution—have been described consistently in the literature (Berndt 1989; Bukowski et al. 2009, 1991; Fehr 1996; Ladd and Kochenderfer 1996). Despite the positive aspects of friendship, conflict between adolescent friends occurs frequently, even more on average, than between romantic partners (Laursen 1995). Yet, conflicts between friends often involve less anger and insistence on the original goal (Laursen 1996), are resolved more equitably than conflicts with parents or others, and are less likely to result in negative affect or reduced interaction (Laursen 1993). As the literature on offline friendships has widely acknowledged these six qualities as integral components of friendships, we use them to frame our understanding of digital interactions between friends. We also consider age and gender differences in our review because these differences have been identified in studies of offline friendships. For example, validation between friends seems to be more common among girls than boys (Parker and Asher 1993) and girls have greater expectations for companionship in stressful situations (Menon 2011). Girls also tend to establish intimacy through self-disclosure whereas boys establish intimacy through shared activities (McNelles and Connolly 1999). While conflicts arising from public disrespect and undependability are most common among younger adolescents (11–13 years), older adolescents (16–18 years) reported more conflicts over private disrespect (e.g., imposing one's view on the another, missing appointments; Shulman and Laursen 2002).

Adolescent Friendships in Online Spaces

Adolescents frequently use online spaces and digital devices to interact with offline friends (Lenhart 2015b). In a nationally representative survey of teens in the United States, over half texted friends daily and another 14% used messaging apps on a day-to-day basis (Lenhart 2015b). Most teens had access to smartphones, laptops, and desktop computers at home (Common Sense Media 2015; Lenhart 2015a), thus allowing for greater digital communication. Adolescents also connected with their friends through a variety of SNS such as Facebook and Instagram and hybrid texting and image sharing apps like Snapchat, and it was common for teens to use more than one platform (Lenhart 2015b). While messaging platforms such as instant messaging (IM) and text messaging facilitate direct communication between individuals, most social media apps offer a variety of channels for users to interact with friends; users can broadcast information to their entire network, leave comments on their friends' profiles that are viewable by others in their network, and send private messages (boyd and Ellison 2007).

As discussed by Amichai-Hamburger and colleagues (2013), however, defining "friendship" in digital spaces is challenging. First, the word "friend" is often used much more loosely in studies of online interactions than in offline studies. In offline studies, researchers typically considered a dyad to be friends if both individuals nominated the other as a friend (Gifford-Smith and Brownell 2013). In online studies, researchers are less likely to survey both individuals before confirming the presence of a friendship. Acquaintances may also be included in studies of friendship as Facebook broadly uses the word "friend" to denote a connection between individuals (Lewis and West 2009). Second, offline studies often seek to distinguish between the levels of closeness among friends. When asked to think about the features of a friendship (Bigelow and La Gaipa 1975; Sharabany et al. 1981), participants are frequently given a target (e.g., their best friend). This method is less

common in online studies. Third, in a national survey, 57% of teens reported that they made at least one friend online, often through video games and SNS, with fewer than half of these friendships actually moving offline (Lenhart 2015b). Thus, it is possible that the qualities of online-only friendships may differ from those that are exclusively offline or those that are both.

Given the challenge of quantifying friendships online, we will broadly define "friend" in our review to include anyone that participants self-report as a friend regardless of whether the friendship nomination is reciprocated or whether the friendship developed online or offline. Nevertheless, as online networks are largely an extension of their offline networks for the majority of youth, (Smahel et al. 2012), it is likely that the digital interactions described in this article pertain primarily to friends that teens met offline, but whom they also interact online. This definition of friendship does not depart from the idea that friendship is based on reciprocity, as reciprocity is required for communication.

Current Study

In addition to enabling users to stay connected throughout the day (Clark 2005), digital interactions differ from face-to-face interactions in numerous ways. For example, users have fewer audiovisual cues such as facial expressions and tone of voice to rely on when determining the meaning of a digital message (Reich 2016). Online interactions between friends are also more permanent—users "like" content shared by friends—and broadly viewed—the number of likes a post receives are viewable by others (Facebook 2016b; Instagram 2016a, b). These differences engender the question of whether the key characteristics of friendship have changed now that many interactions occur digitally. Do the conceptualizations of friendships that were created prior to the rise in technology-mediated communication still apply?

Method

To address how characteristics of offline friendships connect to digital interactions, we first identified literature describing each of these six characteristics in offline friendships. Then, we identified digital parallels of these behaviors or interactions by cross-listing the six core qualities of adolescent friendships (i.e., self-disclosure, validation, companionship, instrumental support, conflict, and conflict resolution) with the keywords "friends" or "friendships" and with different forms of technology-mediated communication (e.g., IM, text messaging) or specific social media apps (e.g., MySpace, Facebook, Twitter, Snapchat) on Google Scholar, PsycInfo, and ERIC. We referred to a national survey of social media use (Lenhart 2015a) in order to generate a comprehensive list of platforms. Broadcasting platforms such as Facebook, MySpace, Instagram, and blogs where users can share information with their entire network were included as well as direct messaging platforms such as texting, IM, Snapchat, and Facebook Messenger as long as adolescent users reported interacting with their friends on them. Studies of multi-player videogames were also included because of the social nature of gaming; a Pew Report found that the majority of adolescents play games with others in the same room or online, rather than individually (Lenhart 2015b). The majority of teens also reported talking while playing. Platforms that users did not describe as using with their friends (e.g., chat rooms) were excluded from the review.

As adolescents are the focus of this review, we included studies where at least a portion of the participants were between the ages of 12 and 18 years and not yet in college. However, the majority of the studies on social media used college-aged samples despite the prevalence of social media in teens' lives. Thus, when there was a lack of literature for a particular characteristic, we included studies with college-aged students, as well as studies on romantic partners. Romantic relationships are similar in many aspects to friendships; both are intimate, reciprocal, and voluntary (Furman and Collins 2009). We gathered studies ranging from the years 2002-February 2017. These studies used a variety of methods ranging from self-report such as interviews, focus groups, and surveys to observational methods such as content analyses of messages and posts on social media platforms.

Altogether, our search generated 36 peer-reviewed articles, book chapters, reports, and presentations that gave examples of the six characteristics in studies of digitally-mediated peer interactions (see Table 1). Sources that examine multiple characteristics are listed more than once in Table 1. Studies that described the prevalence of these characteristics but did not describe the content or nature of the interaction were excluded. Some sources were used to support the narrative, but did not actually describe the characteristic or answer the research question. These were also excluded from Table 1.

For each of the six qualities, we identified ways in which digital interactions corresponded with or differed from face-to-face communication. We also noted differences by gender and age; however, as this is still a burgeoning area of study, research on gender and age differences is still limited.

Table 1 Summary of key literature by friendship quality

References	Title	Platform(s)	Age
Self-disclosure			
Bayer et al. (2015)	Sharing the small moments: ephemeral social interaction on Snapchat	Snapchat	$M = 20.4$
Bazarova (2012)	Public intimacy: disclosure interpretation and social judgments on Facebook	Facebook	18–32
Bortree (2005)	Presentation of self on the web: an ethnographic study of teenage girls' weblogs	Blogger	16–18
Dolev-Cohen and Barak (2013)	Adolescents' use of instant messaging as a means of emotional relief	IM	14–18
Forest and Wood (2012)	When social networking is not working: individuals with low self-esteem recognize but do not reap the benefits of self-disclosure on Facebook	Facebook	Study 1: $M = 21.35$ Study 2: $M = 19.95$ Study 3: $M = 21.18$
Manago et al. (2008)	Self-presentation and gender on MySpace	MySpace	18–23
Manago et al. (2012)	Me and my 400 friends: the anatomy of college students' Facebook networks, their communication patterns, and well-being	Facebook	18–28
Mazur and Kozarian (2010)	Self-presentation and interaction in blogs of adolescents and young emerging adults	LiveJournal, DeadJournal, Xanga, Open Diary, MySpace (all blogging sites)	15–19
McLaughlin and Vitak (2011)	Norm evolution and violation on Facebook	Facebook	College undergraduates
Leung (2007)	Stressful life events, motives for Internet use, and social support among digital kids	ICQ (IM platform)	8–18
Lindqvist et al. (2011)	I'm the mayor of my house: Examining why people use foursquare—a social-driven location sharing application	Foursquare	Study 1: 21–38 Study 2 18–54+
Piwek and Joinson (2016)	"What do they *snapchat* about?" Patterns of use in time-limited instant messaging service	Snapchat	First year college students 18–41+
Reich (2010)	Adolescents' sense of community on MySpace and Facebook: a mixed-methods approach	MySpace, Facebook	13–29
Reich et al. (2012)	Friending, IMing, and hanging out face-to-face: Overlap in adolescents' online and offline social networks	MySpace, Facebook, instant messaging	13–19
Vickery (2010)	Blogrings as virtual communities for adolescent girls	Blogs	14–19
Wang and Stefanone (2013)	Showing off? Human mobility and the interplay of traits, self-disclosure, and Facebook check-ins	Facebook	19–25
Yau and Reich (2016)	Adolescent friendships on Snapchat and Instagram	Instagram, Snapchat	12–18
Yau and Reich (*under review a*)	Audiences and allies: Adolescents' self-presentation norms and practices on Facebook and Instagram	Facebook, Instagram	12–18
Yau and Reich (*under review b*)	Getting the message: The association of network size and friend contact on Facebook	Facebook	18–23

Table 1 (continued)

References	Title	Platform(s)	Age
Zhao et al. (2008)	Identity construction on Facebook: digital empowerment in anchored relationships	Facebook	College undergraduates
Validation			
Bortree (2005)	Presentation of self on the web: an ethnographic study of teenage girls' weblogs	Blogger	16–18
boyd (2010)	Friendship	Facebook, MySpace, IM	7–25 (majority between 12 and 19)
Blight et al. (2015)	"Same stuff different day": a mixed-method study of support seeking on Facebook	Facebook	$M = 21.20$
Brandes and Levin (2014)	"Like my status"	Facebook	12–18
De Ridder and Van Bauwel (2013)	Commenting on pictures: teens negotiating gender and sexualities on social networking sites	Netlog (SNS)	13–18
Livingstone (2008)	Taking risky opportunities in youthful content creation: teenagers' use of social networking sites for intimacy, privacy and self-expression	MySpace, Facebook, Bebo, and Piczo (SNS)	13–16
Scissors et al. (2016)	What's in a Like? Attitudes and behaviors around receiving Likes on Facebook	Facebook	13–90
Underwood et al. (2015)	The BlackBerry project: the hidden world of adolescents' text messaging and relations with internalizing symptoms	Text messaging	14
Yau and Reich (*under review a*)	Audiences and allies: Adolescents' self-presentation norms and practices on Facebook and Instagram	Facebook, Instagram	12–18
Companionship			
Ferguson and Olson (2013)	Friends, fun, frustration and fantasy: child motivations for video game play	Video games	7th and 8th grade (M age = 12.9)
Grinter and Palen (2002)	Instant messaging in teen life	AIM, ICQ, MSN Messenger, Yahoo! Messenger (all IM platforms)	14–20
Jones et al. (2011)	When friends who talk together stalk together: online gossip as metacommunication	IM, Facebook	15–18
Lenhart (2015b)	Teens, technology, and friendships	SNS, texting, video games	13–17
Niland et al. (2015)	Friendship work on Facebook: young adults' understandings and practices of friendship	Facebook	18–25
Sherman et al. (2013)	The effects of text, audio, video, and in-person communication on bonding between friends	IM	18–21
Yang et al. (2013)	From Facebook to cell calls: Layers of electronic intimacy in college students' interpersonal relationships	Facebook, IM, phone calls	College undergraduates
Instrumental support			
Bayer et al. (2015)	Sharing the small moments: ephemeral social interaction on Snapchat	Snapchat	$M = 20.4$

Table 1 (continued)

References	Title	Platform(s)	Age
De Smet et al. (2014)	Determinants of self-reported bystander behavior in cyberbullying incidents amongst adolescents	Not specified	12–16
Grinter and Palen (2002)	Instant messaging in teen life	AIM, ICQ, MSN Messenger, Yahoo! Messenger (all IM platforms)	14–20
Kahn et al. (2014)	Actual friends matter: an internet skills perspective on teens' informal academic collaboration on Facebook	Facebook	9th–12th grade
Macháčková et al. (2013)	Bystanders' support of cyberbullied schoolmates	Not specified	12–18
Reich et al. (2014)	Connections and communities in virtual worlds designed for children	Virtual worlds	Virtual worlds designed for children ages 3–12
Wang and Wang (2008)	Helping others in online games: prosocial behavior in cyberspace	Online games	$M = 18.27$
Conflict			
boyd (2010)	Friendship	SNS, IM	Adolescents (age range not specified)
boyd (2014)	It's complicated: the social lives of networked teens	SNS, blogs	13–18
McLaughlin and Vitak (2011)	Norm evolution and violation on Facebook	Facebook	College undergraduates
Reich (2010)	Adolescents' sense of community on MySpace and Facebook: a mixed-methods approach	MySpace, Facebook	13–29
Reich et al. (2012)	Friending, IMing, and hanging out face-to-face: overlap in adolescents' online and offline social networks	MySpace, Facebook, instant messaging	13–19
Rueda et al. (2015)	"She posted it on Facebook": Mexican American Adolescents' Experiences with Technology and Romantic Relationships	SNS, text messaging	15–17
Van Ouytsel et al. (2016)	Exploring the role of social networking sites within adolescent romantic relationships and dating experiences	SNS, messaging apps	15–18
Weinstein and Selman (2016)	Digital stress: adolescents' personal accounts	Not specified	$M = 16.3$
Conflict resolution			
Subrahmanyam et al. (2008)	Online and offline social networks: use of social networking sites by emerging adults	SNS, IM	18–29
McLaughlin and Vitak (2011)	Norm evolution and violation on Facebook	Facebook	College undergraduates

Sources that discuss multiple qualities appear more than once. The age ranges of participants are provided when available. When they are not, the means of participants' ages are provided instead

Results

The Qualities of Friendship Online

Self-disclosure

Self-disclosure, which enables individuals to release pent-up feelings and elicit social support from others (Burhmester and Prager 1995), promotes intimacy in friendships (Radmacher and Azmitia 2006). Self-disclosure between friends differs both qualitatively from disclosure between acquaintances—friends share more intimate details (Planalp and Benson 1992)—and quantitatively—friends communicate more often (Fehr 1996). Moreover, self-disclosure fosters self-clarification; it enables individuals to explore their identities and values and reassures individuals that others share their thoughts and experiences (Burhmester and Prager 1995). The studies addressing disclosure between friends on social media that we review here were published between 2006 and 2016.

Similar to face-to-face disclosures, digital disclosures can help adolescents seek support and cope with emotional distress (Dolev-Cohen and Barak 2013). Leung (2007) found that family stressors such as serious injury to a parent, remarriage, divorce, and the death of a parent, predicted ICQ (an IM platform) use by children and teens. Studies also found, from both self-report and content analyses of instant messages, that disclosure via technology-mediated communication could reduce negative emotions. Adolescents in the study by Dolev-Cohen and Barak (2013) completed an affect questionnaire before and after each conversation they had via IM. Adolescents with higher emotional distress scores before the conversation reported, on average, lower distress scores at the end of the conversation. Transcripts of the conversations were also coded for their emotional state and revealed that, among the adolescents with higher distress scores, the second half of the chat transcript contained fewer negative expressions and emoticons than the first. These findings suggest that self-disclosure may reduce emotional distress; however, as the authors did not code the content of the sessions or the friends' responses, it cannot be concluded whether the teens felt less distressed simply because they were able to share negative feelings, actually discussed the cause of the distress, and/or received advice and support from their friends.

Self-disclosure between friends is more intimate and while some intimate disclosures are emotionally charged or are about risky behaviors, others, as described in the literature on offline friendships, are about the mundane activities of everyday life (Samter 2003). Disclosures about daily life still require vulnerability, as individuals share details of which few would have knowledge. For instance, on Snapchat, which adolescents and college students use primarily with friends and romantic partners, mundane disclosures are shared often (Piwek and Joinson 2016; Yau and Reich 2016). Common images included funny faces, selfies indicating the sender's current mood, and everyday moments such as cute pets, food, and haircuts (Bayer et al. 2015; Piwek and Joinson 2016). These studies suggest that the disclosure of mundane information online occurs frequently, like face-to-face settings, and may facilitate greater intimacy because the senders are presenting themselves in a vulnerable position.

Adolescents also seem to be thoughtful about where (i.e., the digital platforms) and to whom they disclose information. On platforms where adolescents can broadcast information to a wide audience of friends and acquaintances, such as Facebook (Manago et al. 2012), intimate posts such as emotionally-charged posts and frequent updates about routine activities are considered inappropriate and receive less positive feedback such as likes and comments (Bazarova 2012; Forest and Wood 2012; McLaughlin and Vitak 2011; Yau and Reich, *under review a*). While location-based services such as Foursquare and Facebook enable individuals to "check in" and share with their friends the places they have visited, a seemingly intimate disclosure (Lindqvist et al. 2011; Wang and Stefanone 2013), Foursquare users reported being selective about the locations where they check in. Participants reported not checking in at fast food restaurants because it was embarrassing and unimpressive to be seen there. Just as adolescents would share intimate information directly with friends rather than broadcasting it at a party or in the classroom, teens seemed to opt to disclose intimate information through direct forms of communication such as private messaging on Facebook (Bazarova 2012) or Snapchat (Yau and Reich 2016; Bayer et al. 2015; Piwek and Joinson 2016). On average, teens reported that interaction partners on Snapchat (a direct message system) are perceived as being closer than partners whom they interacted with through other more open forms of social media such as Instagram, Twitter, and Facebook (Bayer et al. 2015).

Self-disclosure between friends is also quantitatively different from disclosure between acquaintances (Fehr 1996); teens disclose more often with those whom they are close. One study found that, online, teens' interactions were primarily with friends, the majority of which were with "very good friends" (Reich et al. 2012). Similarly, Manago and colleagues (2012) found, through self-reports, that college students communicated directly more frequently on Facebook with close others (e.g., close friends, parents, romantic partners, and roommates). Furthermore, a logging study of college students' Facebook activities found that these students messaged a very small percentage of their network in a given week, potentially friends rather than acquaintances (Yau and Reich *under review b*). Thus, while close

others comprise a minority of Facebook networks (Manago et al. 2012), it seemed that users communicated, both in the form of private messages and public timeline posts, more frequently with those whom they were close.

Self-disclosure promotes self-clarification (Burhmester and Prager 1995) and this has also been identified online, but largely on spaces where adolescents can remain anonymous. Teen bloggers wrote about sexuality, as well as other intimate topics such as their relationships with their family and their hopes for the future (Bortree 2005; Mazur and Kozarian 2010; Vickery 2010). Nonetheless, to understand how adolescents engage in self-exploration through self-disclosure with their friends, it is important to explore self-exploration on platforms where identities are known. On MySpace and Facebook, studies find that self-exploration is much more constrained by social norms and gender stereotypes than on chat rooms and blogs; college students tended to present themselves in ways that they thought would appeal to their networks of friends and acquaintances (Manago et al. 2008; Zhao et al. 2008). It seems that there is less evidence of self-exploration focused disclosure when identities are known; however, more research is needed on direct forms of communication (e.g., Snapchat, text messaging). While identities are still known on these digital spaces, the risks of sharing intimate information may be lower because individuals are communicating directly with friends rather than broadcasting to a wide audience of friends and acquaintances.

Validation

Validation can occur in the presence of others as a public declaration of a friend's importance. We identified studies published between 2008 and 2017 that indicate validation of friends on social media. Akin to yearbook messages, which are written to the yearbook's owner, but are visible to a broader audience (i.e., every person who subsequently writes in the yearbook; Giordano 1995), posts directed at specific recipients on social media may also be viewed by a larger audience (e.g., Facebook 2016a; Instagram 2016a; Twitter 2016). In yearbook messages, validation can take the form of overt declarations of affection (e.g., "Carol, To the very best (I mean that) friend I had or ever will"; "To my best buddy"; p. 672), the use of nicknames (e.g., ROAD KILL, Taco; p. 672) that allude to shared jokes or experiences, longer messages, and shared memories and references as to why the friendship was special (Giordano 1995).

Similarly, on social media platforms, adolescents validate their friends through affectionate language such as "I missed you" and "I love you sooooooooo" and the use of hearts (Brandes and Levin 2014; De Ridder and Van Bauwel 2013). They lavish compliments on one another (e.g., "my gorgeous, you're such a beauty!"), which they describe as "loving" speech (Brandes and Levin 2014, p. 715). Compliments (e.g., "you're pretty") from friends can be perceived as conveying "care" and "support" and thus are highly appreciated (Livingstone 2008). Supportive comments seemed to be more common between friends than between acquaintances; when asked to identify their most recent support-seeking post on Facebook and to select the most supportive comment they received on their post, the majority of the college-aged sample (68%) chose a post that had been written by a close other (i.e., close friend, family member, significant other), with a much smaller percentage (32%) choosing a post written by an acquaintance (Blight et al. 2015).

Affectionate speech and interactions also include liking their friends' posts on social media (Brandes and Levin 2014; Livingstone 2008; Yau and Reich, *under review a*). As the number of likes a post receives and the names of the people who liked it are displayed underneath the post (Gerlitz and Helmond 2013), individuals can feel special when they receive many likes (Yau and Reich, *under review a*) and when they receive likes from close others (Scissors et al. 2016). Hong and colleagues (2017) even characterized liking posts as a form of virtual gift-giving; individuals give out likes on Facebook as they would give out gifts offline.

Adolescents also refer to one another by nicknames in blogs (Bortree 2005) and write elaborate messages containing shared memories to their friends on Facebook and Instagram like they did in yearbook messages. For example, on their close friends' birthdays, adolescents reported sharing collages on social media of previously taken photos of themselves and their friends (Yau and Reich, *under review a*). While liking and creating digital birthday collages are novel ways of communicating made possible by technology, these interactions are replications of how friends already interact offline.

Much like saving seats at the lunch table (Eder 1985) or creating an exclusive handshake (McCall 1988), teens also use methods of differentiating friends on SNS. On MySpace, users selected and ranked their "Top Friends," whose names are then displayed on a grid on their profiles (boyd 2010). On Facebook, adolescent girls reported repurposing the family section of the "About Me" feature so that their close friends were listed as their romantic partner, mother, father, daughter, etc. instead (Brandes and Levin 2014). As their friends need to accept this designation before it is displayed on both users' profiles, the indication of a familial relationship serves to validate the closeness of the friendship from both members of the dyad.

Validation between friends seems to be more common among girls (Parker and Asher 1993) and this is also true in digital interactions. Underwood and colleagues (2012)

found that, while there were no gender differences in the total number of texts that were sent, girls sent more texts with positive or neutral content than boys did (Underwood et al. 2015). However, this category encompassed a wide range of topics, including both texts with validating (e.g., "Tina was telling all the girls how hot you looked") and non-validating content (e.g., "My mom is going to pick me up at 7"; Underwood et al. 2015, p. 114). In a study of adult Facebook users, women reported a higher frequency of liking others' posts than men (Hong et al. 2017). Similarly, in focus groups with teens, girls were more likely to report expecting their close friends to like their posts on Facebook and Instagram and asking for likes if their friends did not yet do so (Yau and Reich *under review a*). Boys, instead, were more likely to like posts based on the content rather than the on relationship between them and the poster (Yau and Reich *under review a*). Validating practices were not exclusive to girls however. De Ridder and Van Bauwel (2013) reported instances of boys using affectionate language with each other and girls in Brandes and Levin's study (2014) stated that boys would sometimes imitate girls' use of affectionate speech in their interactions with one another.

Validation on digital platforms has also been studied extensively, but it has largely been examined in the context of public spaces (i.e., in the presence of acquaintances and other friends). Validation, however, can take place in private spaces as well; in offline studies, validation has included complimenting (Berndt 1989), caring for one another (Parker and Asher 1993), and celebrating accomplishments (Cohen et al. 1985). More research is needed on how validation occurs over private channels such as text messaging as well as public outlets (e.g., Facebook). Additionally, future studies should consider the role of gender in public and private validations. Currently, there is some evidence that women have higher expectations of their friends to support them on public spaces offline (Felmlee et al. 2012). Perhaps the gender difference for validation disappears or is reduced in private communication. To better understand what validation may look like in friendship between boys, future studies could also examine the presence and nature of validation on multi-player games, which are used more by boys (Lenhart 2015b) and provide opportunities for individuals to contribute to the success of a team. Lastly, future studies should explore whether or not technology-mediated communication enables teens to seek more frequent validation from their friends. Prinstein et al. (2005) found that, for girls, seeking reassurance (e.g., "I always need to ask my parents and friends if they like me; "Sometimes when I ask people if they like me, they tell me to stop asking"; "Sometimes when I ask people if they like me, they tell get mad") was associated with a decline in their friend's rating of the quality of their friendship over time (p. 679). However, teens can seek reassurance from their friends on social media through likes and comments without having to ask for their friend's opinions overtly and risk jeopardizing their friendship.

Companionship

Another distinguishing quality of friendship is companionship. Research on offline friendships indicates that interactions between friends are fun and relaxing (Planalp and Benson 1992) and this has also been observed in studies of companionship online. The studies reviewed in this section were published between 2011 and 2015. Young adults between the ages of 18 and 25 years shared jokes, funny videos, and images with their friends (Niland et al. 2015) on Facebook. Teens and their friends also referred to enjoyable shared experiences such as funny YouTube videos they have all seen, on their Facebook statuses (Davis 2012). Both young adults and teens reported "stalking" or browsing other people's Facebook profiles with their friends as a form of entertainment (Jones et al. 2011; Niland et al. 2015). Teens would then use IM to share the pictures or comments they had seen with their friends (Jones et al. 2011).

Video games are also a space where adolescents seek companionship and recreation. Ferguson and Olson (2013) surveyed over 1000 students in the 7th and 8th grade and found that over 90% of the participants reported playing video games with someone else at least occasionally. Furthermore, social reasons for game playing (e.g., "My friends like to play", "I like to teach other kids how to play", "It helps me make new friends") positively predicted the amount of time spent playing (p. 158). These reasons were more likely to be endorsed by boys, which is consistent with offline findings that suggest that adolescent boys are more likely than girls to establish intimacy through shared activities (McNelles and Connolly 1999). In a nationwide study, Lenhart (2015b) found that adolescent boys were more likely to play video games with others in the same room (91 vs. 72%) or online (91 vs. 52%) than girls. Boys were also more likely to talk with their friends while playing (88 vs. 52%) and to use a voice connection (71 vs. 28%). Although teens reported that their conversations usually consisted of trash-talking or strategizing, conversations about teens' personal lives also occurred.

Nevertheless, interactions between individuals may be more limited in some aspects than they would be in offline settings (e.g., users cannot see each others' expressions on IM). In an experimental study, college students came to the lab with a close friend and engaged in conversations face-to-face, over video chat, audio chat, and IM (Sherman et al. 2013). Self-reported feelings of bonding were higher in the face-to-face conditions; nevertheless, the differences

were not substantial—the average ratings for IM, which had the lowest ratings, was less than one point lower than the average ratings following face-to-face interactions (on an 8-point scale). Furthermore, in a study by Yang et al. (2013), college students reported that they could still experience closeness and sincerity through IM because of its synchronous nature; users could receive a response instantaneously even though they were not in the same physical space. To compensate for the lack of non-verbal cues in IM, users may instead on rely on emoticons (e.g., ;D), typed laughter (e.g., LOL), repeated letters (e.g., righttttt!), and capitalization (e.g., YES YOU CAN) to convey affection. In fact, Sherman et al. (2013) found that participants who used more of these affiliation cues reported higher bonding scores. Thus, while the effects of technology-mediated communication may not be equivalent to those of face-to-face interactions, adolescents still may find that technology-mediated communication benefits their friendships.

Future studies could examine whether expectations for companionship, especially in stressful situations, vary by gender. In a study of offline friendships, girls between the ages of 11 and 13 years were more likely than boys to have preoccupied styles of friendship, which can be described as distress over separation and strong need for the friend in difficult situations (Menon 2011). Conversely, boys were more likely to have avoidant styles, which can be described as a lack of feeling when separated and avoidance of the friend when distressed. Perhaps adolescent girls, then, would be more likely than boys, to seek companionship with their friends online when stressed and to expect that their friends would be available and responsive during difficult situations.

Instrumental Support

Studies published between 2002 and 2015 demonstrate that teens use technology-mediated communication to seek instrumental support in a variety of ways. They use IM and Facebook to ask for help with homework and discuss assignments (Grinter and Palen 2002; Kahn et al. 2014) and Snapchat to ask friends for feedback while shopping (Bayer et al. 2015). Instrumental support also includes protecting friends who are being bothered by others (Bukowski et al. 1991). In digital spaces, adolescents reported being more likely to defend and support victims of cyberbullying if they were friends with the victim or had a positive relationship with them (De Smet et al. 2014; Macháčková et al. 2013). However, teens reported that perceived expectations for support from friends usually consisted of comforting the victim and not reinforcing the bully, rather than actually confronting the bully (De Smet et al. 2014). Common methods of support consisted of telling the victim to ignore the bullying, comforting the victim, and showing empathy for what had happened (Macháčková et al. 2013). Oftentimes, support was provided offline, rather than online (De Smet et al. 2014). It seems that offline and digital spaces are not distinct worlds; rather, teens use online spaces to ask for support for offline tasks (e.g., homework) when they cannot ask in-person and they also use offline spaces to resolve issues that arise online (e.g., cyberbullying).

Much more research is needed on instrumental support; only a few studies have compared the instrumental support teens provide for friends with the support for acquaintances (De Smet et al. 2014; Macháčková et al. 2013). Future studies should also examine differences by age and gender. Additionally, as adolescents value equity and reciprocity in relationships (Laursen 1993; Youniss and Smollar 1985), future studies could examine the role of reciprocity in instrumental support (i.e., whether it is expected and whether it occurs) and whether there is a stronger preference for sharing with friends than with acquaintances or strangers. This question may be explored on collaborative games (Wang and Wang 2008) or on virtual worlds where players can work together to advance through levels (Reich et al. 2014).

Conflict

Common causes of conflicts identified in the literature on offline friendships are public disrespect such as betrayal and being ignored publically, and undependability, such as lack of closeness and failure to provide instrumental support (Shulman and Laursen 2002; Youniss and Smollar 1985). According to the studies identified (published between 2010 and 2016), conflicts online seem to also be frequently attributed to these causes. Instances of betrayal included the spreading of rumors (boyd 2014) and the unwanted distribution of information that had been sent privately; for example, in a study of MTV's "Over the Line?" platform, where teens can share personal accounts of cyberbullying and harassment, a teen reported that two of her friends shared her secrets on Facebook, even listing 100 of her flaws. Another reported that a nude photo she sent to a boy she considered her best friend was distributed to many others (Weinstein and Selman 2016). Features, like Facebook's short-lived honesty box that allowed for anonymous posts from friends, resulted in increased conflict following mean comments (Reich 2010). These examples can be likened to the gossiping or spreading rumors (Paquette and Underwood 1999), except that technology-mediated communication has enabled messages and images to be easily saved and rapidly distributed to a wider audience (boyd 2010), intensifying the harm betrayal can cause. Instances of being ignored publicly by friends were also identified online. boyd (2010) and Reich and colleagues (2012) noted that the "Top Friends" feature caused conflict

between teens as this was a public declaration of who mattered most to them; not making the list or not being ranked first suggested that the friendship was unimportant, or at least less important than other friendships. Much like not being invited to parties or being neglected in favor of other friends or romantic partners offline (Youniss and Smollar 1985), online features aimed at emphasizing exclusivity in relationships can lead to jealousy and exclusion. Moreover, akin to offline friendships, conflicts can arise because of undependability; for example, adolescents have reported that conflicts sometimes occur if they did not respond to texts immediately (Rueda et al. 2015; Weinstein and Selman 2016). This problem of appropriate response times was exacerbated by messaging apps such as Facebook Messenger or WhatsApp that indicate to the sender that the recipient has opened the message. Knowing that their partners opened their messages and did not respond made participants feel neglected and mistrustful of their partners (Van Ouytsel et al. 2016).

In offline studies, the causes of conflicts that are most prevalent vary by age: younger adolescents reported more conflicts over public disrespect and undependability whereas older adolescents reported more conflicts over private disrespect (Shulman and Laursen 2002). While studies of conflict online have largely identified instances of public disrespect as the cause, few have directly compared the causes for different age groups. Nonetheless, public disrespect is frequently mentioned even among college students, who reported conflict occurring because a friend shared a photo of them looking unattractive or intoxicated (McLaughlin and Vitak 2011). The prevalence of public disrespect is likely because studies of conflict have primarily focused on social media sites, which are perceived as public spaces with broad audiences. In order to find instances of private disrespect, researchers may have to look at platforms used for direct communication.

Conflict Resolution

Of the six qualities described in the study, the least is known about conflict resolution—which was identified in just a few studies published in 2008 and 2011 (McLaughlin and Vitak 2011; Subrahmanyam et al. 2008). While some college students reported that it is easier to discuss relationship challenges on social media than by phone or face-to-face (Subrahmanyam et al. 2008), more research is needed on how incidences of conflict between friends on digital media are resolved. Some adolescents may prefer to resolve conflicts face-to-face, because of the presence of non-verbal cues (Reich 2016) to indicate the other's mood. To compensate for the lack of non-verbal cues, adolescents may also use emoticons, which have been found to affect the emotional intensity and meaning of messages (Derks et al. 2008). Future studies can also explore for conflicts that occurred in public platforms (e.g., when one teen shares an unattractive photo of the other), whether teens resolved them on the platform where they occurred or on a more private platform that is perceived as more appropriate for heated discussions (McLaughlin and Vitak 2011). Findings for these studies may have implications for how to help teens resolve conflicts more effectively.

In offline friendships, interactions between friends often resume after the conflict and in some instances the conflict even improved the relationship (Laursen 1993). Future studies can examine whether these findings are also true for digital friendships. The equitable outcome of friendship conflicts offline has been attributed to the reciprocal nature of friendships (Laursen 1993), but the power distribution of friendships may actually be unequal online; one adolescent may have a higher status in their peer network by having many friends (Tong et al. 2008) or by being associated with attractive others (Walther et al. 2008), which may affect whether or not the outcome is still equitable.

Finally, studies on conflict resolution should consider age and gender differences. In a longitudinal study (von Salisch and Vogelgesang 2005), 14–18 year olds were more likely to resolve conflicts with their friends by explaining themselves and using humor and less likely to harm or ignore their friends than when they were younger (9–13 year old). MacEvoy and Asher (2012) found that among pre-adolescents (9–11 year olds), girls were more likely than boys to want to try and maintain the friendship after their friend had violated a friendship expectation, even though they reported feeling more anger and sadness and perceived the violation as more severe. These differences in the perceptions of friendship violations and in resolution strategies may also apply to digital interactions.

Discussion

There is clear evidence that the qualities of friendships identified by Parker and Asher (1993) and others persist in digital interactions. Across many types of platforms (e.g., primarily image based vs. primarily text based and direct messaging vs. broadcast) adolescents disclose more intimate information with friends than with acquaintances, validate one another through the use of supportive language and recognition in features such as likes and comments, spend time with one another, and provide instrumental support. The conflicts that occur through technology-mediated communication (e.g., sharing information that was disclosed privately, designating another friend as the Top Friend, not responding immediately) are also similar to the causes of friendship conflict offline (e.g., betrayal, exclusion). It seems, then, that adolescents use these platforms

as an extension of their offline interactions, as many of the digital interactions have parallel behaviors offline. Thus, friendship interactions in digital spaces should not be studied as separate aspects of adolescents' lives; rather, they should be understood in the context of teens' relationships offline. The behaviors that teens engage in online may be explained by what they are experiencing offline. It does not seem necessary, therefore, to consider a new conceptualization of friendship in the digital landscape of today's adolescence. Yet, to capture adolescents' experiences more comprehensively, updating questionnaires of friendship qualities with questions regarding digital interactions may still be worthwhile.

While the characteristics of friendship remain the same across modalities, digital interactions offer increased benefits in some areas while posing additional risks in others. For example, technology-mediated communication facilitates self-disclosure. Adolescents reported preferring to share intimate information via text messaging than in-person because text allows more time to craft responses (Davis 2012) and more ways to control emotions and calm down (Blair and Fletcher 2013). Adolescents with social anxiety especially perceived online communication as being valuable for self-disclosure (Valkenburg and Peter 2007) and among boys with social anxiety, those who used IM or chat rooms reported higher friendship quality than those who used these platforms infrequently (Desjarlais and Willoughby 2010). Digital media may also facilitate greater companionship between offline friends because they enable adolescents to circumvent the common restricts to communication, thereby facilitating constant communication. Adolescents reported texting or using IM at school where cell phone use is often prohibited, at a concert where the loud volume limits phone conversations, and while doing homework because they could communicate while still completing other tasks simultaneously (Blair et al. 2013; Clark 2005; Davis 2012). Conversations can continue throughout the entire day and early in the morning or late at night, without concerns of disrupting others the way an unexpected phone call would (Blair et al. 2013; Davis 2012). With parental restrictions on the amount of time they could spend with their friends and much of their out-of-school time spent on structured activities, digital media enabled adolescents to continue discussing the day's events and to interact with their friends without adult monitoring (boyd 2014; Grinter and Palen 2002). Conversely, interactions on digital media also pose additional risks for adolescents. For example, the damage to a friendship caused by one individual spreading gossip and rumors about the other may be far greater online because gossip and rumors can spread faster and be seen by more people on digital spaces (boyd 2014). The victim may experience greater humiliation and as a result, it is possible that adolescents find it more difficult to repair their friendship after acts of betrayal online than similar actions offline. Finally, some features may pose both benefits and risks. The overt display and permanence of likes and comments may be more validating than comments made face-to-face as individuals can refer back and remember what was said, but they can also be more damaging as individuals may feel that they did not receive enough, perhaps in comparison to others in their networks (Scissors et al. 2016).

Nevertheless, many gaps in the literature remain, especially about age and gender differences and whether or not digital interactions can improve friendship quality. Studies of offline friendships suggest that friendships that take place in multiple contexts are more stable than friendships that take place exclusively in school or outside of school (Chan and Poulin 2007). Further, research finds that online peer interactions are typically between friends that interact offline as well (Reich et al. 2012; Subrahmanyam et al. 2008). As technology-mediated communication provides an additional context where adolescents can interact, it may help adolescents maintain relationships with friends whom they only see in-person in one context. Additional areas for future research and challenges of studying friendships online are discussed below.

Future Directions

More Specific Definitions of Friendship

Friendship has been broadly defined in studies on technology-mediated communication. A Facebook "friend" for example, can include roommates, former romantic partners, best friends, friends of friends, and classmates (Manago et al. 2012). To disentangle the effects of interactions with friends from those with peers in general, future studies exploring interactions between friends online should be careful to distinguish between the different types of relationships. One example of this is the study by Bryant and Marmo (2012), which directed college students to think about interaction expectations separately for acquaintances, casual friends, and close friends. They found that the expectations for interactions on Facebook varied depending on the emotional closeness of the dyad. Future studies may also ask participants to distinguish between friends they met offline and friends they met online (whether it is through the site or through a different one; e.g., individuals who meet through an online game may then become Facebook friends).

Cross-gender Friendships

It may be worthwhile, for studies across all of these qualities, to consider not only the gender of the adolescent

sending the message, but also the gender of the recipient. Offline studies that have compared differences in the levels of intimacy between same-gender and cross-gender friendships have found mixed results (Fehr 1996); nonetheless, it is possible that teens interact differently based on their friend's gender. Adolescent girls reported expecting higher levels of loyalty and intimacy from female friends than from male friends (McDougall and Hymer 2007), whereas their friendships with male are more likely to be based on common activities and lacking negative behaviors (e.g., hitting). Studies that take into account the gender of the dyad are important to understanding how teens interact with their friends, because cross-gender groups become more common as adolescents age (Shrum and Cheek 1987).

Challenges

Longitudinal Studies

Longitudinal studies are useful for determining the effects of technology use on friendship quality and socio-emotional outcomes. However, conducting longitudinal studies can be challenging due to the rapid speed at which platforms gain and lose their popularity among users (Brown 2016). Furthermore, new features are constantly being added and old ones removed, changing the way users interact on platforms. As some platforms, such as Facebook and Instagram, have common affordances, longitudinal studies should avoid focusing on a singular platform and how its use over time affects outcomes (e.g., How does frequency of IM affect self-disclosure between friends?). Instead, researchers can expand their question to include multiple platforms with the same function (e.g., How does frequency of using apps for direct communication affect self-disclosure between friends?). In doing so, researchers could avoid underestimating certain behaviors (e.g., the use of direct communication platforms) because participants are switching platforms (e.g., switching from IM to texting).

Studies of Age Differences

Offline studies of friendship often use cross-sectional designs to compare differences across age groups, but age comparisons may be difficult on digital spaces when the social media platform of choice often vary by age (Lenhart 2015a). While the percentage of teens in a nationally representative sample who used messaging apps (e.g., Whatsapp, Kik) were similar between 13 and 14 year olds and 15–17 year-olds (i.e., 32 and 34%, respectively), Facebook, Instagram, and Snapchat, were all more frequently used by 15–17 year olds than by 13–14 year olds (Lenhart 2015a). It may be more difficult, then, to find a large sample of younger adolescents who use Facebook. Younger adolescents who use the site may also differ in some aspects from the younger adolescents who do not (e.g., less parental monitoring, access to their own device). As a result, differences between age groups may actually reflect differences between a subset of younger adolescents and a more representative sample of older adolescents. Furthermore, younger and older adolescents may differ in whom they befriend online. Madden et al. (2013) found that teens aged 14–17 years were more likely than teens 12–13 years to be friends with teachers and coaches on Facebook. Perhaps, the older teens would be more cautious about what they share on Facebook as a result. Thus, differences in how early and late adolescents use Facebook may be explained by differences in their networks rather than developmental differences. Again, it may be more valid to make age comparisons across different platforms that function similarly, such as Facebook and Instagram (Yau and Reich *under review a*), rather than to make comparisons on the same space.

Interactions between friends may also vary by age not because of developmental differences, but because of parental involvement. It is possible that younger teens may have greater parental monitoring (e.g., parents friending them on Facebook) or be less likely to have their own devices, which may affect the amount of time they spend interacting or the types of information they disclose. Common Sense Media (2015) found that 67% of 13–18 year olds owned their own smartphone in comparison to 24% of 8–12 year olds. Thirteen to eighteen year olds were also more likely to own their own laptop (45 vs. 19%, respectively). Researchers searching for differences between age groups need to be aware of these factors, especially since increases in autonomy and decreases in parental monitoring also occur offline (Seydlitz 1991).

Conclusion

Adolescent friendships online have largely been examined from the perspective that the features of digital spaces provide unique affordances and challenges, thereby changing the ways teens communicate. Given the similarities between offline and online friendships, we suggest that these studies be complemented with work that uses the literature on face-to-face studies of friendship quality to frame their exploration of digital friendships. It seems that, while the behaviors and activities (e.g., liking, sending selfies) are novel, they largely serve the same purpose as those offline. Digital communication may increase the ramifications of conflict due to permanence and the speed by which information travels, but at the core, friendships seem to have the same key characteristics because teens often interact with individuals they also consider friends offline

(Manago et al. 2012; Reich et al. 2012). In fact, these studies suggest that digital communication can provide greater opportunities for friends to disclose, spend time together, and display affection than in offline spaces alone. Rather than reducing intimacy in friendships, technology-mediated communication may provide the same benefits to teens as interactions that occur face-to-face.

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Compliance with Ethical Standards

Conflict of interest The authors report no conflicts of interest.

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