

4 Peer Relationship Processes in the Context of Digital Media

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Peer relationships have always served an important role in adolescent development. The quality of peer relationships is a driving force in adolescents' academic functioning (Wentzel et al., 2021), sense of self (Bellmore & Cillessen, 2006), and mental health (La Greca & Harrison, 2005). Furthermore, many – if not most – of the core developmental tasks that adolescents must traverse require navigating the peer context. Adolescents obviously cannot establish intimate peer relationships or explore romantic feelings and sexuality without engaging with their peers. Even experimenting with different versions of the self often requires feedback from peers to help understand how the external world will receive a potential internal self (Erikson, 1968).

Digital communication and social media have likely reshaped adolescents' peer relationships and social environment more than any other force in the 21st century. Digital communication is adolescents' preferred method for engaging with peers (Anderson & Jiang, 2018), beyond even face-to-face interaction (Lenhart et al., 2010). Nearly 90% of adolescents report using social media platforms every single day (Lenhart, 2015), primarily to interact with the same peers and friends they interact in their offline lives. It is not surprising then that adolescents' digital peer interactions are related to a range of outcomes similar to in-person peer interactions: self-concept and self-esteem (Steinsbekk et al., 2021), involvement in risk behavior (Ehrenreich et al., 2014), and mental health (Vannucci & McCauley Ohannessian, 2019). Digital communication is a critically important context that has transformed the way that the peer process unfolds and impacts adolescents (Nesi et al., 2018a, 2018b).

This chapter will begin with an examination of the features of social media that make it such a powerful context in which peer interaction occurs, briefly reviewing the theoretical underpinnings of this context. We will review recent research on how three important peer constructs unfold and are shaped by digital media: peer influence, social connectedness (vs. isolation), and popularity and social status. We will then discuss challenges and opportunities for studying peer relationships in the context of digital media. Finally, we will conclude with a discussion of the future directions in this field.

Theoretical Considerations

Much of the early research examining how digital communication relates to peer relationships was guided by existing, “offline” developmental theory. This perspective coalesced in co-construction theory (Subrahmanyam et al., 2006), which suggested that adolescents use social interaction in digital spaces as a means to explore the same developmental issues occurring in their offline lives. Accordingly, adolescents are active participants in the construction of the online content that they consume and create, building environments that can facilitate their developmental needs. Subrahmanyam and colleagues viewed these on- and offline environments as being “psychologically continuous” (Subrahmanyam et al., 2008, p. 421). In line with this perspective, many early studies of peer relations in the digital sphere sought to examine whether important peer processes truly did translate between realms. For example, do adolescents’ offline social deficits translate into online spaces (i.e., the rich-get-richer hypothesis) or are online contexts used as a more comfortable space to compensate for their offline deficits (social compensation; Kraut et al., 1998, 2002; Valkenburg & Peter, 2007)? Alternatively, considerable research examined the extent to which individuals who engaged in offline bullying behaviors or were subjected to offline victimization were also involved in these aggressive relations online (Kowalski et al., 2014), and whether there was similar overlap in offline and online prosocial behavior (Wright & Li, 2011).

Co-construction was an important advancement, in that it promoted the application of existing developmental theory to the study of adolescents’ online interactions, which had previously functioned with a fractured combination of theories emerging from a variety of disciplines (see Underwood et al., 2018). However, co-construction theory placed great emphasis on the overlap between adolescents’ on- and offline worlds, highlighting that adolescents are creating these spaces in an effort to fulfill their offline developmental needs (Subrahmanyam et al., 2008). Although co-construction does not suggest that these spaces are the same (despite being psychologically connected), little focus was placed on systematically identifying the ways in which digital communication functionally changes adolescents’ peer interactions. To bridge this gap, the transformational framework (Nesi et al., 2018a, 2018b), sought to systematically identify specific ways that social media transforms peer experiences, proposing five specific methods. First, social media increases the frequency and immediacy of peer interactions, allowing (and encouraging) near-constant contact with peers. Second, and relating to this, social media also amplifies the demands of peer interactions, creating new expectations to be available and responsive to peers. Third, social media changes the qualitative nature and feel of peer interactions, for example by changing the access to various social cues, and placing a greater emphasis on quantitative peer metrics such as number of likes and followers. Fourth, social media affords

youth new opportunities for compensating behaviors, such as the opportunity to maintain relationships despite physical distance. Finally, social media also provides adolescents with the potential to engage in entirely new social behaviors, such as virtually stalking romantic partners, or passively viewing the entire peer network.

Although this recently proposed framework has received limited empirical examination to date, initial findings examining the role of social media on women's body image have generally supported the model (Choukas-Bradley et al., 2019). Additional research is needed, but the transformation framework builds on existing developmental theory to highlight specific – and testable – ways that peer interactions should differ in, and be affected by, these digital contexts. Perhaps most importantly for its continued utility, the transformational framework highlights seven specific aspects of the social media environment (asynchronicity, permanence, publicness, availability, cue absence, quantifiability, and visualness) that transcend specific digital media platforms and tools (e.g., Facebook vs. Snapchat vs. text messaging). Given the incredible pace in which digital platforms rise and fall in popularity, emphasizing broader features of these platforms is critically important for a cohesive study of peer interactions in digital spaces over time.

Transformed Peer Constructs in Digital Communication

Guided by co-construction and the transformational framework, researchers have established the importance of digital communication in both promoting and inhibiting a variety of peer processes, and at times fundamentally transforming these processes altogether. In the following sections, we will review recent research on the role of social media on three of these important peer processes and constructs: peer influence, social connectedness versus isolation, and popularity/status. These sections will not serve as a comprehensive review but will instead highlight recent trends and future directions.

Peer Influence in Digital Realms

Susceptibility to peer influence peaks during the adolescent years (Steinberg & Monahan, 2007), due to an increased importance of peer relationships and status during this period (Prinstein & Dodge, 2008), as well as neurological development (Sommerville, 2013; Steinberg, 2008). Adolescents look to their peers as informative models for what behaviors are considered acceptable and desirable (injunctive norms), and to assess the how frequent various behaviors are (descriptive norms; Kallgren et al., 2000). Due to the highly public nature of many social media platforms, adolescents are able to spend hours examining the posted lives of their close friends and more distant peers. Because adolescents' social media feeds display the content produced by their wide

social networks, this could also serve to blur the line between proximal norms (their immediate friends) and more distal or global norms (peers in general). A great deal of research on peer influence has focused on how it can affect the development of problematic behaviors such as substance use (Geusens & Beullens, 2017a, 2017b). Adolescents who believe that their friends and peers are using substances (or hold positive views of substance use) are more likely to engage in this behavior themselves. Depictions of substance use are viewed on social media by both adolescents (Boyle et al., 2017; Carrotte et al., 2016) and college-aged adults (Moewaka Barnes et al., 2016; Morgan et al., 2010), and these depictions in turn relate to individuals' perception of injunctive norms (Boyle et al., 2016; Yoo et al., 2016) and their own substance use (Geusens & Beullens, 2017b). Substance use presentations on social media likely influence adolescents by changing their perception of the acceptability and prevalence of these behaviors. In one study, viewing peers' posts about substance use improved the perceived desirability and positive expectancies of substance use behaviors (Huang et al., 2014). Another study found that viewing friends' substance use posts on social media predicted elevated drinking one year later, and this relationship was mediated by more positive injunctive peer norms about alcohol (Nesi et al., 2017).

However, social media does not only influence adolescents by allowing them to observe their peers, but also permits adolescents to *be observed* by their peers as well. Adolescents are heavily influenced by the notion (accurate or inaccurate) that their activities are being viewed and judged by peers. Although the impact of the *imaginary audience* has been discussed for decades (Elkind, 1967), recent fMRI studies support the neurological underpinnings for this influence process. Simply being in the presence of peers increases adolescents' susceptibility to peer influence by increasing functioning in the regions of the brain responsible for social cognition and reward seeking (primarily the amygdala, striatum, and prefrontal cortex; Somerville, 2013; Steinberg, 2008). This increased focus on reward seeking in turn leads to greater risk-taking behavior (Chein et al., 2011; O'Brien et al., 2011). In offline contexts, peer presence is a fairly objective variable (for both adolescents themselves and inquiring researchers), but many of the features of social media outlined in the transformation framework (Nesi et al., 2018a) may amplify this experience. The availability and the publicness of social media means that peers can be "present" even when the adolescent is physically alone. Furthermore, the quantifiability of these networks, with a numeric quantity of followers and likes, could intensify peer influence. Recent fMRI studies have found that the neurological activation patterns underpinning peer influence when peers are physically present (Chein et al., 2011, Steinberg, 2008) also occur when peers are "present" via Instagram (Sherman, Hernandez, et al., 2018; Sherman et al., 2016), and the impact of digital peer influence is stronger for adolescents compared to young adults (Sherman, Greenfield, et al., 2018).

The studies highlighted above suggest that social media can extend the reach of peer influence beyond physical presence and interaction with peers. Future research can leverage the networked data available on these platforms to better understand the role of proximal and distal peers in influencing adolescents' behavior, and to operationalize different levels of peer connection and degrees of separation from each other in more detailed ways. For example, frequency of communication with a peer or even frequency of viewing a peer's posts might objectively and accurately assess proximity to that peer. Alternatively, metrics used in social network analyses such as network closure and centrality can be used to more clearly define proximal and distal peers (Hanneman & Riddle, 2011). This would allow researchers to go beyond simply asking adolescents to identify and rate their friends and peers, to directly assess with whom an adolescent digitally interacts and is connected. Directly assessing interactions (and observation) at the network level could greatly enhance our understanding of peer influence for a variety of important variables such as mental health, academic performance, and body image issues.

Social Connectedness and Isolation via Social Media

The role of social media in promoting (or inhibiting) social connectedness has received increasing research interest over the past several years. Social connectedness and a feeling of belonging is one of the primary benefits of peer relationships during adolescence, promoting positive psychosocial outcomes (Bradley & Inglis, 2012) and protecting against both externalizing and internalizing problems (Newman et al., 2007). As social media and digital communication increased in popularity, there was a great deal of speculation about whether these technologies would foster intimacy and connection with peers, or if the reductions in face-to-face interaction would actually diminish adolescents' sense of belongingness with peers (Allen et al., 2014). Some proposed that specific features of social media would provide opportunities to better connect with peers. In a series of interviews conducted with adolescents, Davis (2012) identified that frequent communication with friends through a variety of digital platforms promoted a sense of closeness with these peers. The ability to connect with peers despite physical distance is identified by adolescents as one of the primary benefits of digital communication (Ling, 2005). Indeed, adolescents exchange a great deal of emotionally supportive communication via social media (Siriaraya et al., 2011), using these platforms to reach out to peers in times of need (Ehrenreich et al., 2020).

Beyond using social media to directly interact with peers, there is also some evidence that posting broadly to social media platforms without directly connecting with a specific peer (such as a tweet or a status post on Facebook) can reduce loneliness in undergraduate samples (große Deters & Mehl, 2013; Lou et al., 2012). These findings highlight that the availability of

the peer network that social media affords adolescents translates into increases in connection and belongingness, and reductions in loneliness. Indeed, a meta-analysis examining 63 studies found that social media use was positively correlated with perceived social resources from peers (Domahidi, 2018). Interestingly, a recent study examining specific features of social media platforms found that image-based platforms in particular (e.g., Instagram and Snapchat) reduced users' loneliness (Pittman & Reich, 2016). The authors speculate that the emphasis on images facilitates the sense of a "social presence" with peers that is better able to promote connection, aligning with the perspective that the visualness of social media (Nesi et al., 2018a) may be an important feature for subsequent research into the role of social media in connection.

In contrast to the potential benefits of social media on adolescents' peer connection, a separate body of research has suggested that smartphones and social media use are actually reducing social connection and well-being, and account for overall increases in social isolation and loneliness among adolescents (Twenge, 2019). Population-level studies have indeed identified increasing trends in both suicidality and depression over the past decade (Mojtabai et al., 2016) that coincided with similar rises in cellphone ownership and social media use (Twenge et al., 2018). One meta-analysis found that social media use does indeed correlate with perceived loneliness (although the authors suggest that loneliness predicting social media use is the most likely direction of effect; Song et al., 2014). One large-scale cross-sectional study of young adults found that social media usage was a significant predictor of social isolation (Primack et al., 2017), and a micro-longitudinal study also found that time spent on social media predicts momentary feelings of social isolation (Kross et al., 2013). Furthermore, a few experimental studies have also supported the hypothesis that social media causally predicts maladjustment. College students who were instructed to limit their social media use to no more than 30 minutes per day reported lower levels of depression and loneliness compared to the control group (Hunt et al., 2018). Similarly, individuals randomly assigned to abstain from Facebook for one week reported being happier and less depressed by the end of the week (Tromholdt, 2016).

Although the immediate and constant connection that social media provides is appealing to adolescents (Davis, 2012), there is concern that time spent on these digital platforms comes at the cost of more intimate and socially valuable face-to-face time (Kraut et al., 1998). The conflicting evidence on the role of social media in supporting or inhibiting social connection likely reflects methodological limitations for disentangling direction of effect (but see George et al., 2021 and Twenge, 2019 for contrasting perspectives on this). However, it also likely reflects the reality that the way adolescents are using these technologies may be more important than the overall time spent online. In particular, it appears *passive social media use* (time spent scrolling through peers' posts without actually interacting or engaging with peers) may be

especially harmful for adolescents' well-being and sense of connection, compared to actively engaging with peers via social media. Time spent passively viewing peers' social media content indeed predicts reductions in perceived peer support (Frison & Eggermont, 2015), increases in social loneliness (Amichai-Hamgurger & Ben-Artzi, 2003; Matook et al., 2015) and a sense of disconnection from peers (Amichai-Hamgurger & Ben-Artzi, 2003) that likely grows out of feelings of envy and negative social comparison (de Vries et al., 2018; Vogel et al., 2015; Weinstein, 2017).

In contrast to the consistently negative correlates of passive social media use, active social media use (posting and directly interacting with peers) appears to have much more positive outcomes. Adolescents' public Facebook posts elicit positive feedback from peers, which in turn increases the perception of peer support (Frison & Eggermont, 2015). Similarly, experimentally increasing the frequency of posting publicly on Facebook reduced loneliness among college students (große Deters & Mehl, 2013). Social media can also facilitate more private, dyadic interactions among peers, which in turn predicts social connection and support (Frison et al., 2019; Frison & Eggermont, 2015). It is not surprising that the opportunities for actual peer interaction (active use) promote feelings of connection and support among adolescents; indeed this was identified by adolescents as a primary benefit (Davis, 2012). However, the conflicting findings between social media contributing to connection versus isolation highlights the importance of *how* adolescents are using these media. Future research must continue to focus on the specific online behaviors and usage patterns that foster connection, rather than simply assessing the amount of time spent using these platforms. The transformational framework model (Nesi et al., 2018a) may be especially useful in disentangling the conflicting findings that have emerged in this research area. By focusing on the specific features of social media platforms that may be shaping peer interactions in these contexts, researchers can better understand what promotes a sense of connection and peer support, and what may undermine it.

Popularity and Social Status

Because of its highly public nature and constant availability, social media may be especially important in shaping adolescent social status (Nesi & Prinstein, 2019). Although social status has always been an important component of adolescent peer relationships (Harter et al., 1996), social media both intensifies that importance and salience of peer status, and also provides new tools for managing and promoting status (Nesi et al., 2018b). The quantifiability of social networks makes social media especially important for adolescents' perceptions of status. Adolescents are highly aware of a variety of social media metrics assessing popularity (e.g., number of friends, number of likes or retweets; Madden et al., 2013).

Indeed, the preoccupation with popularity on social media may have reframed adolescents' traditional desire for popularity into aspirations for fame and stardom. Content analysis of movies and television viewed by adolescents has found that fame is increasingly portrayed as an important – and achievable – goal (Uhls & Greenfield, 2012), and adolescents who use social networking sites more frequently report a greater emphasis on the value of fame (Uhls et al., 2014). This emphasis on fame is somewhat attributable to the rise in popularity of reality television, wherein “ordinary people” ostensibly become famous for simply living their day-to-day lives (Rui & Stefanone, 2016). But adolescents are also highly cognizant of the potential to achieve celebrity simply by acquiring enough social media followers (e.g., “Instagram famous”; Marwick, 2015).

Although social media has made peer status and popularity much more salient, it has also provided a variety of tools adolescents can use in their attempt to improve their status. Prior to the advent of social media, many adolescents no doubt spent their free time envisioning moving up the social hierarchy. However, with the help of smartphones and social networking sites, adolescents can actively work toward improving their number of friends, and curating their self-presentation at all times. Adolescents are quite strategic in leveraging social media to promote a positive and popular image. Many adolescents go to great lengths to ensure that their self-presentation on social media receives positive peer response, including taking numerous photos to select the best image for posting (Yau & Reich, 2019), heavily editing photos to present an attractive image (Bell, 2019), curating the activities they disclose to create a fun and glamorous identity (Fardouly & Vartanian, 2016), and timing posts to maximize peer likes (Nesi & Prinstein, 2019). Indeed in her analyses of adolescents' digital presentations, Marwick (2013) suggests adolescents are engaging in “self-branding,” designed to market themselves using techniques similar to consumer products.

Although social media may provide a variety of new tools for managing one's social status, that does not mean that all adolescents leverage social media to achieve higher status. Using social media in ways that will promote one's social status requires a significant amount of social competence (Reich, 2017) and a great deal of effort (Yau & Reich, 2019). Popular adolescents are more likely to engage with their peers in ways that will promote their existing status, including both positive and aggressive behaviors. Furthermore, popular adolescents who are better able to self-monitor and regulate the online interactions are less likely to be the target of cybervictimization (Ranney & Troop-Gordon, 2020).

Opportunities and Challenges for Studying Peer Relationships in Digital Communication

As social media increases as an important context for adolescents to interact with their peers, it presents both opportunities and challenges for researchers seeking to better understand peer relationships. Perhaps the

greatest advantage of social media is that it permits researchers to connect with adolescents where their peer interactions are unfolding. While observing peer interactions used to require artificial lab settings (Piehler & Dishion, 2007) or naturalistic observation that was restricted in time and location (Snyder et al., 2010), researchers can now potentially observe peer interactions in digital spaces unobtrusively for extended periods of weeks, months, or years (Hendriks et al., 2018; Underwood et al., 2012). Furthermore, because much of adolescents' digital communication is centered around their smartphones, a variety of additional data collection technologies can be connected with peer relationships and interactions, including ecological momentary assessment (Duvenage et al., 2019), geolocation (Boettner et al., 2019), and even physical functioning such as sleep patterns (George et al., 2019). These technologies provide researchers with a unique opportunity to stitch together a more comprehensive understanding of how peer relationships are impacting adolescents' functioning and development.

Although the potential for these research methods is truly exciting, they are not without challenges and risk. First, there are important ethical considerations for researchers to capture the volume of data available in adolescents' digital spaces. Although adolescents seem fairly comfortable with digital observation (Meter et al., 2019), capturing digital communication nonetheless involves novel ethical considerations. Because this data collection can be conducted subtly from smartphones and social media apps, it is important that researchers clearly explain the details of digital data collection. Similarly, since social media data is inherently networked information, challenges arise for navigating when it is necessary to obtain peer consent (and whether that is even possible). This may require a dialogue with IRBs and granting institutions to better reflect the digital contexts in which adolescents live their lives. With tens of millions of adolescents permitting third parties to observe their social media data, these research activities are likely the very definition of minimal risk (see Ehrenreich et al., 2021 for a discussion about this).

Another challenge for researchers is understanding the hidden, guiding hand of the algorithms that decide what is presented on social media platforms. These algorithms constantly evaluate the adolescents' social media behavior to provide a stream of content tailored to the adolescent (and the marketing forces underlying many of these platforms). The role of these artificial intelligence and machine learning algorithms obfuscates peer processes occurring in these platforms. For example, one long-running research inquiry has examined whether adolescents' similarity to peers is best explained by socialization (learning how to behave from our peers) or selection (choosing peers who behave as we do). Evidence suggests that both of these processes likely work in tandem: adolescents select peers who are similar to them, who in turn further socialize their attitudes and behaviors. However, on social media these two processes become further intertwined (and blurred), as the content an adolescent views and posts themselves will in turn affect who and what is

highlighted in their social media feeds. In this way, the content that is socializing the adolescent is also being used to select the peers who will be suggested to them or featured on their feed, and the selection of this network is in turn dictating what content will be presented (and will thus socialize the adolescent further). And all of these “decisions” are being conducted by computer algorithms that are likely hidden to the adolescent. Indeed, much of TikTok’s explosion in popularity during 2020 is attributed to the advanced artificial intelligence recommendation engine that rapidly tailors what videos are suggested based on the user’s previous preferences (see Wang, 2020 for an overview of this technology). Much of the research outlined above highlights investigations into how social media features and content impact adolescents’ peer relationships. But *why* adolescents are exposed to features and content (e.g., why this specific video is presented at the top of their feed) is being guided by algorithms that are likely poorly understood by both adolescents and developmental scientists.

Future Directions

In their presentation of the transformational framework, Nesi and colleagues (2018a, 2018b) highlight seven features of the social media context that are important to understanding how peer relationships operate in these environments (asynchronicity, permanence, publicness, availability, cue absence, quantifiability, and visualness). Future research must move away from examining specific social media platforms, and instead focus on their features. Not only do social media platforms rise and fall in popularity, but they also change their form and features over time. Not only is Facebook less popular among adolescents than it was in 2012 (Rideout & Robb, 2018), but the platform itself is also quite different, with new features constantly being added. By focusing on features of social media that can be assessed on a variety of platforms (e.g., the emphasis on visual content versus textual, the degree of asynchronicity; Nesi et al., 2018a), researchers can better understand how the broader social media context is shaping adolescents’ peer relationships, and these impacts can be assessed more consistently across time.

But the importance of these features of the social media context may not just be limited to assessing the social media platforms themselves. Perhaps some (or all) of these features of the *context* are now reflected in fundamental changes in the *relationships* themselves. For example, prior to the advent of social media, moving into new stages of life often meant losing contact with peers from previous stages. Although an adult may have retained friends from middle or high school, it was perhaps unlikely that they kept tabs on the broader peer network from those years. However, with Facebook, Instagram, and other social networking sites, it is quite common for individuals to maintain a (perhaps tenuous) connection with these earlier peer networks.

Although the transformational framework suggests that a feature of the Facebook context is its permanence (e.g., photos and subsequent comments are retained indefinitely), by extension, relationships themselves may now reflect this feature (the relationship itself is now retained indefinitely).

It is possible that other features of social media may be redefining the features of peer relationships as well. For example, perhaps the cue absence permitted in social media is redefining how adolescents want to experience all relationship interactions. Alternatively, perhaps the publicness of social media has fostered the perception that relationships themselves should be experienced publicly. If this were the case, it would challenge the conventional adolescent developmental task of navigating intimate relationships traditionally characterized as a dyadic process. Similarly, there has been a great deal of concern about how digital communication may be undermining youth's development of more general social skills, such as navigating small talk and interpersonal interactions (Turkle, 2012). Whereas periods of downtime (e.g., waiting for a class to begin, standing in line at the supermarket) used to be opportunities to strike up a conversation with the stranger next to you, these moments are now often spent checking in with peers on one's phone. A student of mine once shared that she used her phone to avoid getting drawn into a conversation with her classmates, because she worried she wouldn't be able to end the conversation if it was awkward or boring. While the asynchronicity and availability of digital communication may permit adolescents to have social interactions on their own terms, perhaps it comes at the cost of learning to navigate challenging, awkward (and even boring) interactions. The seven features of social media outlined by the transformation framework (Nesi et al., 2018a, 2018b) provide an important advancement for the study of adolescents' interactions occurring via digital media, but they also provide guidance for future research seeking to understand how peer relationships themselves are fundamentally changing.

Finally, future research must increasingly focus on the behaviors and processes that are occurring in these platforms. In many ways, researchers' initial focus on the *quantity* of social media use has obfuscated our understanding of these contexts (such as the conflicting associations between social media and subsequent loneliness and mental health). Current research is illuminating the fact that time spent on social media is less important than how adolescents are using these platforms (e.g., Swirsky, Rosie & Xie, 2021). Researchers must continue to move away from overly simplistic metrics of social media use. Examinations about the amount of time spent on social media should be reframed into *how time is spent* on social media. Evaluating the number of friends and followers is likely less important than evaluating the interactions (and observation) of those peer networks. Luckily social media platforms provide a unique opportunity to naturalistically observe adolescents in these more nuanced ways.

Conclusion

Social media platforms have become an increasingly important context for adolescents' peer relationships. These platforms are reshaping the way that adolescents interact with and observe their peers. In many ways, social media has accomplished what social scientists have sought to do for years: it has established a platform that makes peer relationships quantifiable, networked, available to outside observers, and permanent so interactions can be scrutinized and analyzed after the fact. It is perhaps somewhat ironic that the features that make these platforms ideal for studying peer relationships are driving many of the changes occurring in these relationships. The publicness of these data allows researchers to observe teens more easily but does it come at the cost of intimate connections with peers? The quantifiability of social media may allow researchers to better understand social status hierarchies. But in doing so, does it change what these hierarchies mean to adolescents? Researchers are now presented with the opportunity to leverage these powerful new social tools to better understand adolescents' relationships but must simultaneously address how these tools are shifting how these relationships unfold and impact adolescents.

References

- Allen, K. A., Ryan, T., Gray, D. L., McInerney, D. M., & Waters, L. (2014). Social media use and social connectedness in adolescents: The positives and the potential pitfalls. *Australian Educational & Developmental Psychologist*, *31*(1), 18–31. <https://doi.org/10.1017/edp.2014.2>
- Amichai-Hamburger, Y., & Ben-Artzi, E. (2003). Loneliness and internet use. *Computers in Human Behavior*, *19*(1), 71–80. [https://doi.org/10.1016/S0747-5632\(02\)00014-6](https://doi.org/10.1016/S0747-5632(02)00014-6)
- Anderson, M., & Jiang, J. (2018). *Teens, social media & technology 2018*. Pew Research Center. <http://publicservicesalliance.org/wp-content/uploads/2018/06/Teens-Social-Media-Technology-2018-PEW.pdf>
- Bell, B. T. (2019). “You take fifty photos, delete forty nine and use one”: A qualitative study of adolescent image-sharing practices on social media. *International Journal of Child-Computer Interaction*, *20*, 64–71. <https://doi.org/10.1016/j.ijcci.2019.03.002>
- Bellmore, A. D., & Cillessen, A. H. (2006). Reciprocal influences of victimization, perceived social preference, and self-concept in adolescence. *Self and Identity*, *5*(3), 209–229. <https://doi.org/10.1080/15298860600636647>
- Boettner, B., Browning, C. R., & Calder, C. A. (2019). Feasibility and validity of geographically explicit ecological momentary assessment with recall-aided space-time budgets. *Journal of Research on Adolescence*, *29*(3), 627–645. <https://doi.org/10.1111/jora.12474>
- Boyle, S. C., Earle, A. M., LaBrie, J. W., & Ballou, K. (2017). Facebook dethroned: Revealing the more likely social media destinations for college students'

- depictions of underage drinking. *Addictive Behaviors*, *65*, 63–67. <https://doi.org/10.1016/j.addbeh.2016.10.004>
- Boyle, S. C., LaBrie, J. W., Froidevaux, N. M., & Witkovic, Y. D. (2016). Different digital paths to the keg? How exposure to peers' alcohol-related social media content influences drinking among male and female first-year college students. *Addictive Behaviors*, *57*, 21–29. <https://doi.org/10.1016/j.addbeh.2016.01.011>
- Bradley, G. L., & Inglis, B. C. (2012). Adolescent leisure dimensions, psychosocial adjustment, and gender effects. *Journal of Adolescence*, *35*(5), 1167–1176. <https://doi.org/10.1016/j.adolescence.2012.03.006>
- Carrotte, E. R., Dietze, P. M., Wright, C. J., & Lim, M. S. (2016). Who 'likes' alcohol? Young Australians' engagement with alcohol marketing via social media and related alcohol consumption patterns. *Australian and New Zealand Journal of Public Health*, *40*(5), 474–479. <https://doi.org/10.1111/1753-6405.12572>
- Chein, J., Albert, D., O'Brien, L., Uckert, K., & Steinberg, L. (2011). Peers increase adolescent risk taking by enhancing activity in the brain's reward circuitry. *Developmental Science*, *14*(2), F1–F10. <https://doi.org/10.1111/j.1467-7687.2010.01035.x>
- Choukas-Bradley, S., Nesi, J., Widman, L., & Higgins, M. K. (2019). Camera-ready: Young women's appearance-related social media consciousness. *Psychology of Popular Media Culture*, *8*(4), 473–481. <https://doi.org/10.1037/ppm0000196>
- Davis, K. (2012). Friendship 2.0: Adolescents' experiences of belonging and self-disclosure online. *Journal of Adolescence*, *35*, 1527–1536. <https://doi.org/10.1016/j.adolescence.2012.02.013>
- de Vries, D. A., Möller, A. M., Wieringa, M. S., Eigenraam, A. W., & Hamelink, K. (2018). Social comparison as the thief of joy: Emotional consequences of viewing strangers' Instagram posts. *Media Psychology*, *21*(2), 222–245. <https://doi.org/10.1080/15213269.2016.1267647>
- Domahidi, E. (2018). The associations between online media use and users' perceived social resources: A meta-analysis. *Journal of Computer-Mediated Communication*, *23*(4), 181–200. <https://doi.org/10.1093/jcmc/zmy007>
- Duvenage, M., Uink, B. N., Zimmer-Gembeck, M. J., Barber, B. L., Donovan, C. L., & Modecki, K. L. (2019). Ambulatory assessment of adolescent coping: It's a complicated process. *Journal of Research on Adolescence*, *29*(3), 578–594. <https://doi.org/10.1111/jora.12468>
- Ehrenreich, S. E., Beron, K. J., Burnell, K., Meter, D. J., & Underwood, M. K. (2020). How adolescents use text messaging through their high school years. *Journal of Research on Adolescence*, *30*(2), 521–540. <https://doi.org/10.1111/jora.12541>
- Ehrenreich, S. E., George, M., Burnell, K., & Underwood, M. K. (2021). Importance of digital communication in adolescents' development: Theoretical and empirical advancements in the last decade. *Journal of Research on Adolescence*, *31*(4), 928–943. <https://doi.org/10.1111/jora.12643>
- Ehrenreich, S. E., Underwood, M. K., & Ackerman, R. A. (2014). Adolescents' text message communication and growth in antisocial behavior across the first year of high school. *Journal of Abnormal Child Psychology*, *42*(2), 251–264. <https://doi.org/10.1007/s10802-013-9783-3>
- Elkind, D. (1967). Egocentrism in adolescence. *Child Development*, *38*(4), 1025–1034. <https://doi.org/10.2307/1127100>

- Erikson, E. (1968). *Identity: Youth and crises*. W. W. Norton & Company.
- Fardouly, J., & Vartanian, L. R. (2016). Social media and body image concerns: Current research and future directions. *Current Opinion in Psychology*, 9, 1–5. <https://doi.org/10.1016/j.copsyc.2015.09.005>
- Frison, E., Bastin, M., Bijttebier, P., & Eggermont, S. (2019). Helpful or harmful? The different relationships between private Facebook interactions and adolescents' depressive symptoms. *Media Psychology*, 22(2), 244–272. <https://doi.org/10.1080/15213269.2018.1429933>
- Frison, E., & Eggermont, S. (2015). Toward an integrated and differential approach to the relationships between loneliness, different types of Facebook use, and adolescents' depressed mood. *Communication Research*, 47(5), 701–728. <https://doi.org/10.1177/0093650215617506>
- George, M. J., Beron, K., Vollet, J., Burnell, K., Ehrenreich, S. E., & Underwood, M. K. (2021). Frequency of text messaging and adolescents' mental health symptoms across four years of high school. *JAMA Pediatrics*, 68(2), 324–330. <https://doi.org/10.1016/j.jadohealth.2020.06.012>
- George, M. J., Rivenbark, J. G., Russell, M. A., Ng'eno, L., Hoyle, R. H., & Odgers, C. L. (2019). Evaluating the use of commercially available wearable wristbands to capture adolescents' daily sleep duration. *Journal of Research on Adolescence*, 29(3), 613–626. <https://doi.org/10.1111/jora.12467>
- Geusens, F., & Beullens, K. (2017a). Strategic self-presentation or authentic communication? Predicting adolescents' alcohol references on social media. *Journal of Studies on Alcohol and Drugs*, 78(1), 124–133. <https://doi.org/10.15288/jsad.2017.78.124>
- Geusens, F., & Beullens, K. (2017b). The reciprocal associations between sharing alcohol references on social networking sites and binge drinking: A longitudinal study among late adolescents. *Computers in Human Behavior*, 73, 499–506. <https://doi.org/10.1016/j.chb.2017.03.062>
- große Deters, F., & Mehl, M. R. (2013). Does posting Facebook status updates increase or decrease loneliness? An online social networking experiment. *Social Psychological and Personality Science*, 4(5), 579–586. <https://doi.org/10.1177/1948550612469233>
- Hanneman, R. A., & Riddle, M. (2011). Concepts and measure for basic network analysis. In J. Scott & P. J. Carrington (Eds.), *The Sage handbook of social network analysis* (pp. 364–367). Sage.
- Harter, S., Stocker, C., & Robinson, N. S. (1996). The perceived directionality of the link between approval and self-worth: The liabilities of a looking glass self-orientation among young adolescents. *Journal of Research on Adolescence*, 6(3), 285–308.
- Hendriks, H., Van den Putte, B., Gebhardt, W. A., & Moreno, M. A. (2018). Social drinking on social media: Content analysis of the social aspects of alcohol-related posts on Facebook and Instagram. *Journal of Medical Internet Research*, 20(6), e226. <https://doi.org/10.2196/jmir.9355>
- Huang, G. C., Unger, J. B., Soto, D., et al. (2014). Peer influences: The impact of online and offline friendship networks on adolescent smoking and alcohol use. *Journal of Adolescent Health*, 54(5), 508–514. <https://doi.org/10.1016/j.jadohealth.2013.07.001>

- Hunt, M. G., Marx, R., Lipson, C., & Young, J. (2018). No more FOMO: Limiting social media decreases loneliness and depression. *Journal of Social & Clinical Psychology, 37*(10), 751–768. <https://doi.org/10.1521/jscp.2018.37.10.751>
- Kallgren, C. A., Reno, R. R., & Cialdini, R. B. (2000). A focus theory of normative conduct: When norms do and do not affect behavior. *Personality and Social Psychology Bulletin, 26*(8), 1002–1012. <https://doi.org/10.1177/01461672002610009>
- Kowalski, R. M., Giumetti, G. W., Schroeder, A. N., & Lattaner, M. R. (2014). Bullying in the digital age: A critical review and meta-analysis of cyberbullying among youth. *Psychological Bulletin, 140*(4), 1072–1137. <https://doi.org/10.1037/a0035618>
- Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukophadhyay, T., & Scherlis, W. (1998). Internet paradox: A social technology that reduces social involvement and psychological well-being? *American Psychologist, 53*(9), 1017–1031. <https://doi.org/10.1037/0003-066X.53.9.1017>
- Kraut, R., Kiesler, S., Boneva, B., Cummings, J., Helgeson, V., & Crawford, A. (2002). Internet paradox revisited. *Journal of Social Issues, 58*(1), 49–74. <https://doi.org/10.1111/1540-4560.00248>
- Kross, E., Verduyn, P., Demiralp, E., et al. (2013). Facebook use predicts declines in subjective well-being in young adults. *PLoS ONE, 8*(8), Article e69841. <https://doi.org/10.1371/journal.pone.0069841>
- La Greca, A. M., & Harrison, H. M. (2005). Adolescent peer relations, friendships, and romantic relationships: Do they predict social anxiety and depression?. *Journal of Clinical Child and Adolescent Psychology, 34*(1), 49–61. https://doi.org/10.1207/s15374424jccp3401_5
- Lenhart, A. (2015, April 9). *Teens, social media and technology overview 2015*. Pew Research Center. <http://www.pewinternet.org/2015/04/09/teens-social-media-technology-2015/>
- Lenhart, A., Ling, R., Campbell, S., & Purcell, K. (2010). *Teens and mobile phones*. Pew Research Center. <http://pewinternet.org/Reports/2010/Teens-and-Mobile-Phones.aspx>
- Ling, R. (2005). Mobile communications vis-à-vis teen emancipation, peer group integration, and deviance. In R. Harper, L. Palen, & A. Taylor (Eds.), *The inside text: Social, cultural, and design perspectives on SMS* (pp. 175–193). Springer.
- Lou, L. L., Yan, Z., Nickerson, A., & McMorris, R. (2012). An examination of the reciprocal relationship of loneliness and Facebook use among first-year college students. *Journal of Educational Computing Research, 46*(1), 105–117. <https://doi.org/10.2190/EC.46.1.e>
- Madden, M., Lenhart, A., Cortesi, S., et al. (2013, May 21). *Teens, social media, and privacy*. Pew Research Center. <http://www.pewinternet.org/2013/05/21/teens-social-media-and-privacy/>
- Marwick, A. E. (2013). *Status update: Celebrity, publicity, and branding in the social media age*. Yale University Press.
- Marwick, A. E. (2015). Instafame: Luxury selfies in the attention economy. *Public Culture, 27*(75), 137–160. <https://doi.org/10.1215/08992363-2798379>
- Matook, S., Cummings, J., & Bala, H. (2015). Are you feeling lonely? The impact of relationship characteristics and online social network features on loneliness.

- Journal of Management Information Systems*, 31(4), 278–310. <https://doi.org/10.1080/07421222.2014.1001282>
- Meter, D. J., Ehrenreich, S. E., Carker, C., Flynn, E., & Underwood, M. K. (2019). Older adolescents' understanding of participant rights in the BlackBerry Project, a longitudinal ambulatory assessment study. *Journal of Research on Adolescence*, 29(3), 662–674. <https://doi.org/10.1111/jora.12461>
- Moewaka Barnes, H., McCreanor, T., Goodwin, I., Lyons, A., Griffin, C., & Hutton, F. (2016). Alcohol and social media: Drinking and drunkenness while online. *Critical Public Health*, 26(1), 62–76. <https://doi.org/10.1080/09581596.2015.1058921>
- Mojtabai, R., Olfson, M., & Han, B. (2016). National trends in the prevalence and treatment of depression in adolescents and young adults. *Pediatrics*, 138(6), Article 320161878. <https://doi.org/10.1542/peds.2016-1878>
- Morgan, E. M., Snelson, C., & Elison-Bowers, P. (2010). Image and video disclosure of substance use on social media websites. *Computers in Human Behavior*, 26(6), 1405–1411. <https://doi.org/10.1016/j.chb.2010.04.017>
- Nesi, J., Choukas-Bradley, S., & Prinstein, M. J. (2018a). Transformation of adolescent peer relations in the social media context: Part 1 – A theoretical framework and application to dyadic peer relationships. *Clinical Child and Family Psychology Review*, 21(3), 267–294. <https://doi.org/10.1007/s10567-018-0261-x>
- Nesi, J., Choukas-Bradley, S., & Prinstein, M. J. (2018b). Transformation of adolescent peer relations in the social media context: Part 2 – Application to peer group processes and future directions for research. *Clinical Child and Family Psychology Review*, 21(3), 295–319. <https://doi.org/10.1007/s10567-018-0262-9>
- Nesi, J., & Prinstein, M. J. (2019). In search of likes: Longitudinal associations between adolescents' digital status seeking and health-risk behaviors. *Journal of Clinical Child and Adolescent Psychology*, 48(5), 740–748. <https://doi.org/10.1080/15374416.2018.1437733>
- Nesi, J., Rothenberg, W. A., Hussong, A. M., & Jackson, K. M. (2017). Friends' alcohol-related social networking site activity predicts escalations in adolescent drinking: Mediation by peer norms. *Journal of Adolescent Health*, 60(6), 641–647. <https://doi.org/10.1016/j.jadohealth.2017.01.009>
- Newman, B. M., Lohman, B. J., & Newman, P. R. (2007). Peer group membership and a sense of belonging: Their relationship to adolescent behavior problems. *Adolescence*, 42(166), 241–263. <http://www.ncbi.nlm.nih.gov/pubmed/17849935>
- O'Brien, L., Albert, D., Chein, J., & Steinberg, L. (2011). Adolescents prefer more immediate rewards when in the presence of their peers. *Journal of Research on Adolescence*, 21(4), 747–753. <https://doi.org/10.1111/j.1532-7795.2011.00738.x>
- Piehler, T. F., & Dishion, T. J. (2007). Interpersonal dynamics within adolescent friendships: Dyadic mutuality, deviant talk, and patterns of antisocial behavior. *Child Development*, 78(5), 1611–1624. <https://doi.org/10.1111/j.1467-8624.2007.01086.x>
- Pittman, M., & Reich, B. (2016). Social media and loneliness: Why an Instagram picture may be worth more than a thousand Twitter words. *Computers in Human Behavior*, 62, 155–167. <https://doi.org/10.1016/j.chb.2016.03.084>

- Primack, B. A., Shensa, A., Sidani, J. E., et al. (2017). Social media use and perceived social isolation among young adults in the U.S. *American Journal of Preventative Medicine*, 53(1), 1–8. <https://doi.org/10.1016/j.amepre.2017.01.010>
- Prinstein, M. J., & Dodge, K. A. (2008). *Understanding peer influence in children and adolescents*. Guilford Press.
- Ranney, J. D., & Troop-Gordon, W. (2020). The role of popularity and digital self-monitoring in adolescents' cyberbehaviors and cybervictimization. *Computers in Human Behavior*, 102, 293–302. <https://doi.org/10.1016/j.chb.2019.08.023>
- Reich, S. M. (2017). Connecting offline social competence to online peer interactions. *Psychology of Popular Media Culture*, 6(4), 291–310. <https://doi.org/10.1037/ppm0000111>
- Rideout, V., & Robb, M. B. (2018). *Social media, social life: Teens reveal their experiences*. Common Sense Media. <https://www.commonsensemedia.org/research/social-media-social-life-2018>
- Rui, J. R., & Stefanone, M. A. (2016). The desire for fame: An extension of uses and gratifications theory. *Communication Studies*, 67(4), 399–418. <https://doi.org/10.1080/10510974.2016.1156006>
- Sherman, L. E., Hernandez, L. M., Greenfield, P. M., & Dapretto, M. (2018). What the brain 'likes': Neural correlates of providing feedback on social media. *Social Cognitive and Affective Neuroscience*, 13(7), 699–707. <https://doi.org/10.1093/scan/nsy051>
- Sherman, L. E., Greenfield, P. M., Hernandez, L. M., & Dapretto, M. (2018). Peer influence via instagram: Effects on brain and behavior in adolescence and young adulthood. *Child Development*, 89(1), 37–47. <https://doi.org/10.1111/cdev.12838>
- Sherman, L. E., Payton, A. A., Hernandez, L. M., Greenfield, P. M., & Dapretto, M. (2016). The power of the like in adolescence: Effects of peer influence on neural and behavioral responses to social media. *Psychological Science*, 27(7), 1027–1035. <https://doi.org/10.1177/09567976166645673>
- Siriaraya, P., Tang, C., Ang, C. S., Pfeil, U., & Zaphiris, P. (2011). A comparison of empathic communication pattern for teenagers and older people in online support communities. *Behaviour & Information Technology*, 30(5), 617–628. <https://doi.org/10.1080/0144929X.2011.582146>
- Snyder, J., McEachern, A., Schrepferman, L., et al. (2010). Contribution of peer deviancy training to the early development of conduct problems: Mediators and moderators. *Behavior Therapy*, 41(3), 317–328. <https://doi.org/10.1016/j.beth.2009.05.001>
- Somerville, L. H. (2013). The teenage brain sensitivity to social evaluation. *Current Directions in Psychological Science*, 22(2), 121–127. <https://doi.org/10.1177/0963721413476512>
- Song, H., Hayeon, S., Anne, Z. S., et al. (2014). Does Facebook make you lonely? A meta analysis. *Computers in Human Behavior*, 36, 446–452. <https://doi.org/10.1016/j.chb.2014.04.011>
- Steinberg, L. (2008). A social neuroscience perspective on adolescent risk-taking. *Developmental Review*, 28(1), 78–106. <https://doi.org/10.1016/j.dr.2007.08.002>

- Steinberg, L., & Monahan, K. C. (2007). Age differences in resistance to peer influence. *Developmental Psychology, 43*(6), 1531–1543. <https://doi.org/10.1037/0012-1649.43.6.1531>
- Steinsbekk, S., Wichstrøm, L., Stenseng, F., Nesi, J., Hygen, B. W., & Skalická, V. (2021). The impact of social media use on appearance self-esteem from childhood to adolescence: A 3-wave community study. *Computers in Human Behavior, 114*, Article 106528. <https://doi.org/10.1016/j.chb.2020.106528>
- Subrahmanyam, K., Reich, S. M., Waechter, N., & Espinoza, G. (2008). Online and offline social networks: Use of social networking sites by emerging adults. *Journal of Applied Developmental Psychology, 29*(6), 420–433. <https://doi.org/10.1016/j.appdev.2008.07.003>
- Subrahmanyam, K., Smahel, D., & Greenfield, P. (2006). Connecting developmental constructions to the internet: Identity presentation and sexual exploration in online teen chat rooms. *Developmental Psychology, 42*(3), 395–406. <https://doi.org/10.1037/0012-1649.42.3.395>
- Swirsky, J. M., Rosie, M., & Xie, H. (2021). Adjustment correlates of social media engagement among early adolescents. *Journal of Youth and Adolescence, 50*, 2265–2278. <https://doi.org/10.1007/s10964-021-01421-3>
- Tromholt, M. (2016). The Facebook experiment: Quitting Facebook leads to higher levels of well-being. *Cyberpsychology, Behavior, and Social Networking, 19*(11), 661–666. <https://doi.org/10.1089/cyber.2016.0259>
- Turkle, S. (2012). *Alone together: Why we expect more from technology and less from each other*. Basic Books.
- Twenge, J. M. (2019). More time on technology, less happiness? Associations between digital-media use and psychological well-being. *Current Directions in Psychological Science, 28*(4), 372–379. <https://doi.org/10.1177/0963721419838244>
- Twenge, J. M., Joiner, T. E., Rogers, M. L., & Martin, G. N. (2018). Increases in depressive symptoms, suicide-related outcomes, and suicide rates among U.S. adolescents after 2010 and links to increased new media screen time. *Clinical Psychological Science, 6*(1), 3–17. <https://doi.org/10.1177/2167702617723376>
- Uhls, Y. T., & Greenfield, P. M. (2012). The value of fame: Preadolescent perceptions of popular media and their relationship to future aspirations. *Developmental Psychology, 48*(2), 315–326. <https://doi.org/10.1037/a0026369>
- Uhls, Y. T., Zgourou, E., & Greenfield, P. M. (2014). 21st century media, fame, and other future aspirations: A national survey of 9–15 year olds. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace, 8*(4). <https://doi.org/10.5817/CP2014-4-5>
- Underwood, M. K., Brown, B. B., & Ehrenreich, S. E. (2018). Social media and peer relations. In K. H. Rubin, W. M. Bukowski, & B. Laursen (Eds.), *Handbook of peer interactions, relationships, and groups* (2nd ed.; pp. 533–551). Guilford Press.
- Underwood, M. K., Rosen, L. H., More, D., Ehrenreich, S. E., & Gentsch, J. K. (2012). The BlackBerry project: Capturing the content of adolescents' text messaging. *Developmental Psychology, 48*(2), 295–302. <https://doi.org/10.1037/a0025914>
- Valkenburg, P. M., & Peter, J. (2007). Preadolescents' and adolescents' online communication and their closeness to friends. *Developmental Psychology, 43*(2), 267–277. <https://doi.org/10.1037/0012-1649.43.2.267>

- Vannucci, A., & McCauley Ohannessian, C. M. (2019). Social media use subgroups differentially predict psychosocial well-being during early adolescence. *Journal of Youth and Adolescence*, 48(8), 1469–1493. <https://doi.org/10.1007/s10964-019-01060-9>
- Vogel, E. A., Rose, J. P., Okdie, B. M., Eckles, K., & Franz, B. (2015). Who compares and despairs? The effect of social comparison orientation on social media use and its outcomes. *Personality and Individual Differences*, 86, 249–256. <https://doi.org/10.1016/j.paid.2015.06.026>
- Wang, C., (2020, June 7). *Why TikTok made its user so obsessive? The AI algorithm that got you hooked*. Towards Data Science. <https://towardsdatascience.com/why-tiktok-made-its-user-so-obsessive-the-ai-algorithm-that-got-you-hooked-7895bb1ab423>
- Weinstein, E. (2017). Adolescents' differential responses to social media browsing: Exploring causes and consequences for intervention. *Computers in Human Behavior*, 76, 396–405. <https://doi.org/10.1016/j.chb.2017.07.038>
- Wentzel, K. R., Jablansky, S., & Scalise, N. R. (2021). Peer social acceptance and academic achievement: A meta-analytic study. *Journal of Educational Psychology*, 113(1), 157–180. <https://doi.org/10.1037/edu0000468>
- Wright, M. F., & Li, Y. (2011). The associations between young adults' face-to-face prosocial behaviors and their online prosocial behaviors. *Computers in Human Behavior*, 27, 1959–1962. <https://doi.org/10.1016/j.chb.2011.04.019>
- Yau, J. C., & Reich, S. M. (2019). “It’s just a lot of work”: Adolescents' self-presentation norms and practices on Facebook and Instagram. *Journal of Research on Adolescence*, 29(1), 196–209. <https://doi.org/10.1111/jora.12376>
- Yoo, W., Yang, J., & Cho, E. (2016). How social media influence college students' smoking attitudes and intentions. *Computers in Human Behavior*, 64, 173–182. <https://doi.org/10.1016/j.chb.2016.06.061>