Peer Experiences via Social Media

Jacqueline Nesi^{1,2}, Rebecca Dredge³, Anne J. Maheux⁴, Savannah R. Roberts⁴,

Kara A. Fox⁵, & Sophia Choukas-Bradley⁴

¹Warren Alpert Medical School of Brown University, Dept. of Psychiatry & Human Behavior; jacqueline_nesi@brown.edu; ORCID iD: 0000-0001-5869-6360

²Bradley/Hasbro Research Center, Rhode Island Hospital

³Katholieke Universiteit Leuven, School for Mass Communication Research

⁴University of Delaware, Department of Psychological and Brain Sciences

⁵University of North Carolina at Chapel Hill, Department of Psychology and Neuroscience

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Synopsis

The transformation framework (Nesi et al., 2018a, 2018b) describes the ways in which the features of social media shape adolescents' peer experiences. In the current chapter, we build on this work in three ways. First, we expand on our previous conceptualization to consider the role of algorithms as a key feature of social media. Second, we offer an updated review of the ways in which social media transforms a range of peer experiences, including peer status, peer influence, victimization, and other interpersonal behaviors and skills. Finally, we describe the translational implications of the transformation framework for adolescents' educators, providers, and parents.

Keywords: Adolescents, Co-Rumination, Cybervictimization, Digital Media, Online, Peer Influence, Peer Relationships, Peer Status, Reassurance-Seeking, Social Comparison, Social Competence, Social Media

Peer Experiences via Social Media

Decades of research support the critical role of peer relationships in youths' development (Bukowski et al., 2018). In recent years, however, there has been a seismic shift in the landscape of adolescents' peer relationships. The advent of social media has profoundly reshaped youths' social worlds, with social media platforms now representing a primary context in which peer experiences occur. Nearly 97% of youth report using some form of social media, with 70% reporting that they use social media multiple times per day (Anderson & Jiang, 2018; Rideout & Robb, 2018). It is impossible to understand the nature of youths' peer interactions without considering the role of social media. Previously, we proposed a *transformation framework* (Nesi et al., 2018a, 2018b), arguing that the unique features of the social media context are transforming adolescents' peer experiences. We suggested that the social media context directly shapes the ways that youth interact, creating new and different experiences online. In the current chapter, we build on this initial work in three ways. First, we expand on our previous conceptualization of social media to consider a new feature: that social media is *algorithmic*. Second, we consider the ways in which social media transforms a number of peer experiences, providing an updated review of the rapidly expanding literature in these areas, focusing on exemplary studies. Third, we describe the translational implications of the transformation framework. We argue that by understanding the ways in which peer experiences are shaped by the social media environment, we can better support youth in using social media in healthy and effective ways.

Due to the rapidly evolving ecosystem of digital tools, the definition of "social media" has required frequent revision and adaptation over time. Drawing on prior conceptualizations of

social media, and aiming to account for future iterations of social media, Carr and Hayes, 2015 have recently offered a broad, “atemporal” definition:

Social media are Internet-based channels that allow users to opportunistically interact and selectively self-present, either in real-time or asynchronously, with both broad and narrow audiences who derive value from user-generated content and the perception of interaction with others. (p. 50)

An important distinction between this definition and other slightly more general definitions (e.g., “digital technologies that allow users to connect, interact, produce, and share content”; Lewis, 2009) is the provision that interaction can occur “with both broad and narrow audiences.”

Although Carr and Hayes (2015) suggest that this might preclude such tools as text messaging and e-mail, we argue that in some cases – particularly for adolescents – such messaging *can* occur with a broad audience. “Group chats,” or group messaging threads containing three or more people, are a key component of many adolescents’ social lives, delineating cliques and in some cases, creating opportunities for exclusion. For purposes of the current chapter, we rely on Carr and Hayes’ (2015) definition, focusing on platforms that have been the emphasis of both public debate and the majority of contemporary peer relations scholarship on “social media” (e.g., Instagram, Facebook, Snapchat, TikTok, Twitter). However, in cases where relevant, we also consider messaging tools, such as text messaging and WhatsApp.

Note that the goal of this chapter is not to provide a comprehensive or systematic review of the literature on adolescent social media use and peer experiences. Rather, our goal is to expand and build upon our prior transformation framework, highlighting key studies in support of this effort. The majority of our discussion focuses on adolescents, broadly defined to include youth between the ages of roughly 11 and 18; thus, we use the term “youth” in this chapter, we are referring to adolescents, broadly defined, except where otherwise specified. Adolescence represents a critical period for the examination of peer relations via social media: during this

developmental stage, youth become increasingly invested in their relationships with peers, showing heightened sensitivity to social evaluation and establishing more complex and intimate relationships (Brown & Larson, 2009; Parker et al., 2015; Steinberg, 2005). It is also the period when many youth begin using social media regularly (Rideout & Robb, 2019).

An Updated Transformation Framework

In our original theoretical review (Nesi et al., 2018a, 2018b), we offered a framework for understanding the role of social media in adolescents' peer experiences. Drawing on multidisciplinary scholarship across the fields of organizational and developmental psychology, computer-mediated communication, and media effects (e.g., boyd, 2010; McFarland & Ployhart, 2015; Subrahmanyam & Smahel, 2011), we argued that social media represents a distinct interpersonal context. Furthermore, in line with 'affordances' approaches (e.g., boyd, 2010; Moreno & Uhls, 2019), we suggested that this context is composed of a number of unique *features*, and that these features shape youths' peer experiences as they occur online.

As noted by prior social media theories (i.e., co-construction models; Subrahmanyam et al., 2006; Subrahmanyam & Greenfield, 2008), adolescents actively construct their media environments to navigate the same developmental tasks that have always been central for youth in this developmental period – e.g., establishing intimate relationships, building a cohesive identity, navigating independence from adult figures. However, we suggest that the features comprising this new social context actually *transform* adolescents' peer experiences in important ways, including by changing the frequency or amplifying the intensity of interactions, altering the qualitative nature of experiences, and creating new opportunities for compensatory behaviors (i.e., those that would have been possible but unlikely offline) and entirely novel behaviors (i.e., those that would have been impossible offline). Through a review of prior scholarship across

disciplines, we described seven features of social media that shape adolescents' experiences in this context. We noted that social media, in comparison to traditional, in-person interactions, tended to be more: *public, permanent, asynchronous, available, absent of cues, quantifiable, and visual* (see Table 1).

Since our original conceptualization, social media has continued to increase in number, complexity, and reach. Along with this growth has come heightened controversy over the many challenges inherent to sites that reach billions of users everyday: concerns about effects on adolescents' mental health, the spread of misinformation that has societal impacts on everything from elections to vaccine uptake, exposure to problematic or dangerous content, and design "hacks" that keep youth engaged, or even addicted, for hours at a time. As these challenges reach the forefront of both scholarly and public conversation, the social media algorithms that drive these controversies become more sophisticated. The fastest growing social media site in the U.S. is currently TikTok, which, perhaps more than other sites before it, has harnessed powerful artificial intelligence (AI) to drive user engagement. Without an individual even needing to create a profile, follow other users, or select interests or preferences, the app builds a complex recommendation model that feeds an endless stream of tailored video clips. This design represents the epitome of an increasingly central feature of social media: it is *algorithmic*.

The *algorithmic* nature of social media refers to the extent to which the user's experience is determined by external design choices and underlying computational mechanisms, typically designed to maximize user engagement. Social media algorithms have a powerful influence on user behavior, determining the type of content that is displayed, and guiding adolescents toward certain choices. Furthermore, the algorithmic nature of social media likely

impacts the amount of time adolescents spend on social media, the types of content they share, and even cultural norms, through the selection and promotion of certain types of posts.

Transformation of Peer Experiences via Social Media

Beyond the algorithmic nature of social media, a number of other features shape youths' behavior (e.g., publicness, permanence, and quantifiability). In our prior review (Nesi et al., 2018a, 2018b), we outlined the ways in which these features of social media may transform traditional peer experiences across multiple domains. In just a few years, the literature in this area has expanded exponentially, offering new insights into the role of social media in adolescents' peer relationships. Thus, here we offer an updated review of recent and exemplary studies. We expand on our prior work, describing how the features of social media shape peer interactions across multiple domains: peer status, influence, victimization, and a range of other interpersonal behaviors and skills.

Peer Status

Peer status plays a pivotal role in adolescent development. Research on peer relations has identified two distinct forms of peer status in the offline context: *likeability* and *peer-perceived popularity* (Cillessen & Rose, 2005; van den Berg et al., 2020). *Likeability*, or social preference, is defined by peer acceptance, higher levels of prosocial behavior, and character traits such as agreeableness, while *popularity* reflects one's social reputation or high position in a social hierarchy and depends on visibility, power, and influence. During adolescence, youth become increasingly attuned to peer feedback and social evaluative concerns (Guyer et al., 2014), and peer-perceived popularity is valued over likeability. Adolescents prioritize status attainment in their decisions over other domains like friendship, achievement, and rule adherence (LaFontana & Cillessen, 2010). Adolescents who are high in peer-perceived popularity display increased

aggressive behavior (Cillessen & Rose, 2005) and are often disliked by their peers (Parkhurst & Hopmeyer, 1998). Furthermore, peer-perceived popularity is associated with greater risk for health-risk behaviors, such as substance use and risky sexual behaviors (Prinstein et al., 2011).

The features of social media create an environment in which this type of peer status (i.e., peer-perceived popularity) is dominant. Social media encourages status-seeking in that it is driven by what is most visible: in recent years, platforms have become increasingly algorithmic, selecting and promoting certain content to users to keep them engaged (Cotter, 2019). This content is often chosen based on what is viewed and interacted with the most by other people. As such, algorithms may also play a role in setting behavior norms on social media, as users attempt to emulate content or content creators that are most successful on the platforms – a *distinctive ideal* most promoted by the algorithms – to gain status for themselves (Bucher, 2012; Kennedy, 2020). Additionally, as outlined in the transformation framework, features of social media like quantifiability, visualness, publicness, and permanence contribute to amplify adolescents' awareness of, attention to, and desire for higher status (Nesi et al., 2018b). The quantifiability of social media, through metrics like the numbers of likes, comments, views, and followers, allow users to gauge their own statuses in a novel, concrete way. Visualness, permanence, and cue absence create opportunities for the undetectable surveillance of peers, where adolescents can spend time viewing photos and profiles and gathering social information about high-status peers. Asynchronicity allows for greater curation of self-presentation and reputation by giving time to decide what to say and post for optimal social rewards.

Social media's emphasis on peer-perceived popularity is further bolstered by the altered form of likeability in the online environment. Prosocial behavior online may take the form of kind, supportive messages or comments. It may also take the form of engagement in likeable or

prosocial actions offline, which are then posted and shared online. Yet, the fact that the great majority of these interactions are public and visible to others complicates the motivations and subsequent consequences of these actions. Perhaps such comments are motivated by wanting reciprocal online engagement, or the posting about good deeds online is less about the deed itself but rather more to “show” others their “likeable” behavior. It may even be motivated by a desire to gain likes, shares, and reposts, or even to “go viral,” paradoxically contributing further to the drive for peer-perceived popularity. As such, likeability and peer-perceived popularity seem to blend together online, the implications of which have yet to be explored.

Obtaining likes on social media posts activates brain regions associated with reward processing (Sherman et al., 2016), which underscores why adolescents may engage in *digital status seeking*, or the investment of effort into accumulating social media-based indicators of peer status (Nesi & Prinstein, 2019), despite the potential for a range of negative consequences. Digital status seeking is associated prospectively with increases in health-risk behaviors (e.g., substance use) beyond the effects of offline status seeking (Nesi & Prinstein, 2019). Some adolescents may go to extreme lengths to obtain indicators of status, engaging in dangerous or risky stunts or social media “challenges” for views or virality. Additionally, selecting and presenting an online image that is deceptive in order to get more likes (i.e. filtering photos to look more attractive or remove imperfections), regardless of the amount of positive feedback received, has been shown to predict weakened feelings of belonging among peers over time (Dumas et al., 2020). Lower peer belonging, in turn, predicts more deceptive like-seeking behavior (Dumas et al., 2017). The features of social media create an environment in which status seeking behaviors may be difficult to avoid.

The online pursuit of status may be associated with increased aggressive behavior. In fact, some cyberbullying perpetration may be motivated by desire for status, and successful in ways that traditional bullying is not: one study suggest that cyberbullying, but not traditional bullying, is associated with increases in popularity over time (Wegge et al., 2016). However, perceived popularity does not necessarily precede cyberbullying perpetration (Wegge et al., 2016). This is novel in the online context, as offline, it is not the *pursuit* of popularity but popularity in itself that is associated with both perpetration and victimization of aggression (Cillessen & Rose, 2005; Gangel et al., 2017).

By way of social media's visualness and publicness, some adolescents may develop an ongoing awareness and/or anxiety about how their physical appearances will be captured and represented on social media, and what the subsequent effects on their social reputations will be. This appearance-related social media consciousness (ASMC) has been found to be associated with depressive symptoms among U.S. adolescents (Choukas-Bradley et al., 2018, 2020). Beyond concerns about appearance, similar processes may play out on social media around a more general desire to showcase one's popularity or status. For example, when youth are at social events, they may become more concerned about how the event will appear when photos are displayed on social media, rather than the event itself (Choukas-Bradley et al., 2018). Youth may even be compelled to plan social events, or act as if they are "having fun," for the purposes of projecting these experiences onto social media, so as to increase the appearance of social status.

The publicness, permanence, and quantifiability of social media create a social feedback loop that is highly visible and concrete. When youth post content, they can immediately view the feedback they received in the form of likes, comments, and shares. If a post does not achieve the

expected or desired feedback, this can amplify feelings of rejection. Indeed, adolescents may take down posts if they feel they haven't gotten a sufficient number of likes (Nesi & Prinstein, 2019). For adolescents who are less popular or rejected among their peers, online social comparisons may often take the form of "upward" comparisons, or those in which the target of comparison is seen to be better off than oneself. Perhaps for this reason, prior work suggests that cross-sectional associations between social media-based social comparison and depressive symptoms are stronger among youth lower in peer-perceived popularity (Nesi & Prinstein, 2015). Social comparison orientation has been shown to be related to fear of missing out (FoMO), or the fear one has that important social experiences are happening while they are absent. Both social comparison and FoMO are linked to increased loneliness and lower life satisfaction (Przybylski et al., 2013; Reer et al., 2019), showing how concern for social status has new, unique implications for adolescent psychosocial wellbeing in the context of social media (i.e., through the ability to easily access social information about peers' activities). FoMO in particular has been found to serve a mediating role between social needs, such as need for popularity, and amount of social media engagement, suggesting that evaluation or promotion of one's social status may be a primary motivator for using social media (Beyens et al., 2016). As research has yielded mixed conclusions on the effects of time spent using social media on mental health, examining underlying mechanisms such as these may be a fruitful direction for future work.

Although social media may amplify the experience of rejection or exclusion for low-status adolescents, it may also provide compensatory benefits for youth who are rejected offline. That is, the publicness, availability, and cue absence associated with social media create new opportunities for "online-only friendships," or friends who youth have never met in person

(Marchant et al., 2017). Online-only friendships are common among adolescents, and may even protect against suicidal ideation by buffering the effects of social stress (Massing-Schaffer et al., 2020). Such experiences would not have been possible before the advent of social media.

Peer Influence

Another major area of research within the field of adolescent peer relations concerns peer influence – a set of processes in which peers (typically friends) influence one another’s attitudes and behaviors over time (for a review, see Brechwald & Prinstein, 2011). These processes may occur in new and different ways via social media (for a thorough review, see Choukas-Bradley & Nesi, 2020). According to peer influence theories developed prior to the ubiquity of social media use, adolescents may conform to social norms to receive social rewards among peers, such as increased social status (Brechwald & Prinstein, 2011). Biological changes that occur during adolescence, such as pubertal changes and rapid development in the brain’s socio-affective circuitry, are believed to heighten adolescents’ response to social rewards (Somerville, 2013; Steinberg, 2008). In turn, such social rewards may improve adolescents’ positive sense of identity (Brechwald & Prinstein, 2011). Decades of research on offline peer relations have found that youth are influenced by their peers’ substance use, deviant behaviors, academic behaviors, internalizing symptoms, prosocial behaviors, and weight-related behaviors, among others (see Brechwald & Prinstein, 2011).

The transformation framework highlights several ways in which social media may transform adolescents’ experiences with peer influence (Nesi et al., 2018a, 2018b). For example, the publicness, permanence, and availability of social media allow adolescents to be exposed to peers’ behaviors – via photos, videos, and text – with unprecedented volume and frequency, and at all hours of the day. Previously private behaviors may be broadcast publicly to a wider peer

audience, including those outside of one's friend group. For example, a dyad or small group of individuals engaging in alcohol use may post photos on social media, or a teen may publicly post information about their depressive symptoms or self-injury. In a pre-social media era, this information may have remained private or shared with only one's closest friends. Furthermore, the algorithmic nature of social media may increase the likelihood that adolescents are exposed to certain types of posts. As posts receive more likes, comments and views, they are more likely to appear on an individual's "feed" or "suggestions." This may amplify the peer influence process. The current language of "going viral" captures the rapid and widespread distribution of content that is now possible in an online world. Moreover, youth can now view quantifiable indicators of the behaviors and attitudes of which their peers approve. For example, if posts related to substance use receive large numbers of likes or positive comments, this signals peer approval, which may encourage engagement in these behaviors. This increased exposure to content depicting certain behaviors, combined with peer feedback endorsing it, may contribute to adolescents' internalization of social norms (Choukas-Bradley & Nesi, 2020). Furthermore, social media's cue absence and asynchronicity may lead youth to feel more disinhibited, and thus willing to disclose information about themselves that they may have been reluctant to share face-to-face.

One widely-publicized experimental study sheds light on the processes implicated in online peer influence. Sherman and colleagues (2016) examined behavioral and neural responses when U.S. adolescents aged 13–18 conformed to peers in a task designed to mimic Instagram. Adolescents were more likely to "like" photos that had been experimentally manipulated to appear to have more likes. Additionally, when adolescents viewed photos with higher numbers of likes, they showed greater activity in neural regions implicated in reward processing (Sherman

et al., 2016). These findings highlight adolescents' desires to conform to peers, while also providing preliminary evidence for the neural rewards associated with conformity. Another key finding was adolescents' decreased activity in the cognitive control network when viewing risky photos (Sherman et al., 2016). The developmental timing of adolescent brain development, in which the limbic system matures before the cognitive control network, has been proposed as a key biological underpinning of why adolescents may engage in heightened risk behaviors in the context of peers (Steinberg, 2008). A follow-up study that included undergraduate students (Sherman et al., 2018) suggests that the patterns observed in the original Sherman et al. (2016) study may be especially pronounced during middle adolescence.

Although research on online peer influence is in its infancy, several longitudinal studies provide preliminary empirical support for peer influence occurring via social media. Substance use has been the most commonly investigated outcome. For example, in a sample of U.S. high school-aged adolescents, exposure to friends' alcohol-related social media content was longitudinally associated with adolescents' initiation of drinking and binge drinking one year later, controlling for several other risk factors (Nesi, Rothenberg, et al., 2017). Importantly, these longitudinal associations were mediated by adolescents' beliefs that their peers approved of alcohol use, providing support for the idea that social media posts may contribute to social norms. Another longitudinal study highlights the interplay of one's own and others' public social media posts in shaping norms. This study of Flemish adolescents found that youth who posted alcohol-related content showed more positive alcohol-related attitudes one year later, and that this effect was amplified among those who were also exposed to peers' alcohol-related posts (Geusens & Beullens, 2019). A similar pattern was found in a longitudinal study of U.S. first-year college students, in which exposure to peers' alcohol-related content predicting drinking

behavior six months later, with the effects partially mediated by perceived norms (Boyle et al., 2016). Importantly, these associations were revealed after controlling for offline peer influence, in the form of adolescents' reports of their peers' actual alcohol use, providing preliminary support for the idea of the amplification of peer processes online, proposed by the transformation framework (Nesi et al., 2018a, 2018b).

Longitudinal studies have also focused on other domains, including sexuality and self-harm behaviors. In a large sample of Dutch adolescents aged 13–17, adolescents' exposure to peers' "sexy online self-presentations" predicted a higher probability of engaging in oral sex and sexual intercourse over six months – controlling for demographic variables and perceptions of friends' injunctive norms about casual sex (van Oosten et al., 2015). Another longitudinal study with Dutch adolescents aged 12–17 found support for peer norms as longitudinal predictors (across four waves, six months apart) of online-specific sexual risk behaviors, such as sending a partially nude photo to someone not known offline (Baumgartner et al., 2011). In regard to self-injury, a recent study of young adults found that exposure to self-harm on Instagram (i.e., having seen posts on Instagram showing someone who intentionally harms themselves) was associated with heightened suicide risk and self-harm behaviors one month later (Arendt et al., 2019).

Several experimental studies, and many cross-sectional studies, provide further support for peer influence through social media. One controversial experimental study, which calls attention to the algorithmic nature of social media, examined emotional contagion on social media among over 600,000 randomly selected Facebook users (Kramer et al., 2014). The content of individuals' newsfeeds was manipulated to decrease exposure to either affectively positive or negative content. Those exposed to reduced negative content were more likely to post updates that included fewer negative words and more positive words, with the opposite pattern observed

for those exposed to reduced positive content. These results suggest that users' emotional states and posting behavior may be influenced by the social media content they observe. Other studies have found similar results on Facebook and Twitter (Coviello et al., 2014; Ferrara & Yang, 2015). Importantly, the algorithmic feature of social media may expose adolescents to more extreme emotional content.

Cross-sectional studies also provide preliminary support for peer influence effects related to depressive symptoms, disordered eating, and body image. For example, associations have been found between friends' online reinforcement and higher depression disclosures among U.S. college students (Moreno et al., 2011). Highlighting the publicness and availability of social media, one study of depression-related accounts on Tumblr found that randomly selected posts had been re-blogged or liked with a median number of times over 1.5 million (Cavazos-Rehg et al., 2017). Cross-sectional research and content analysis studies have also analyzed pro-eating disorder social media profiles and groups (often called "pro-Ana," i.e. "pro-anorexia"; e.g., Arseniev-Koehler et al., 2016). Similar to online communities focused on self-injury, these pro-eating disorder communities reflect the ability for youth to connect with one another regardless of physical location via social media. One cross-sectional study with U.S. college students found that the internalization of pro-anorexia websites was associated with drive for thinness in both men and women (Juarez et al., 2012). Another international cross-sectional study of young adults found that, among women only, viewing online content related to disordered eating was associated with offline disordered eating behaviors (Branley & Covey, 2017).

One critically important area for future research concerns positive peer influence. Studies have experimentally demonstrated electronic peer influence on prosocial behaviors such as volunteering (e.g., Choukas-Bradley et al., 2015); however, this work has not been extended to

the social media context. Popular press news stories have recently highlighted the ways in which adolescents may influence one another to get involved in social justice movements and civic engagement (e.g., Bennett, 2020). Given the ways in which the features of social media can amplify peer influence processes around both maladaptive and adaptive behaviors, the role of social media in peer influence towards positive outcomes is an important area for future empirical study.

Peer Victimization

Peer victimization that occurs on social media, or cyberbullying, has been defined based on the three central components of a traditional bullying definition: repetition, deliberate intent to harm, and power imbalance (Olweus, 1993, 2012). Despite clear overlap with traditional bullying victimization, the experience of cyberbullying victimization has been found to differ behaviorally and to be associated with outcomes distinct from face-to-face (FtF) environments (Cross et al., 2015; Williford et al., 2018). Features identified in the transformation framework may transform both the experience of peer victimization, as well as the impact of those experiences (Nesi et al., 2018b). Permanence allows for content to be searched for (boyd, 2010), retrieved (Valkenburg & Peter, 2013), and subsequently replicated (boyd, 2010) long after its original curation. Such processes can enable a vast array of victimization behaviors, such as sharing old posts or photos, with such content available for an infinite amount of time. Given the permanence of such content, victims of cyberbullying may be unable to control the content's removal. This lack of control, due to social media's permanence and availability, highlights how peer victimization on social media can differ from traditional victimization experiences. One qualitative study with Australian adolescents found that a perpetrator's decision to remove harmful content from social media shaped victims' perceptions of the experience (Dredge et al.,

2014b). Victims felt helpless and hopeless if they were unable to remove the material themselves, and distress was reduced if the material was taken down. Notably, the permanence of content shared may not always be perceived by young people (Nesi et al., 2018b). For example, Snapchat users may rely on the ephemeral nature of posts, yet there is a possibility that peers will take “screenshots” of their content and redistribute it. This possibility highlights how other social media features, such as publicness and visualness, can transform peer victimization experiences by allowing visual content to be shared widely, even if doing so was not originally intended.

A distinctive reality experienced by cyberbullying victims is that social media platforms do not operate within specific hours or on certain days. The availability of social media means that victimization experiences can take place 24/7, which may lead youth to feel as though they cannot escape such experiences, even when physically apart from a perpetrator (Wolke et al., 2017). Furthermore, the types of peer victimization behaviors that can occur on social media platforms may differ from behaviors that occur in a FtF setting, reflecting the potential for novel behaviors on social media. Potentially novel behaviors include the distribution of content without a victim’s consent, defriending, reporting a post or tag to be removed, and failing to “like” an important post (Caplan, 2018). The media features of visualness, cue absence, and publicness provide perpetrators with different tools through which to victimize. For example, original photos or videos can be digitally altered and disseminated to a vast audience, and a lack of interpersonal cues can allow a perpetrator to pretend to be someone else or victimize anonymously. Quantifiability may lead to the reinforcement of victimization behaviors, and users who “like” or share a victimization post may also be seen as additional perpetrators. Furthermore, the algorithmic design of social media may create an incentive for users to create

victimizing content as controversial posts that receive greater engagement are more likely to rise to the top of users' feeds. Algorithms may also perpetuate the cycle of victimizing posts receiving such engagement, as these posts are repeatedly brought to different users' awareness.

The absence of or reduction in cues on social media such as facial, nonverbal, and intonational cues typical of FtF interactions (Steer et al., 2020) can also play a central transformative role in the experience and impact of cyberbullying victimization. These absent or reduced cues, in combination with the lack of required physical presence for victimization to occur, may lead to a process of deindividuation and disinhibited behavior. Suler (2004) described how 'toxic disinhibition' can occur when individuals behave in online environments differently compared to FtF environments. In such instances, perpetrators may engage in more aggressive, hurtful ways. The asynchronicity of social media communication may also create limited opportunities for feedback from victims to perpetrators regarding the consequences of victimization (Nesi et al., 2018b). This limited feedback and the temporal flexibility of communication, may also increase the severity of the victimization experience(s) because perpetrators can take time to plan their actions (Massing-Schaffer & Nesi, 2020). Social media's cue absence also can allow victimization to take place anonymously, potentially creating more distress among victims. In a systematic review of qualitative research on young people's conceptualizations of cyberbullying, Dennehy et al. (2020) reported that many studies cited the anonymity of perpetrators as a key feature in heightening the perceived severity of victimization. Participants in one study also reported that the anonymity of a perpetrator can increase feelings of loneliness, fear, and persistent worry (Dredge et al., 2014a).

The public nature of peer victimization experiences on social media platforms has also been identified as a key factor in determining how severely a victim is impacted by a

victimization experience (Dredge et al., 2014a). Several studies have found that victimization was experienced as more severe if the online exchange was public compared to private (Nocentini et al., 2010; Sticca & Perren, 2013). Publicness can amplify a range of cyberbullying behaviors, from sharing a video on TikTok to an audience of thousands (some of whom may be anonymous), to sharing an embarrassing photo without permission to a group chat of friends on WhatsApp or GroupMe. In such examples, however, publicness can also amplify and encourage the role of the bystander. Bystander intervention during a public cybervictimization experience has been shown to reduce the negative impact of that experience (Dredge et al., 2014b; Moxey & Bussey, 2020). Publicness can also intersect with the availability of content: such content can be made visible to a vast audience, given the ease with which it can be shared and accessed (Nesi et al., 2018b).

A large body of evidence has begun to accumulate for the potential negative effects of cybervictimization on adolescents' health and wellbeing. Notably, multiple systematic reviews and meta-analyses in recent years have identified associations between cybervictimization and suicidal thoughts and behaviors (John et al., 2018), and a range of internalizing and externalizing problems, including depression, anxiety, self-esteem, aggression, and social problems (Fisher et al., 2016). Furthermore, a recent systematic review of longitudinal studies suggests that cybervictimization may actually predict later mental health outcomes (e.g., internalizing symptoms; Camerini et al., 2020), providing evidence refuting the possibility that youth with mental health concerns are simply more likely to be victimized online. Experimental work with adolescents has also suggested that the experience of exclusion on social media is associated with momentary decreases in self-esteem and belonging (Timeo et al., 2020). Providing evidence for the unique effects of cybervictimization independently of traditional victimization, a recent

meta-analysis found cybervictimization to be associated with internalizing symptoms, even after controlling for traditional victimization (Gini et al., 2018). Similarly, longitudinal work with adolescents has found unique effects of cybervictimization on suicide risk, over and above traditional victimization (Perret et al., 2020). Notably, the effects of cybervictimization on internalizing symptoms were comparable to those of traditional victimization in a meta-analysis (Gini et al., 2018), and on externalizing behaviors (aggression, delinquency) in a longitudinal study of middle school students (Mehari et al., 2020).

Interpersonal Behaviors and Skills

In the prior sections, we have outlined the ways in which social media may transform larger peer processes and constructs: peer status, peer influence, and peer victimization. In the next section, we turn our focus to specific interpersonal behaviors and skills that may be transformed in the context of social media. We first discuss interpersonal behaviors that have typically been described as maladaptive, most often considered in relation to depressive symptoms (i.e., social comparison, excessive reassurance-seeking and negative feedback seeking, and co-rumination; Evraire & Dozois, 2011; Starr & Davila, 2008). We then discuss social media's transformation of more adaptive interpersonal behaviors, i.e., social competencies.

Problematic Interpersonal Behaviors

Adolescents have always experienced interpersonal difficulties as they navigate a developmental stage characterized by identity exploration, increased peer contact, and a desire for autonomy (Mitchell J. Prinstein et al., 2005). Social media now affords adolescents unparalleled opportunity for social interaction. However, it also increases opportunities for and changes the nature of these problematic interpersonal behaviors.

Social Comparison. Social comparison theory posits that humans naturally compare themselves to others to estimate their relative social standing and abilities (Festinger, 1954). As adolescents engage in identity exploration, they are more likely to use social comparison as a strategy to identify their strengths and weaknesses (Harter et al., 1996), and to experience fluctuations in self-esteem as a result of social comparisons (Harter et al., 1996). Social media has introduced a new domain for social comparison, as adolescents can now evaluate how both their offline lives and online presence compare to their peers.

The quantifiable nature of social media may facilitate social comparison by providing an objective metric for this process. Adolescents can compare the number of likes, comments, and shares their social media posts receive, and use these metrics to establish benchmarks of their social position in the peer group (Chua & Chang, 2016). Adolescent girls in particular often have expectations for the number of likes and comments their social media posts will receive, and may experience distress if this number is not reached (Chua & Chang, 2016; McLean, Jarman, et al., 2019). However, when expectations of likes *are* met or exceeded, it may provide positive reinforcement from the peer group and signal popularity and approval (McLean, Jarman, et al., 2019; Sherman et al., 2016), particularly if social media's algorithms "pick up" a post and facilitate even greater engagement with it. With these features in mind, adolescents may be reinforced for deriving self-worth and confidence from social media metrics, though this leaves them in a precarious emotional situation if their expectations are not met (McLean et al., 2019).

In addition to providing quantifiable metrics, social media often makes adolescents' social interactions public to their social network. Adolescents may feel "on display" and engage in self-presentation strategies to present a curated representation of their lives on social media. As a result, adolescents may be comparing their realities to the highly-edited and selective

portrayals of their peers' lives. Research with adults has found that comparing oneself to peers on social media, regardless of whether the social comparison target is believed to have a better, worse, or equal standing, is associated with reduced well-being (Chou & Edge, 2012; Steers et al., 2014) and body dissatisfaction (Ho et al., 2016). In a longitudinal study of late adolescents, participants reported engaging in social comparison on social media for identity exploration. However, social comparison led to rumination over one's social status and abilities, which predicted higher identity distress over the course of one year (Yang et al., 2018). An experimental study of adults further suggests that for those who are prone to social comparisons, viewing others' positive posts reduces positive affect (de Vries et al., 2018). Taken together, social comparison on social media may be implicated in adolescents' well-being, likely in part due to unrealistic comparison targets facilitated by the features of social media.

Excessive Reassurance Seeking and Negative Feedback Seeking. Excessive reassurance seeking, or the tendency to repeatedly seek reassurance about one's self-worth from others, has traditionally occurred primarily in dyadic contexts. However, social media now allows users to seek reassurance from their entire social network, instantly (boyd, 2010). Adolescents high in rejection sensitivity are especially likely to seek reassurance from others, and paradoxically, excessive reassurance seeking often leads to greater risk of rejection (Starr & Davila, 2008). Uses and gratifications theories suggest that people tend to use forms of media that will satisfy their needs (Katz et al., 1973), thus social media users low in self-esteem may use social media to request reassurance from their peers, putting themselves at risk for greater interpersonal difficulties. Indeed, adolescents who engage in greater reassurance seeking have been found to spend more time on social media (Sheldon & Newman, 2019). Longitudinal research with late adolescents and young adults has also demonstrated that reassurance seeking

on Facebook predicts decreases in self-esteem three weeks later (Clerkin et al., 2013), with cross-sectional work suggesting associations between social media-based reassurance-seeking and depressive symptoms, controlling for offline reassurance-seeking (Nesi & Prinstein, 2015).

The permanent nature of social media may also transform the experience of reassurance seeking via social media. For example, adolescents may post sensitive content on their profiles to receive reassurance, only to feel regret or embarrassment later. In a qualitative study of adolescents with depression, participants reported posting content related to their negative moods as a way to request support from their peer network (Radovic et al., 2017). Sometimes, adolescents reported receiving reassurance. However, they also experienced judgment, misinterpretation by others, embarrassment, and unwanted attention. When viewing these types of posts from peers on their social media accounts, they reported irritation and disgust, realizing that distressing posts used for reassurance seeking were unlikely to have positive effects. Thus, adolescents' use of social media to request reassurance may be viewed negatively within the larger peer context.

Unlike excessive reassurance seeking, in which adolescents request reassurance of positive attributes (e.g., that they are likeable, that a friendship is stable), negative feedback seeking refers to adolescents' seeking confirmation of the negative beliefs they hold of themselves (Timmons & Joiner, 2008). Specifically, adolescents with negative self-perceptions are believed to disproportionately solicit and attend to negative feedback from others (Cassidy et al., 2003). Due to the public nature of social media, adolescents may post content that is intended to solicit negative feedback to a vast network of peers regarding their appearance, personality, or social status. Furthermore, providing evidence for the relevance of social media's quantifiability, research with young adults demonstrates that negative feedback seeking on Facebook predicted

dietary restraint four weeks later when users received a high number of comments on their social media posts (Hummel & Smith, 2015). Because content on social media is permanent and asynchronous, adolescents are vulnerable to receiving negative feedback at any time, immediately, potentially reinforcing this problematic interpersonal behavior.

Co-rumination. Co-rumination is another problematic interpersonal behavior that involves engaging in excessive conversations with others about problems an individual is experiencing (Rose, 2002). Co-rumination is distinct from problem solving, as it does not generate potential solutions, but rather focuses on the causes and consequences of negative life experiences. Co-rumination has been found to be associated with depression and anxiety (Rose et al., 2007; Stone et al., 2011). Adolescent girls demonstrate greater co-rumination than boys, which may contribute to gender differences in adolescent depression (Alarcón et al., 2018; Rose, 2002). However, co-rumination also appears to have benefits, in that it may predict increased friendship quality over time among both adolescent girls and boys (Rose et al., 2007).

Whereas co-rumination was once limited to in-person interactions, it now occurs in private and public conversations on social media. Because conversations on social media are asynchronous and available, co-rumination can occur at any time. Furthermore, social media's permanence means that negative life events can be revisited repeatedly, allowing co-rumination to be ongoing for extended periods of time. Adolescent girls in particular appear to use social media to co-ruminate. In a study of U.S. adolescents' public communication via Facebook, higher depressive symptoms predicted posting a higher number of somatic complaints, requests for support, and expressed negative affect, as well as receiving more peer support via social media among girls only (Ehrenreich & Underwood, 2016). Results suggest that, at least for adolescent girls, social media provides an important context for co-rumination, and that, contrary

to FtF interactions, this behavior may be occurring in the presence of a public audience (Ehrenreich & Underwood, 2016).

Social Competence

Social competence involves appropriate communication with others, emotional regulation, flexibility in responding to varied social situations, and perspective-taking (Semrud-Clikeman, 2007). In the era of social media, social competence also involves the ability to manage and adapt to both online and offline social contexts. Asynchronicity and cue absence of social media may offer opportunities for adolescents to practice interacting in a less anxiety-provoking setting yet could also hinder the development of social skills needed in offline contexts. Importantly, in one recent study with U.S. high schoolers, online and offline social skills were only modestly correlated, suggesting that these constructs are related but still distinct (Resnik & Bellmore, 2019). Similarly, only low to moderate convergence has been found between FtF and computer-mediated contexts regarding the knowledge, skills, abilities, and other characteristics required for FtF and text-based communication (Schulze et al., 2017).

Transformation of Social Competency Development: Potential Benefits. Despite concerns about the negative impacts of social media use, social media may confer unique benefits for adolescents' social skill development. Key features of social media—the “24/7” availability and publicness—offer adolescents more opportunities to connect with peers, frequently practicing effective social skills with close friends, diverse communication partners, and broader audiences. Moreover, the asynchronicity and cue absence of social media may provide adolescents with a safe context in which to practice social skills, with time to carefully consider their responses and without the anxiety of receiving negative nonverbal feedback (see Reich, 2017). A recent review found that the most consistently reported interpersonal benefits

associated with social media use in adolescents are the provision of a sense of belonging, social capital, offline social interaction, and degree of offline socializing (Dredge & Schreurs, 2020).

Importantly, social media also offers adolescents new social challenges to which they must adapt, such as interpreting novel social cues (e.g., through text or emojis), engaging in strategic self-presentation (e.g., avoiding “oversharing”), or understanding normative online behavior, such as gender-normative social media behaviors (see Reich et al., 2017). Some evidence suggests that these skills transfer from online to offline environments. Longitudinal studies have found that Dutch adolescents’ use of instant messaging (Koutamanis et al., 2013) and German adolescents’ initiation of online friendships (Metzler & Scheithauer, 2017) positively influenced their initiation of offline friendships. Novel social media behaviors, such as commenting when friends post good news, may also be important for maintaining offline friendships (Rousseau et al., 2019).

Some adolescents may experience unique benefits related to social media use, particularly those with marginalized identities or struggling with social isolation. Given the publicness, availability, and, in some cases, visualness of social media, adolescents with stigmatized or minoritized identities can seek out similar others with whom to communicate about shared experiences and view posts that can normalize their particular struggles. For example, sexual and gender minority (SGM) adolescents report using social media to find friends and romantic partners that they may not have access to offline (Dehaan et al., 2013; Escobar-Viera et al., 2018; Selkie et al., 2020). SGM adolescents also report using social media to learn about and experiment with their identities, particularly during the process of coming out (Fox & Ralston, 2016), which may be instrumental to their ability to navigate offline social stressors related to these processes. The algorithmic design of social media may even make it easier for

youth to find similar others, as friends or followers with similar identities may be “suggested” by social media sites. More work is needed in this area to understand these benefits for diverse youth, such as those with a disability or racial/ethnic minority identity.

Transformation of Social Competency Development: Potential Detriments.

Detriments to social skill development may be driven by the ways in which features of social media allow for fundamentally new behaviors and ways to interact with peers. For example, the asynchronicity and cue absence of social media presents a unique opportunity for youth to misrepresent themselves (e.g., by saying they are older). The cue absence of social media precludes adolescents’ practice processing and responding to rich interpersonal feedback.

Whereas asynchronicity may facilitate adolescents’ skills crafting careful responses, these skills may not transfer to in-person interactions. Furthermore, social media use may lead to social skill deficits simply due to reduced in-person interactions, with increased passive social media use perpetuated by the addictive quality of social media algorithms. Providing some evidence for this “displacement” theory, in one study of U.S. adolescents, those who interacted with their romantic partner proportionally more on social media (relative to in-person interactions) reported poorer conflict management skills with their partner one year later (Nesi, Widman, et al., 2017).

Social media can also amplify peer experiences that previously occurred exclusively offline by providing an audience for peer conflict. Adolescents frequently report “drama” playing out on social media, defined as “performative, interpersonal conflict that takes place in front of an active, engaged audience” (Marwick & Boyd, 2014, p. 5). In 2018, nearly half of U.S. adolescents (44%) reported feeling overwhelmed by drama on social media and 78% of teens who have unfriended or unfollowed others on social media report doing so because they cause too much drama (Anderson & Jiang, 2018). As “drama” unfolds, adolescents are often aware of

their audience, many of whom enter the fray by adding public comments or likes to posts (Marwick & boyd, 2014). Additionally, drama that unfolds online is typically permanent, providing an archive of statements and behaviors that can be used in future conflicts in a way that was previously unavailable offline (Marwick & boyd, 2014). More work is needed to understand how adolescents' experiences of drama contribute to their ability to manage peer conflict.

Romantic Relationships

Although much of the research on adolescents' social media experiences has focused on platonic friendships and peer relationships, romantic relationships also represent a central component of the adolescent peer context that is shaped by the digital world. Social media alters how adolescents initiate, publicize, engage with, and experience conflict within romantic relationships. Adolescents report using social media to interact with potential dating partners, such as by liking or commenting on content and initiating private chats, and report that aspects of social media (i.e., cue absence and asynchronicity) make initiating these conversations less daunting (Van Ouytsel et al., 2016). In qualitative studies, adolescent girls regarded the ability to publicly formalize and update peers about their relationship instrumental for their sense of identity, status, affiliation, and relationship maintenance (Howard et al., 2015, 2019). Social media also commonly plays a role in relationship dissolution, with adolescents often reporting unfriending/blocking or deleting photos of the partner and posting about their distress or to indicate that they have "moved on" after a relationship ends (van Ouytsel et al., 2016).

Social media also creates new opportunities for partner conflict that easily escalate into abuse. Although some of these behaviors may be normative for adolescents, about 28% of adolescents in a recent national U.S. study reported being the victim of digital dating abuse

(Hinduja & Patchin, 2020). The publicness and permanence of social media may contribute to partner jealousy in a way not possible before social media, with adolescents able to easily monitor their partners' public interactions or violate their privacy, which may elicit jealousy and create conflict (Reed et al., 2016; Van Ouytsel et al., 2016). Due to the availability of social media, adolescents may expect immediate responses from their partners or can harass their partners with excessive check-ins (Rueda et al., 2015). A study of adolescent and young adult couples in Canada found an association between Facebook jealousy and offline intimate partner violence perpetration (Daspe et al., 2018), highlighting how online experiences can affect offline relationship processes. Highlighting the visual nature of social media, girls more frequently experience digital sexual coercion compared to boys, which frequently includes being pressured for sexual photos from their partners (Reed et al., 2017, 2020).

Translational Implications

The transformation of peer relationships through social media may create a number of unique benefits, from the immediate accessibility of social support to the increased opportunities for friendship initiation and maintenance. However, social media may also be transforming adolescents' peer experiences in problematic ways, such as by amplifying a drive for social status, facilitating social comparison, and creating novel forms of peer victimization. Social media is a key component of young people's social lives, and it is likely to remain that way long into the future. Thus, a primary goal of researchers, parents, educators, and mental health professionals must be to determine how best to leverage our understanding of online peer experiences so that adolescents can maximize the benefits and minimize the harms of their social media use. The transformation framework offers a useful starting point for considering how to facilitate adolescents' healthy use of social media. In particular, the transformation framework

can be leveraged to increase two facets of youths' relationship with social media: their *knowledge* and *skills*.

The transformation framework can support adaptive social media use among adolescents by providing insights that may help youth *increase knowledge* about social media. Adults could teach adolescents about the features of social media, and how those features might shape both their own and their peers' behaviors (Galla et al., 2020). For example, adolescents could be taught that social media's cue absence might tempt them to say or do things they normally would not, that algorithms and availability might make it particularly difficult to reduce their screen time, and that publicness might increase their chance of exposure to inappropriate or problematic content. Youth could be encouraged to increase knowledge or awareness of their own social media behaviors and use. For example, youth could learn to monitor their use through accessing weekly estimates of their screen time, which is available on most smartphones and on many social media apps. Such increased awareness may encourage youth to reflect on their use, and perhaps to bring a more mindful approach to their social media consumption and engagement.

In addition to recognizing potentially problematic consequences of the features of social media, adults could support adolescents in recognizing how these features might be used to their benefit or the benefit of society. For example, youth could be encouraged to recognize which forms of social media communication involve greater interpersonal cues (e.g., video calls) versus those involving less (e.g., text messaging), and to use different forms of communication depending on their needs in a given moment. Adolescents might be encouraged to use high-cues forms of social media to facilitate social connection, whereas they might use low-cues forms in the context of an argument to avoid escalation. Youth could also be taught about how social media's publicness and quantifiability might be used to facilitate spreading positive messages or

engaging in political advocacy. In addition, they might learn about how social media's algorithms might help them when they encounter negative content – that is, they could be encouraged to use reporting tools to automatically notify social media sites when they encounter cyberbullying or hate speech.

The second way in which the transformation framework can support adolescents' healthy social media use is by informing the development of social media-specific *skills*. Such skills can help adolescents manage the different types of interpersonal interactions that occur in digital environments. Young people not only need social skills to manage normative interpersonal processes, but also negative experiences unique to computer-mediated environments such as cyberbullying and miscommunications due to cue absence. Social skills are one component of media literacy, which has been defined as the ability to think critically about the media message intention and the ability for messages to shape receivers' realities (McLean, Wertheim, et al., 2019). Given the many ways in which the social media environment transforms traditional, FtF interactions, the social skills required to navigate *digital* interpersonal experiences are likely to be unique (Nesi et al., 2018a).

One clear example of a social skill with different needs and requirements for social media versus FtF environments is self-disclosure. Given the features of cue absence, publicness, and permanence, young people must be especially careful about in what context and how much they self-disclose on social media. They also need to understand how best to seek support, and what types of support are appropriate to seek out, within the norms of the given social media platform. For example, young people may need to develop skills to recognize when public versus private self-disclosure is warranted on social media, and when to use visual versus text-based messages for seeking support.

Training in social media-based social skills may be especially required in regard to managing cue absence online. Recognizing the differences between humor, banter, and cyberbullying may be especially challenging for young people (Steer et al., 2020). Based on their findings the authors recommended that young people should be taught to be aware of the unique interpersonal difficulties that can occur online due to the “absence of non-verbal redressive messages and social context cues” (Steer et al., 2020, p.7) as well as how to communicate on social media platforms with self-restraint given the potential for miscommunications being experienced as cyberbullying victimization. The promotion of empathy development in young people is also needed to support them in managing negative interactions in social media environments. Wang (2020) found that bystanders were more likely to publicly and privately intervene when they witnessed cyberbullying when they felt more empathy. Given studies have found that the impact of cyberbullying victimization is reduced when bystanders intervene (Dredge et al., 2014a), this is clearly an important skill to generate in young social media users.

Facilitating the development of social media *knowledge* and *skills* based on the transformation framework may be especially important among youth with mental health concerns, who may be particularly vulnerable to the negative effects of social media. Interpersonal difficulties are implicated in the onset and maintenance of a range of mental disorders, including depression (Young et al., 2016) and suicidal thoughts and behaviors (Stewart et al., 2017). Given that these interpersonal challenges may be amplified in the context of social media, clinical providers should be aware of adolescent patients’ use of social media. For example, providers might assess the degree to which youth are engaging in problematic interpersonal behaviors via social media, such as social comparison, co-rumination, and excessive reassurance seeking. Adolescents may be encouraged to reflect on the ways in which

the features of social media intersect with their behaviors and symptoms, such as how publicness and availability may increase the likelihood that they come across content that could be triggering or upsetting or amplify the negative consequences of risky or impulsive decision-making. Finally, clinical treatments could facilitate access to resources or provide opportunities for distraction.

Conclusions

Social media represents a new interpersonal context that is fundamentally reshaping adolescents' social worlds. Recognizing how the features of social media transform youths' peer experiences provides a framework for synthesizing the rapidly growing body of research on adolescent social media use. By understanding the ways that these features influence adolescents' interactions, we can support youth in developing the knowledge and skills needed to use social media in healthy and effective ways.

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Table 1

Social media features identified in the transformation framework, with examples of transformation of adolescents' peer experiences

Social Media Feature	Definition	Examples of Application to Peer Experiences
Asynchronicity	Time lapse between aspects of communication	<ul style="list-style-type: none"> Carefully construct messages to peers to maximize positive or negative impact
Permanence	Permanent accessibility of content shared via social media	<ul style="list-style-type: none"> More easily save and share problematic or harmful posts
Publicness	Accessibility of information to large audiences	<ul style="list-style-type: none"> Share information with wider range of peers
Availability	Ease and speed with which content can be shared, regardless of physical location	<ul style="list-style-type: none"> Immediate accessibility of social support and communication
Cue Absence	Degree to which physical cues absent	<ul style="list-style-type: none"> Disinhibition increases harshness of bullying behaviors
Quantifiability	Allowance for countable social metrics	<ul style="list-style-type: none"> Reinforcement for behaviors is directly observable in numbers of likes, comments, views, shares
Visualness	Extent to which photos and videos are emphasized	<ul style="list-style-type: none"> Heightened social comparison processes around physical appearance
Algorithmic	Constructed by external design choices and underlying machinery	<ul style="list-style-type: none"> Create new norms for popular or desired behaviors based on what will "go viral" Increased time spent watching peers' content online

Note: Adapted from Nesi, Choukas-Bradley, & Prinstein (2018a, 2018b) and Choukas-Bradley & Nesi (2020). Some examples may be related to multiple social media features.