Positive and negative uses of social media among adolescents hospitalized for suicidal behavior

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ABSTRACT (248 WORDS)

Introduction: There is public concern about potential associations between adolescent social media/smartphone use and risk for suicide. However, no prior studies leverage qualitative methods to explore the experiences of adolescents currently at-risk for suicide.
Methods: This study examined social technology use from the perspectives of adolescents ($n = 30$; $Mage = 16.1$ years) currently hospitalized for a recent suicide attempt or severe ideation. We conducted in-depth interviews and coded transcripts using thematic analysis. We had three research questions: What (1) negative and (2) positive experiences do suicidal adolescents report related to their use of social media/smartphones? (3) How do adolescents describe their disconnection from these technologies use during inpatient hospitalization and views on a subsequent return to digital connectivity after discharge?
Results and conclusions: Results reveal both positive and negative social technology uses, with most participants reporting mixed (positive and negative) experiences. Negatives/risks included trouble regulating use, stress related to social media metrics, encounters with "triggering" content, hostility and meanness, self-denigrating comparisons, and burdensome friendship expectations. Positives/benefits included social connection, social support, affect-enhancing content, shared interests, and resources for mental health and coping. Overall, the documented risks and benefits of social technology use correspond with established (offline) risk and protective factors for suicidal thoughts and behaviors. Participants generally valued the break from social technologies during hospitalization, and also viewed them as integral to social re-entry and identified related concerns. Future studies should test well-being focused 'digital hygiene' interventions for maximizing potential benefits and minimizing potential harms of social technologies for at-risk adolescents.

Social technologies – namely smartphones and social media – are now central to the everyday life of adolescents. In the U.S., more than 80% of 13–18-year-olds have their own smartphones and most are daily users of social media apps (AP-NORC, 2017; Rideout & Robb, 2018). Yet scientists remain divided about the relationship between such technology use and mental health. One recent large-scale analysis noted that increases in depressive symptoms and suicidal thoughts and behaviors trace the rise in screen activities

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and the related decline in non-screen activities (e.g., in-person socializing, sports) after 2010 (Twenge, Joiner et al., 2017). The authors suggest contemporary social technology use is a causal contributor to these mental health trends, which are not explained by factors like academic stress or a depressed economy. Another recent large-scale analysis of several studies found that regular consumption of potatoes has only a slightly less deleterious effect on well-being than technology use, and the positive effect of eating breakfast is nearly three times as large as the negative effect of technology use (Orben & Przybylski, 2019). Such divergent conclusions from large-scale analyses may stem from differences in statistical methods and approaches (e.g., see Twenge, Blake, Haidt, & Campbell, 2020).

In this context, focused studies of adolescents' experiences with social technologies are especially important. There are two different approaches to this research. Some studies focus on particular risk experiences, like internet addiction/problematic internet use or cyberbullying, and document connections to suicidal thoughts and behaviors. Indeed, retrospective studies suggest that individuals who exhibit problematic internet use show higher rates of suicidal thoughts and behaviors (Cheng et al., 2018) and that cyberbullying may play a role in the development of suicidal thoughts and behaviors among adolescents (John et al., 2018). Yet these studies focus on, for example, the ~15% of adolescents with problematic internet use and not on technology use among suicidal adolescents more broadly (including those with suicidal thoughts and behaviors who do not exhibit problematic internet use).

A second approach is to focus more holistically on the digital experiences of adolescents known to struggle with mental health issues and/or suicidal thoughts and behaviors. Radovic, Gmelin, Stein, and Miller's (2017) interviews with depressed adolescents (ages 13–20) demonstrate the value of this approach. Participants described both benefits and risks: they accessed positive content (entertainment and humor) and maintained valued social connections, but they also shared risky behaviors (e.g., smoking, sneaking out), confronted cyberbullying, made self-denigrating comparisons, and encountered triggering posts. Radovic et al.'s exploratory, qualitative approach surfaced the complexity of depressed adolescents' social media experiences. Their findings contribute a collection of relevant areas for consideration by researchers and practitioners who work with depressed youth.

Nesi, Wolff, and Hunt's (2019) surveys of psychiatrically hospitalized adolescents (aged 11–18) focused on youth in acute crisis and also documented both positive and negative social media uses. Among 230 participants who had previously attempted suicide, a majority of participants endorsed recently using social media for distraction and/or social support. Some reported getting into a fight or argument (51% F, 40% of M), making self-denigrating social comparisons (56% F, 23% M), feeling left out (38% F, 32% M), being bullied or teased (30% F, 15% M) and viewing content that encouraged self-injury (27% F; 18% of M) or suicide (25% F, 21% M). More than one-third had talked to a stranger in the prior two weeks (49% F, 38% M). Nesi et al.'s study is currently the only somewhat holistic investigation of social media among adolescents with suicidal thoughts and behaviors. By design, the study was limited to a set of predefined experiences and focused on quantifying the presence/absence of these experiences rather than on understanding their nature.

Notably, there is now robust evidence of correspondence between online and offline vulnerabilities, with struggles related to digital life often mirroring offline risks and challenges (Ito et al., 2020; Odgers & Jensen, 2020). Decades of research have established relevant risk and protective factors for suicidal thoughts and behaviors. These include, for example, rejection sensitivity (Brown, Mitchell, Roush, La Rosa, & Cukrowicz, 2019), perfectionistic self-presentation (Roxborough et al., 2012), and inclination to self-isolate (Endo et al., 2017), as well as benefits of social support (Miller, Esposito-Smythers, & Leichtweis, 2015) and safety planning (Stanley & Brown, 2012). In some cases, research about online life already signals relevant overlap (e.g., peer victimization and cyberbullying, Geel, Vedder, & Tanilon, 2014). More detailed research on the social media experiences of at-risk youth may facilitate further connections to documented risk/protective factors.

There also remain important clinical questions relevant to social technology use in this population. On adolescent inpatient psychiatry units, access to smartphones and social media is often prohibited or severely constrained, leading to a marked disruption in age-typical digital connectedness. There has been no exploration of how adolescent patients perceive this forced break. On the one hand, they may view the break negatively given potential loss of social support and anxiety associated with *fear of missing out* (Beyens, Frison, & Eggermont, 2016). On the other hand, they may view the break as a useful respite and/or useful way to 'reset' digital patterns (Aranda & Baig, 2018). Better understanding adolescents' perspectives can inform best practices surrounding inpatient treatment and discharge.

Current study

The purpose of this study was to explore social technology use among adolescents hospitalized for suicide risk. We sought to answer three specific questions: What (1) negative and (2) positive experiences do adolescents with current suicidality report related to their uses of social technologies? (3) How do adolescents describe the break from routine social technology use during hospitalization, and their views on a subsequent return post-discharge? Rather than test specific hypotheses, we used qualitative methods to gain a rich, descriptive understanding of these topics from adolescents' perspectives (Sandelowski, 2000). We chose an interview design to facilitate an in-depth exploration.

Method

Participants

Participants were 30 adolescents (M_{age} = 16.1 years, SD = 1.6, range = 13.1–18.4) recruited from a large urban inpatient psychiatry unit where they were hospitalized for a suicide attempt or severe suicidal ideation (100% had suicidal ideation at some point in the life, 63.3% attempted suicide at some point in their life). The sample was 70% female and 80% White, 7% Hispanic, 3% Asian, 3%

endorsed another race/ethnicity (the remainder declined to report). Table 1 provides an overview of participant characteristics including history of suicidal thoughts and behaviors, psychiatric diagnoses, and social media usage.

Procedure

Participants were interviewed in this IRB-approved study using a semi-structured protocol (described below). Interviews were conducted in private areas of the inpatient unit by two-person teams comprised of a lead interviewer (first author, consistent across interviews) and a second interviewer who took notes and provided an additional monitor. Interviews typically lasted ~30 min (*M*=28.2 min, *SD* = 8.3). Participants also completed self-report measures (e.g., demographics) on an iPad. We extracted from medical records information regarding diagnoses and severity. We obtained written parental consent and participant assent (or consent if ≥ 18-years).

Interview

Interviews began with participants providing a *grand tour* of their social media experiences and progressed to questions for *specific examples*; the protocol also included *planned prompts* (Leech, 2002). While the semi-structured protocol (Table 2) provided flexibility for varied follow-up questions, interviews were consistent in prioritizing: in-depth understanding of participants' uses (positive and negative) and their views on both disconnecting during hospitalization and anticipated re-entry post-hospitalization. Interviews focused on typical (*past*) uses when not hospitalized, *current* experiences disconnecting, and *future* expectations for following discharge. Notably, while our interview questions referred to "social media," we encouraged participants to report more inclusively on their use of smartphones, messaging, gaming, and other apps. Their responses showed that they did so, and we therefore use the broader term "social technologies" when describing study findings.

Coding and analysis

Interviews were audio-recorded and transcribed verbatim. Within 24 hours, the lead interviewer also prepared detailed interview notes. Transcripts were coded through a three-phase process using a predominantly emic approach to thematic analysis (see Boyatzis, 1998; Saldaña, 2016), though informed by code categories identified elsewhere (e.g., Radovic, Gmelin, Stein, & Miller, 2017; Weinstein, 2018). In brief, codes were developed during a first phase that included data familiarization, open-coding, preliminary operationalization, application to a sub-sample of cases, and preparation of a codebook (with definitions, anchor cases, and exclusions). Codes were refined through a second phase of inter-rater reliability (IRR) training and testing with three additional coders (using *Dedoose*; κ > 0.70 for each positive and negative aspect code). Table 3 outlines final code categories with example cases. Then, all coders independently coded the full set of interviews (*n* = 30). For findings reported here, at least two of three independent coders and the lead coder agreed on the presence and importance of a code in the participant's narrative. Descriptions of the break from typical use during hospitalization and feelings about re-entry were categorized for exploratory analysis based on sentiment(s) in each

Table 1
Sample description.

History of Suicidal Thoughts and Behaviors			
Event	Lifetime	Month before hospitalization	Week before hospitalization
Suicidal thoughts	100%	96.7%	90.0%
Suicide plan	67.6%	56.7%	53.3%
Suicide attempts	63.3%	36.7%	33.3%
Non-suicidal self-injury[a]	83.0%	67.0%	63.0%
Diagnoses[b]			
At least 1 diagnosis	90%		
More than 1 diagnosis	63%		
Social Media Usage			
Platform	Has account	Checks "almost constantly" or "several times a day"	
Instagram	86.67%	60.0%	
Snapchat	86.67%	76.7%	
Facebook	66.67%	16.7%	
Twitter	43.33%	10.0%	
Tumblr	33.33%	3.3%	
Twitch	13.33%	0.0%	
VSCO	10.00%	3.3%	
Discord	6.67%	0.0%	
LinkedIn	3.33%	0.0%	

[a] Refers to purposely hurting oneself without the desire to die at least 1 time during lifetime/month before/week before hospitalization.
[b] The most common diagnoses (from chart diagnoses) were Major Depressive Disorder (80% of sample), Generalized Anxiety Disorder (33.3% of sample), Eating Disorders (13.3% of the sample), Panic Disorder (10% of the sample), Post-Traumatic Stress Disorder, Attention Deficit Hyperactivity Disorder (hyperactive, inattentive, and combined subtypes; 10% of sample) and Bipolar disorder (I and II) without psychotic features (10% of the sample).

Table 2
Interview protocol: Key questions.

Past	General experience	How does social media usually fit into your life?
		Which apps/social media sites do you typically use?
		Can you tell me about how you use each site?
		(prompt for frequency, typical use patterns, interactions)
	Perception of benefits and challenges associated with use	What are some of the best parts of having social media? *(prompt for specific examples)*
		What are some of the most challenging or difficult parts of having social media? *(prompt for specific examples)*
	Perceived influences on mental health	Before you came to [hospital], were there times that social media/cell phone were helpful related specifically to your mental health? *(prompt for examples)*
		Were there times that social media/cell phone made your mental health worse or made you feel worse? *(prompt for examples)*
Current	Experience of break during hospitalization	How has it been having this break from social media and your cellphone?
		What was it like getting used to not having your phone while you were here?
Future	Attitudes about post-hospitalization digital re-entry	When you think about going home and having access to social media again, how does that feel?
		Optional follow-ups, time permitting: What are some ways you think your cellphone/social media might help or get in the way of your recovery? Do you have any worries?

participant's responses: positive descriptors, negative descriptors, ambivalence/mixed (i.e., both positive and negative), or neutral/no perceived impact. (See Supplement A for additional detail about coding and reliability procedures; See Supplement B for consolidated study criteria following the 32-item COREQ reporting guidelines).

Results

Overview of findings

Our coding process surfaced nine aspects of social technology use perceived by participants as risks/challenges and nine aspects perceived as positives/benefits. Frequency of occurrence of these 18 coded themes is presented in Table 3. Overall, most participants reported mixed experiences; exceptions were a sub-group of five adolescents who reported essentially no risks/challenges and another sub-group of four who described no true positives/benefits. Experiences varied and no single challenge was described by even half of the sample.

Negatives and risks of social technology use

Trouble regulating use (n = 12)

Participants who described trouble regulating use - the most commonly acknowledged risk/challenge - felt "addicted" (i.e., to phones, social media, gaming) and/or noted displacement of adaptive activities (e.g., sleep, studying, hobbies, relationships) because of time spent with social technologies. They also described using technologies to self-isolate when mental health was already poor.

As P18 (16, F) explained, "It is kinda like this addiction. It is so easy to get caught up in everything that has to do with social media"; "It kind of allows me to isolate myself, which is not the thing to do when you have depression." P4 (age 18, M) described his social technology use as "kind of a process addiction," reinforced by the endless availability of content and social feedback (e.g., likes). P10 (age 15, M) explained, "It is keeping me away from my family and friends, and I have been trying to stop my addiction to my cell phone and videogames because it's- my mental health is not good, my physical health is not good, *because* I have been sitting in a chair all day playing video games. And it is overall not healthy at certain points." P20 (age 17, M) echoed this struggle, "[I am] unequivocally addicted … it's very difficult to use properly in moderation.".

Stress related to metrics (n = 11)

Social media apps often include public (e.g., likes) and/or private (e.g., streaks) metrics that quantify social interactions and feedback. P15 (age 14, F) acknowledged metrics-related pressures across multiple platforms:

> There's this pressure on Instagram to have, like, many followers. Or on Snapchat to have a high Snapchat score. Or [on] VSCO, to have as many publishes … Everybody just wants to be better than everyone else. And I think that's something not *just* with social media, but on social media it's kind of more magnified because it's more numbers.

P19 (age 15, M) described drawing on his 'likes' and follower-ratios as indicators of social acceptance; because of these metrics, social media "empowers the idea that I'm liked but also empowers the idea that I'm hated." P3 (age 18, F) described deleting pictures with too few likes because "the number is just such a big part of Instagram." Streaks, which require daily reciprocal communication were in some cases managed by others to avoid "dropping" them during inpatient treatment. For example, P1 (age 13, F) maintained "like 90" streaks with lengths up to 600 days. Some of her streaks were with people who "hate me at school"; her best friend was maintaining all of her streaks during hospitalization.

Table 3

Major codes: Categories and example cases.

Risks & Challenges

Category	n; %	Example Quote(s)
Trouble regulating use, feeling 'addicted,' disruption of other activities	12 (40%)	"I am worried that I will be addicted again, and I will lose sense of reality and just want to play games and sit around and not worry about the world around me."
Metrics (e.g., likes, followers, streaks)	11 (37%)	"There's this pressure on Instagram to have, like, many followers. Or on Snapchat to have a high Snapchat score. Or [on] VSCO to have as many publishes."
'Triggering,' depressogenic, and/or self-injurious content	10 (33%)	"There's like, pictures of people self-harming and people talking about how much they hate their lives and stuff, and it's just really upsetting to look at sometimes."
Cyberbullying, hostility, direct exclusion	9 (30%)	"It was last year, maybe end of the year, like end of the school year, like May or June and I started receiving death threats and … people—they would send me pictures of razor blades and nooses and tell me to go kill myself …"
Self-denigrating social comparisons (incl. body-related)	9 (30%)	"When I saw people having a really good day or having so much fun, or like they were being happy … for me, when I saw that, it kind of made me feel sad. Because it's just like: why can't I just be like them? Like why do I have to deal with all this mental stuff and they can just deal with their normal, happy lives and stuff?"
		"I think it comes from accounts that have like models and stuff and they're all like very thin or very pretty or like the idea of what society thinks is pretty. And yeah I think there's like a very specific form of what someone should look like."
Burdens related to friendship expectations	9 (30%)	"… it's hard if you just want time alone to yourself because it feels like it's expected that you respond to people's texts and stuff, and that can be really stressful."
Fear of missing out, feeling left out	8 (27%)	"Even though they might not necessarily be my best friends, and I don't expect to be invited, it's more like I just when I'm sitting alone at home and they're at a party and it just makes me feel like I have no friends."
Impression management, performance pressure	7 (23%)	"… it just puts so much unnecessary stress on a lot of teenagers to kind of find that image of themselves that they think is perfect, and it is really pressuring to kind of be like oh my god, if I don't look like this, no one is going to like me."
Expression causing or contributing to problems	3 (10%)	"… it also is a way to express my anger, which is not healthy. And it destroys relationships that I have with people, if I express my anger on social media where everyone can see instead of talking to someone in person."

Opportunities & Benefits

Category	n; %	Example Quote(s)
Social connection		
a) Staying connected to existing relations	20 (67%)	a) "and then I mean I dont *need* to talk to my best friend, but it's mostly her … She lives across the street so I don't know why that's important, but like, yeah, it is."
b) Keeping in touch with people who are geographically distant	16 (53%)	b) *"Overall what would you say are some of the best parts of having social media?"* "It can connect me to friends that live far away."
c) Making new friends	7 (23%)	c) "And the other positive that I sort of already touched on is the opportunity to meet people that you otherwise would never meet. For instance … social media gives me opportunities to meet people from all over, doing all different kinds of things, with all different kinds of backgrounds."
Positive/affect-enhancing content	18 (60%)	"I try to only follow positive things that will make me feel better."
		"There was also like videos you could watch that can make you laugh."
Social support		
a) Seeking/receiving support from others	16 (53%)	a) "I think because I could talk to friends on it, I think it was helpful. So if I was like having an issue or something, I could talk to a friend and they would help me."
b) Giving support to others	5 (17%)	b) "I have their Snapchat, so it is nice to be like, 'Hey, how are you? Are you okay?' Because a lot of times, that helps people. I know I texted someone who wasn't okay and I didn't know it. Like, 'hey are you okay, we will all support you through it' … and they were like, 'aw, thanks."
Resources for mental health, coping	11 (37%)	"Watching a bunch of YouTubers who I relate a lot to. Usually when I'm struggling a lot with urges, I'll lay down with my blanket and my dog and watch those. So that could be a huge coping skill."
Shared interests	11 (37%)	"I look at a lot of art. I like- I like it when I see people who do nice art. I follow a lot of comics. I don't really like web comics per-se because you have to have a browser for that and you have to make sure you're constantly updated, whereas Instagram you can tap on their page and it'll come up in the chronological order of all the comics that they've posted and it's just nice for that."
Self-expression opportunities	5 (17%)	"It is a good way to put stuff out there. Um … artistic expression and kind of big important things or things that you think are kind of cool and you can put up there and people can see."

Engagement with "triggering" content (n = 10)

Participants described engaging with depressing, self-injurious, and/or "triggering" content (a term used by adolescents for content that evokes distress). This included both intentional encounters (e.g., seeking out such content and ignoring warnings) and unintentional exposure (e.g., stumbling on content while browsing). P7 (age 13, F), for example, referenced accidental encounters: "there's a lot of self-harm accounts out there that sometimes I stumble upon that's like, 'oh, since you may like this, or something you may be interested in might be like a self-harm account, graphic pictures,' and that can be really triggering." For unintentional encounters, the unpredictability of knowing when such content would present was itself a challenge. As P29 (age 14, F) described, "you never really know what's coming, and so it can kinda like, hit you, and you can get triggered really easily." In contrast, P20 (age 17, M) actively ignored content warnings ("Instagram gives you this warning saying like oh you know that some content is just not the best, and I always just hit okay.") "Triggering" content included text (e.g., sad quotes), pictures (e.g., images of guns, cutting), and combinations (e.g., pro-anorexia pictures combined with written tips).

Cyberbullying, hostility, and direct exclusion (n = 9)

Participants described facing hostility through distinct "hate accounts" created specifically to mock or target others, impersonation, circulation of embarrassing pictures or videos, "subbing" (i.e., making comments about someone without mentioning their name), intentional tags in suicide-relevant content or receiving suicide-relevant messages (e.g., pictures of nooses that connote death by hanging), exposure of private information or communication, trash-talking (e.g., through Instagram; gaming), name-calling, criticizing physical appearance, and active exclusion (e.g., being cropped out of posted pictures). Reports referenced meanness from known and anonymous sources. For youth who were bullied offline, social technologies presented the possibility of blurred boundaries between home and school. As P1 (age 13, F) described, "You come home from school and … You're at your home, and you're feeling safe or whatever, and they're still coming at you through your phone."

Avoiding social technologies did not result in inoculation from digital hostility. For example, P22 (17, F) did not have a Facebook account but was still talked about and publicly threatened on Facebook. Blocking a harasser was insufficient since people could get around blocks by going on a friend's account. Apps like Snapchat, where videos and stories are ephemeral and not archived, presented potential challenges to adult requests for documentation. Experiences with meanness and cyberbullying were not universal: although nine participants described hostile experiences, others emphatically noted that they never had such experiences.

Self-denigrating social comparisons (n = 9)

Challenges also stemmed from comparisons, including with others' bodies, how happy others seemed via online presentations, peer feedback (e.g., number of likes), and/or others' material possessions, wealth, or opportunities. Such comparisons could intersect with clinical issues (e.g., depression, eating disorders). As P12 (age 15, F) described: *"When I saw people having a really good day or having so much fun, or like they were being happy … for me, when I saw that, it kind of made me feel sad. Because it's just like: why can't I just be like them? Like why do I have to deal with all this mental stuff and they can just deal with their normal, happy lives and stuff?"* P6 (age 16, F) referenced the "pressure" that comes "from accounts that have models and stuff and they are very thin or pretty" and believed, "I have some body image issues because of it." P22 (age 17, F) described comparing her weight-loss to eating disorder pages on Instagram. For P14 (age 16, F), comparing the social feedback she received to the feedback her close friends received often led her to wonder, "Do I deserve to be in the friend group?"

Burdens related to friendship expectations (n = 9)

Issues with burdensome friendship expectations included feeling pressure to be available at all times of day, to respond immediately, and/or to offer public support (e.g., via comments on friends' posts). These pressures could be a barrier to disconnecting. As P11 (age 17, TM) noted, "It's hard if you just want time to yourself because it feels like it's expected that you respond to people's texts and stuff, and that can be really stressful." P20 (age 17, M) similarly noted, "there's this unspoken expectation that you be available all the time because it's the Internet"; "I feel like I should and need to talk to these people, even if I really do want a break." Participants also struggled with their own unmet expectations, including frustration when others' responses were not immediate, disappointment with how friends responded to their posts, and/or feeling ignored by unreciprocated efforts to connect. P21 (age 16, M) described "hoping for an immediate response" when reaching out to friends and then, when it did not come fast enough, being "impulsive in telling them like, '"Nevermind I'm fine,' which isn't true, or insulting them because they weren't there for you."

Other challenges

Participants described **impression management/performance pressure**: "there's always like a pressure … to put up a good front on social media, all the time. Like, 'Oh, you're doing well,' or, 'Oh, you look like this and you have all these friends" (P15 age 14, F); "it causes a lot of stress, trying to keep up your image, I guess?… So you kind of try really hard and that effort kind of just becomes, like, misery" (P29, age 14, F). They also referenced **feeling left out and fear of missing out**, both in general (e.g., finding out via Snapchat Snap Map that friends are together, seeing photos from parties when not invited) and related specifically to hospitalization ("If my friends did stuff and they post it. I will be kind of, like, left out … I know that it is not my friends' fault for leaving me out, it is just that I was not available" (P2, age 17, F). Several participants also reported **personal expression causing issues**: "for me, I guess when I'm in like a depressed state, sometimes I'll be really upset and I'll like text someone something that I didn't really mean, but in the moment I was really upset" (15 age 14, F); "it also is a way to express my anger, which is not healthy. And it destroys relationships that I have with people, if I express my anger on social media where everyone can see instead of talking to someone in person" (P7, age 13, F);

Positives and benefits of social technology use

Social connection (n = 20)

Most participants saw value in social technologies for staying socially connected. They kept in touch with distant family, friends from summer programs, and/or school friends during extended absences (e.g., for treatment). Making new (online) friends was relevant for a small number of participants (*n* = 7) but was valued by those youth: online friends cheered participants up, provided continuity across school changes, allowed for managed self-presentation and socialization outside of school, and provided ties across shared interests. P10 (age 15, M) explained, for example, "my depression got worse every day, but when I met some pretty cool people online, they were helping me. … They were making me happy. It was kinda a life changing experience, I guess."

Positive content (n = 18)

Humorous and uplifting content offered small but reliable sources of positive affect enhancement. This included watching funny (e. g., pranks, fails) and/or "cute" (e.g., animal) videos, intentionally following accounts focused on positivity/inspiration, finding humorous/relatable memes, and easily accessing entertainment. Participants reported, for example, "I try to follow only positive things that will make me feel better" (P6, age 16, F); "There are funny videos that like make me laugh. Or like cute videos of like cats falling off tables or playing with each other. That was always cute and would make me smile. It was to distract me from other stuff" (P17, age 13, F); and "Twitter is funny and you will go on it if you are in a bad mood and find something funny" (P16, age 18, F).

Accessing social support (n = 16)

Support seeking occurred mostly via private messaging/texting. Activities included advice-seeking, venting, distraction, and soliciting support from friends and/or online networks. For example, P13 (age 16, M) described, "When I've been down, one of the things that helps me is just [reaching out to] talk with someone … to distract me from whatever's going on in my thoughts. A lot of times when I'm home, my parents aren't really the best choice for someone to do that with." Immediacy and the ability to reach out to many people were referenced affordances.

Resources for mental health and coping (n = 11)

Social technologies played an active role in learning and coping related to mental health. Participants turned to forums/accounts for advice on strategies to resist self-harm urges, used apps to help with anxiety regulation, and learned about personally-relevant issues. For example, P28 (age 16, F) described turning to forums for advice on coping strategies to resist self-harm urges, and learned about techniques like, "holding an ice cube." P14 (age 16, F) used an ongoing suite of apps to help with her anxiety regulation and P20 (age 17, M) created his own anti-anxiety apps. P7 (age 13, F) first recognized her then undiagnosed OCD through a YouTube video.

Shared interests (n = 11)

Participants reported engaging in socially shared interests including art, science, cars, news, politics, charities, nature, animals, philosophy, computer science, playing instruments, following bands, BMX, comics, TV shows, and sports. They also shared interests through community spaces (e.g., Google+) and specific apps (e.g., music-oriented apps) or accounts that provided an opportunity for connecting around interests. As P20 (age 17, M) explained, "… I'm in a lot of different servers, and it's a wonderful opportunity for me because it provides me with connections to people that share a lot of interests with me."

How do these positive and negative experiences fit together?

Participant narratives indicated that social technology use is often mixed, though it could be comprised of almost entirely risks or, instead, benefits. We provide illustrative cases for each of these sub-groups (i.e., mixed, risk-heavy, and benefit-heavy). All three cases portray the experiences of male-identified teens admitted for suicide risk.

Case example: mixed experience

P24 (age 15, M) explained that there are challenges associated with social media, but "there are still so many pros." Among key benefits for him: social media is an important source of social connection and self-expression; he also values opportunities to digitally seek, receive, and offer social support. P24 appreciates that he can reach others "fast" when struggles arise. Being able to talk to multiple people means he can hear different perspectives and get "better insight." P24 values using social media to share his artwork, connect with other artists, and get feedback and inspiration, too. Yet he describes downsides. "You can get ignored or you get less feedback than you hoped … it … makes me insecure." This feeling of insecurity intersects with both metrics-related stress (e.g., not getting desired 'likes') and unmet friendship expectations (when his friends are unresponsive or fail to offer the hoped-for support). Self-expression – though often helpful to "clear my mind … reset my thoughts" – can cause problems because, "I get angry. I say words that I don't really mean."

Case example: risk-focused

P19 (age 15, M) stated clearly: "Social media is—in my opinion—a depressant … it's really unhealthy." For him, key risks/challenges included constant self-denigrating comparisons, metrics stress, and hostile social interactions. Related to comparisons, P19 explained: "When you look at [someone's] page … you compare that idea of them … to yourself. Not just to your Instagram page, but *you*—as in *your* life. So you're like, I'm here, watching Parks and Rec, not doing crap, and they're just like skiing in the Alps and just like

climbing Machu Picchu. And it makes you feel like garbage." He focused heavily on likes, streaks, follower ratios, and comments. For P19, access to these metrics "empowers the idea that I'm liked but it also empowers the idea that I'm hated." He also described how social media amplified hostility and harmful rumors spread about him. He was called a rapist by a girl who had asked him out (after he said no) and explained, "It would be inaccurate to say without social media it would be just as hurtful, cause it's not. Social media makes it ten times worse. It's a public forum, everybody can see it … I want you to understand the seriousness of this. Because this is something that like, high schoolers struggle with daily." There were essentially no true positives of social media use for P19; he referenced occasional social connection benefits intertwined with his discussion of stresses.

Case example: benefit-focused

P23 (age 23, TM) began his description of social media by noting,

> I usually prefer to be on social media as much as I can be without it interrupting my normal life… it's just a creative outlet that I really love to use as much as I can, because it makes me happy… And it's really fun interacting with people around the world.

Key benefits included, for him, social support, making friends and staying connected, positive content, accessing resources, self-expression, and engaging interests. He underscored meaningful experiences of support for and across the LGBTQ + community. P23 also reported that his family had moved more than a dozen times. Online friends provided a sense of stability. In his words:

> In my opinion that social media really does help me. It really does make me feel like there are people that are there for me … it just shows that someone could be 5000 miles away but still care about you and still support you. And I mean, there's always memes and there're always just funny jokes on the Internet that do make me happy. And usually when I get really anxious, I'll listen to calm music on my phone or you know, I'll watch a nice funny video on YouTube. And when I'm really depressed, I feel like it's really nice when I get to talk to other people. And even if they post something negative … then someone [else] would probably show support.

His one negative experience on social media – encountering meanness or hostility – was consistently described as above, i.e., with caveats downplaying impact.

Disconnection during hospitalization and reconnection post-hospitalization

Participants had no access to cellphones or social media while on the inpatient unit. When asked about this disruption to routine access, two-thirds (67%) portrayed the experience as predominantly positive (e.g., "calming," "feels so good," "amazing!"). Some described missing social connections while also emphasizing benefits for sleep, improvements in focus, more time to focus on recovery, less pressure to post, and a reprieve from feeling excluded. Among the remaining ten participants, six had more neutral or ambivalent assessments (e.g., "I'm not suffering because of the lack of social media, but at the same time I feel like there's no great improvement with anything"). Fewer (10%) portrayed the break as predominantly negative and reported missing usage related to coping and social connection.

Feelings were varied about the post-hospitalization return to social technologies. On the one hand, adolescents reported a desire to reconnect with friends and viewed social technologies as integral to social re-entry. On the other, they articulated concerns related to: the volume of content waiting for them and how they would "catch up; " re-engaging with depressogenic content; seeing what others had said about them online; explaining absences; and feeling "addicted again." Most interviewees (60%) expressed ambivalence or apathy. Fewer described only positive (13%) or only negative (20%) feelings.[1]

Discussion

There are three main findings from this study. First, from the perspective of suicidal adolescents, social technology use is associated with benefits as well as risks. Most participants reported mixed experiences, though some had digital lives that were almost entirely positive or negative. Second, a number of the risks documented here are potentially modifiable. Third, adolescents reported experiencing upsides of abstaining from social technology use during inpatient hospitalization. Each of these findings warrants additional comment.

There is abundant public concern about the potential role of social media/smartphone use in contributing to poor mental health and suicidal thoughts and behaviors. The suicide death rate among U.S. youth has been increasing (Cash & Bridge, 2009) and some have suggested that this may be due to increasing digital media use (e.g., Twenge, Joiner, Rogers, & Martin, 2018). In this context, we conducted an in-depth qualitative study of social technology use among adolescents hospitalized with current suicidal thoughts and behaviors. This study design can provide rich and previously lacking information about these adolescents' uses and subjective experiences. A qualitative study like this one allows us to explore the basic nature of the relationship between social technology use and suicidal thoughts and behaviors that forms the foundation for future quantitative studies.

First, interview data document risks and benefits of technology use for youth at-risk for suicide. Findings are consistent with prior studies, including research on social media use with non-clinical samples (e.g. see Uhls, Ellison, & Subrahmanyam, 2017), qualitative

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[1] For two participants, responses to this question were incomplete/not codable.

Table 4
Interrelations of documented social technology experiences with offline risk/protective factors for suicidal thoughts and behaviors.

Social technology experience	Offline risk/protective factors for suicidal thoughts and behaviors (and related outcomes when specified)
Relevant risk factors	
Trouble regulating technology use	- Inclination to withdraw and self-isolate (Endo et al., 2017) - Struggles with self-regulation, particularly for those who engage in NSSI (Perez et al., 2012) and/or with comorbid ADHD (Steinberg & Drabick, 2015)
Stress related to social media metrics (e.g., likes, streaks)	- Rejection sensitivity (Brown et al., 2019; Mereish, Peters, & Yen, 2019)
Engagement with 'triggering' digital content	- Attentional bias to suicidal content (Cha, Najmi, Park, Finn, & Nock, 2010) - Overlap with risk behaviors e.g., self-harm (Riquino, Reese, & Garland, 2020), disordered eating (Werthmann, Jansen, & Roefs, 2015)
Cyberbullying, hostile social interactions	- Offline victimization (Geel et al., 2014) - Struggles with interpersonal skills (Rotheram-Borus, Trautman, Dopkins, & Shrout, 1990)
Social comparison to others' social media posts	- Tendency among depressed individuals toward social comparison, including related to perceptions of others' happiness, peers' social standing (Wetherall et al., 2019) - Difficulty adjusting goals when attainment is thwarted (e.g., social goals) (O'Connor, Fraser, Whyte, MacHale, & Masterton, 2009)
Friendship expectations (e.g., for digital availability)	- Socially-prescribed perfectionism, including in relationships (Hewitt, Flett, & Turnbull-Donovan, 1992) - Beliefs about being burdensome to others (Joiner et al., 2009)
Impression management/performance pressure on social media	- Social desirability (Linehan & Nielsen, 1981) - Perfectionistic self-presentation (Roxborough et al., 2012)
Feeling left out, Fear of missing out (FOMO)	- Thwarted belongingness (Joiner et al., 2009)
Digital expression causing issues	- Impulsivity; negative urgency (Auerbach, Stewart, & Johnson, 2017)
Relevant protective factors	
Social connection	- Importance of maintaining ongoing connection to school peers during hospitalization(s) and making new and positive connections (You, Van Orden, & Conner, 2011) - Acceptance from others (Witvliet, Brendgen, van Lier, Koot, & Vitaro, 2010)
Social support	- Accessibility to others, especially parents and adults in the school for ongoing support needs (Miller et al., 2015) - Importance of social support to buffer stress (Rueger et al., 2016)
Positive, uplifting content	- Distraction component in Safety Planning Intervention (Stanley & Brown, 2012)
Shared interests	- Benefits of socially engaged interests, e.g., offline clubs and sports teams where one can connect with others who have shared interests (Ramey et al., 2010)
Resources for Mental Health/coping	- Provision of coping resources, such as in the Safety Planning Intervention (Stanley & Brown, 2012)

research with depressed adolescents (Radovic et al., 2017) and survey research with psychiatrically hospitalized youth (Nesi, Wolff, & Hunt, 2019). As in Radovic et al. and Nesi et al., adolescents reported benefits for social connection, social support, and accessing positive/affective-enhancing content, and risks including self-denigrating comparisons, encounters with "triggering" posts, and cyberbullying. Importantly, participant narratives clarified how these experiences can take shape for suicidal adolescents. For example, encounters with triggering posts happened both intentionally and unintentionally, and comparisons were at times specifically relevant to personal mental health struggles. This study also surfaced additional risks and benefits relevant to the study population (e.g., struggles regulating use, burdensome friendship expectations, metrics-related stress, resources for coping and mental health). Interview data suggest that benefits should be assessed alongside risks in research, treatment, and intervention planning.

Notably, all of the documented technology experiences overlap with established offline risk and protective factors for suicidal thoughts and behavior (see Table 4). For example, peer victimization (Geel et al., 2014) and social comparison (Wetherall, Robb, & O'Connor, 2019) are recognized risks in offline life that have online corollaries; as we describe, these risks are salient for some suicidal adolescents. Youth who are at-risk for suicide also have a tendency to self-isolate (Endo et al., 2017) and may struggle with self-regulation (Perez, Venta, Garnaat, & Sharp, 2012; Steinberg & Drabick, 2015), both of which intersect with reported struggles regulating technology use. Interview data further suggest that social support needs (Rueger, Malecki, Pyun, Aycock, & Coyle, 2016) can be fulfilled through digital interactions, and social technology use may facilitate aspects of traditional safety planning (Stanley & Brown, 2012). When considering the interrelatedness of online and offline experiences (e.g. Ito et al., 2020), this study serves as a reminder that details matter: even among youth who share acute risk for suicidal thoughts and behavior, individual social technology use can mirror or amplify different risk/protective factors.

Second, a number of risks are potentially modifiable (e.g., digital habits, comparative thinking, and intentionally-sought triggering content). Brief intervention programs aimed at teaching adolescents principles of 'digital hygiene' for mental health may be an effective way to minimize negative effects while retaining and/or amplifying benefits. Such interventions might focus on (for example) teaching strategies to regulate digital habits, unfollowing/muting accounts that routinely evoke comparison, and encouraging online engagement with adaptive interests/hobbies and supportive social ties.

Third, psychiatric inpatient units face safety and privacy policy decisions about social technology access. Participants in this sample generally valued the break from routine use; however, they also viewed social technologies as integral to social re-entry. At the same

time, they reported concerns about the volume of content that would be waiting, how encounters with depressogenic content would influence recovery, and how to explain absences related to their hospitalizations. Prevailing logic might be that a digital detox supports inpatient treatment goals. However, clinicians should think carefully about supporting digital re-entry so this aspect of re-acclimation is not itself a stressor. Here too, novel interventions on digital re-entry should be developed and tested.

One important limitation to acknowledge is that the current sample is comprised of (a) only suicidal adolescents who had access to inpatient treatment and (b) almost entirely white youth. Although the demographic breakdown of our sample matches the unit we recruited from and the larger catchment area, this sample is obviously insufficient for drawing conclusions about the social technology experiences of all youth at-risk for suicide. Given the intersections of online and offline vulnerabilities and continued systemic inequities that intersect with race, we particularly urge more research on the digital experiences of youth of color who struggle with suicidal thoughts and behaviors.

Social technologies are a reality of contemporary adolescents' lives. Suicidal adolescents represent a particularly high-risk group and additional research focused on technology use in this population may facilitate the development of more effective assessments and interventions in the current digital landscape.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.adolescence.2020.12.003.

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