The Kids are Alright: Adolescents’ Experiences During COVID-19 Disruption

IRENE LOPATOVSKA1
Pratt Institute, School of Information, ilopatov@pratt.edu

RADHIKA GARG
Syracuse University, School of Information, rgarg01@syr.edu

OLIVIA TURPIN
Pratt Institute, School of Information, oturpin@pratt.edu

JI HEE YOON
Pratt Institute, School of Information, jyoon56@pratt.edu

LAURA VROOM
Pratt Institute, School of Information, lvroom@pratt.edu

DIEDE BROWN
Pratt Institute, School of Information, dbrow207@pratt.edu

Purpose

The study aimed to understand adolescents’ experiences, negative feelings and coping mechanisms associated with the major disruption caused by the COVID-19 pandemic. The purpose of the study was to develop a baseline for understanding adolescents and their environment in order to assist future developments of technological and other solutions to mitigate adolescents’ loneliness, improve their wellbeing and strengthen their resilience.

Design/methodology/approach

The data about adolescents’ experiences during the COVID-19 pandemic was collected through virtual interviews conducted via Zoom. A total of 39 adolescents (aged 12 through 18) primarily from the North East of the United States participated in the study. The transcripts of the interviews were analyzed using thematic analysis.

Findings

The study found evidence of negative disruptions to adolescents’ social, learning and emotional routines. The study also found that in dealing with the effects of COVID-19 disruption, most of the participants exhibited five key attributes of individual resilience, including social competence, problem-solving, critical consciousness, autonomy and a sense of purpose. External factors supporting resilience were also mentioned, including technology resources, family, school and broader community.

Originality

The study relied on first-hand adolescents’ reports of their experiences, feelings and coping strategies during the pandemic. The study applied a resilience framework to interpret the findings, and translate them into recommendations for further development of support systems for adolescents.

Keywords Adolescence, Coping Strategies, COVID-19, Loneliness, Resilience, Technology, Wellbeing, Interviews

---

1 Corresponding Author, ORCID: 0000-0001-7322-9461
1 INTRODUCTION

Studies on the COVID-19 pandemic have shown increases in anxiety, depression and overall mental distress in populations as a direct result of the pandemic (Hyland et al., 2020; Li et al., 2020; Pierce et al., 2020). While the pandemic has affected people on a global scale, it can have significant consequences for vulnerable groups from both younger and older populations (Gavin et al., 2020). Adolescents might be especially at risk as they are experiencing the pandemic at a critical time in their lives when peer interaction is crucial to their social development, yet these interactions have been severely limited due to social distancing (Rawat and Sehrawat, 2021). When disconnected from their peers, adolescents are also easily prone to experiencing loneliness (Yuan, 2021). The need to understand and address this onset of pandemic-related distress in adolescents is critical for preventing mental illnesses that have been shown to most likely occur during the mid and post-pandemic phases (Gavin et al., 2020; Hoffart et al., 2020).

In the spring and summer of 2021, we conducted a study to a) understand adolescent experiences during the pandemic, with a particular focus on loneliness, and b) explore the potential of using intelligent personal assistants (IPAs, e.g., Apple Siri, Amazon Alexa) to mitigate loneliness and other negative feelings. This article focuses on exploratory findings pertaining to the first part of the study that aimed to understand the changes brought by isolation and distancing measures to adolescents' routines, participants’ reactions to these changes, with a particular focus on the feeling of loneliness, and the coping mechanisms employed during the COVID-19 disruption. The reported qualitative part of the study was grounded in the constructivist approach employed to understand realities of adolescents from their own perspectives (Merriam and Tisdell, 2016).

2 RELEVANT LITERATURE

During the time of the study, few reports were published about the state of adolescents during COVID-19 social isolation (mentioned below). In order to prepare for the study, we examined a) existing reports on the effects of the pandemic on wellbeing, b) general literature about adolescents and their experiences with loneliness and other negative emotions, and c) popular strategies for improving mental health and resiliency.

2.1 Effects of the pandemic on wellbeing

Studies published around the time of the study tended to suggest that the pandemic has had a significant impact on mental health, with stress, anxiety, and depression rising across various populations (Salari et al., 2020). Loneliness levels in particular have been shown to increase among vulnerable groups (Bu et al., 2020; Shah et al., 2020), of which predictors include younger age, lower household income, lower levels of education, being a student, being a woman, living in an urban area, and having a previous mental health condition (Bu et al., 2020; Hoffart et al., 2020). Adolescents meet the profile of the vulnerable population by already being predisposed to experiencing higher levels of loneliness in comparison to other age groups (Beam and Kim, 2020). Recent studies of COVID-19 and loneliness, depression, and sadness indicate that social isolation and pandemic stress amplified negative feelings to the point where they could become a public health issue for adolescents and younger populations who need social interaction for development (Gavin et al., 2020; Komisar, 2021; Leeb et al., 2020).

2.2 Adolescents, loneliness and other negative emotions

Adolescence is characterized by intense physical, psychological, and social transformation from childhood to adulthood (Orben et al., 2020). This transformation is often associated with emotional difficulties ranging from depression, anxieties and fears, to aggressive and noncompliant behaviors (Friedman and Kutash, 1992). Feelings of loneliness stemming from “dissatisfaction with one’s perceived social relationships” (Peplau and Perlman, 1979; Peplau and Perlman, 1982; Rotenberg and Hymel, 1999, p.13) is common in adolescents (Dyer, 1974; von Soest et al., 2020). It is often seen as a natural byproduct of this developmental stage, and is referred to as “transient loneliness” (Rotenberg and Hymel, 1999) or ego-identity development (Goossens and Marcoen, 1999). By being in the stage of life in which people tend to seek satisfactory peer relationships and evaluation (De Goade et al., 2009), an adolescent may be experiencing loneliness when such peer relationship needs are not met. In response, adolescents are, in a way, forced to cope with and evolve from such experiences of loneliness: essentially motivating adolescents to adapt from the “pain of loneliness” through change of behavior towards such negative feelings (Cacioppo et al., 2014, p.1). Many environmental factors may exacerbate transient loneliness including social isolation, defined as the quantifiable lack of (or absence of) social interactions (Gardner et al. 1999). Additional factors include pre-existing depressive symptoms and feelings of low self-esteem.
and low self-compassion (Barry and Wong, 2020; Vanhalst et al., 2012). Therefore, methods to help adolescents mitigate and/or break through such negative feelings should be further researched and developed.

2.3 Popular strategies for mitigating feelings of loneliness and other negative emotions

The literature outlines a number of mechanisms available to help adolescents and other populations cope with disruptive changes and negative feelings. A big umbrella covering different solutions is Cognitive Behavioral Therapy (CBT), an approach from psychology that offers techniques to re-engineer one’s thinking (i.e., cognitive behavior) in order to mitigate or resolve negative feelings and thoughts (Oud et al., 2019). The ability to recognize and understand the mental state of oneself and others’, known as Theory of Mind (ToM), has been found to be negatively associated with loneliness, anxiety, and depression (Caputi and Schoenborn, 2018; Ronchi et al., 2020), as well as being critical for adolescent development (Bosacki, 2020). Another popular solution under CBT is using humor as both a coping mechanism for stress and a distraction (Freud, 1960; Harm et al., 2014; Martin and Lefcourt, 1983; Schiau, 2016). Like ToM, humor can be a coping tool among younger and older adults alike (Harm et al., 2014). Other CBT methods include self-compassion, compassion, mindfulness, and internet-based self-help or therapy – all techniques that help alter people’s negative affect (Eddy et al., 2020; Käll et al., 2020).

Additional frameworks for understanding teen reactions to major disruptive changes and negative emotions are offered by resilience research. With its origin in the fields of medicine, ecology, and psychology, definitions of resilience usually highlight “a stable trajectory of functioning after an adverse event; maintaining positive psychological wellbeing in the aftermath of adversity; the capacity of a system to adapt successfully to a disturbance; and as a process through which people draw on resources to sustain well-being.” (Comfort, 1999; Manyena, 2006; Southwick et al., 2014, pg. 11). Research emphasizes that resilience is not an individual characteristic, but rather a process that is not fixed or immutable (Engel, 2009). Resilience has the potential to significantly improve the psychological, educational, social and emotional outcomes in young people (Sanders et al., 2019). Many of the key resilience theorists -- Bonnie Benard, Manfred Bleuler, Lois Murphy, Irving Gottesman, Michael Rutter, Norman Garmezy, and Emmy Werner -- conceptualize factors that support resiliency at three levels: individual (the child), the family, and the community (for a complete summary, refer to Shean (2015) and Zolkoski and Bullock (2012)).

At the individual level, resilient youth are characterized by: a) social competence: characteristics of responsiveness, flexibility, communication skills and other prosocial behavior (Benard, 1991); b) problem-solving skills: abstract and resourceful thinking employed to seek alternate solutions to cognitive and social problems (Benard, 1991); c) critical consciousness: “insightful awareness of structures of cruelty” (Zolkoski and Bullock, 2012, p. 2296); d) autonomy: a sense of one’s identity and an internal locus of control (Benard, 1993; 1995), and e) sense of purpose in goal-setting, achievement motivation, educational aspirations, and hopefulness (Benard, 1991; 1995). Other factors at this level include positive self-concept, positive outlook in life, and showing a balance between independence and dependence on others (Infante, 2001; Kaplan, 2005).

At the family-level, resilience is supported through the following factors: family cohesion and warmth, parental involvement in a child’s education, the presence of a caring adult in the absence of responsive parents, and socioeconomic advantages (Mackay, 2003). Community-level factors include effective schools and access to learning resources, informal networks of support (e.g., neighbors, friends), institutional structures that foster social ties (e.g., church, social worker), and opportunities for age-appropriate work (Shean, 2015; Zolkoski and Bullock, 2012). Support is not just limited to human-to-human contact, but also can be received from non-human pet companionship (Hoy-Gerlach et al., 2020). The expansive literature review on pet companionship by Hoy-Gerlach et al. (2020), indicates how animal companionship can alleviate the increased social stressors experienced during the pandemic by being sources of comfort, activity motivation, and connection.

In the case of the ongoing COVID-19 pandemic, several studies have found that feeling “supported” emotionally, socially, and communally, impacted perceptions of loneliness and negative moods to varying degrees, particularly in adolescents and young adults (Fumagalli et al., 2021; Groarke et al., 2020; Luchetti et al., 2020; Saltzman et al., 2020).

Within resilience research, scholars have examined the role of technology, and particularly social media, in the lives of adults experiencing disruptions, such as those caused by war (Mark et al., 2009) identity-related transitions (Haimson et al., 2015; Wexler et al., 2009), homelessness (Massimi, 2012), chronic illness (Liu et al., 2015), divorce (Massimi, 2012), and relationship breakups (Massimi, 2014). The role of technology to mitigate negative emotions in adolescents and other populations is often explored in the context of systems that support online communities and communication (Ellis et al., 2020; Ko et al., 2013; Twenge et al., 2019), robots designed as companions to help people manage loneliness (Ananto et al., 2020), programs aimed at understanding
the communication needs of people in environments associated with social isolation and loneliness (Baecker et al., 2014), and personalized use of technologies to assist in anxiety self-regulation (Alliaud, 2021; Senaratne et al., 2019). Overall, the research that focuses specifically on young people's use of technology as a coping mechanism is scarce, and often relies on parent and teacher reports (Zolkoski and Bullock, 2012).

During the pandemic, several studies examined adolescent use of technology in coping with the disruption. Through interviews and ecological momentary assessments (EMAs) of 36 adolescents, Pitt et al. (2021) identified some key factors affecting adolescent wellbeing during the early months (April – August 2020) of the pandemic in the United States. These factors included pandemic-related worry, the transition to online school, increased family time and decreased time with friends. Authors concluded that technology use and wellbeing was dependent more on the level of satisfaction adolescents derived from the use of technology than the amount of time they spent using it. Garg’s (2021) research of Asian Indian immigrant families, which included 22 parents and their teenagers of varying socioeconomic status in the U.S. during COVID-19, indicated that technology facilitated resilient practices (e.g., expressing emotions, maintaining a positive outlook, making meaning of the disruption, solving problems collaboratively) that helped participants cope with the disruption caused by the pandemic. The empirical interviews conducted in the Garg (2021) study found reports of technology such as messaging applications allowing for more open sharing of emotions and/or information between children and their parents, thus demonstrating technology’s role in building a “resilient family environment” (Garg, 2021, p.19) with an increased sense of trust and empathy amidst the pandemic.

In summary, prior work suggests that a) adolescence is a turbulent time of transition associated with increases in loneliness and other negative feelings; b) pandemic measures of social isolation might have exasperated these negative feelings; c) coping strategies and factors of internal and external resilience are available to adolescents to cope with negative changes in their lives. Our study aimed to extend prior research on adolescents by understanding their experiences during COVID-19 isolation, their feelings of loneliness and related negative feelings, and the coping strategies they employed during this major disruption.

3 METHODS

The reported research aimed to explore the following research questions:

RQ1: What changes occurred in adolescents’ lives during the social distancing measures of the COVID-19 pandemic and how did they experience these changes?

RQ2: To what extent did adolescents experience the feeling of loneliness and what strategies did they use to mitigate it?

Due to insufficient published evidence on adolescents’ COVID-19 experiences, we were unable to formulate ad-hoc hypotheses. Instead, we employed a qualitative approach, relying on participants’ self-reports from our exploratory study (Krathwohl, 2009). Self-report, and specifically interview methods, have been used in earlier pandemic and pre-pandemic studies of adolescent experiences (Garg, 2021; Pitt et al., 2021). We designed a semi-structured interview script including general open-ended questions about an adolescent’s life and school experiences during the pandemic (RQ1), and more specific questions about feelings of loneliness and ways of coping with loneliness and general life changes (RQ2) (the copy of the interview questions with sources of inspirations for some of them is included in Appendix 2).

Participants for the study were recruited from the mailing lists and social media channels of researchers' academic institutions, as well as parent groups of public and private schools in and around the greater New York City area. The initial recruitment message targeted adult caregivers of children ages 12 to 18 (middle and high school ages in the U.S. school system, defined as adolescents by Ladd and Ettekal (2003)). Caregivers of potential participants received a summary of the study aims and procedures, and were asked to fill out a demographic questionnaire. If adults consented to their minor's participation in a study, they were asked to provide the email address of the adolescent(s) in their care. The adolescents were then contacted and offered participation. In the Spring of 2021, the interviews with our adolescent participants were conducted on the Zoom virtual platform and lasted

---

2 Link to Appendix:
https://docs.google.com/document/d/1xENIFF7kdTvdbtOwM_pfh32j_tN1OwOCpKEuLj3jkc/edit?usp=sharing
approximately 30 minutes. A total of 39 adolescents completed the study and received a gift card to an online store at the end of the study.

The median age of adolescent participants was 14 (min 12 - max 18, mode is 12, with 10 students aged 12 years old). Twenty-six (67%) participants identified as female (more male participants initially volunteered for the study but were unable to complete it; the data provided by these participants at the beginning of the study (demographics and initial interview) were excluded from analysis).

![Figure 1. Participants age distribution](image)

Twenty-seven households reported speaking only English in their home, with 10 speaking one or more additional languages and 2 speaking primarily languages other than English. The majority of parents described their household as white (24/62%), followed by Asian (4/10%) and Asian/White (4/10%), African American (3/8%), and other ethnicities (4/10%). Most caregivers reported living in an urban environment (26/67% vs suburban 13/33%), and within the Northeastern region of the U.S. (36/92%). Thirty-six (92%) of caregivers reported being married.

Most of the primary caregivers who completed the demographic questionnaire were women (67%) who work over 31 hours a week (22/57%). Of those who responded to the question (9 declined to say), 18 (60%) have an annual household income above $100,000, 8 (27%) make between $50,000-$100,000 and 4 (13%) make under $50,000, with a mode (11) of over $200,000. Caregivers reported their child’s school style at the time of the study was hybrid (26/67%) followed by fully remote (10/26%), fully in-person (2/5%), and homeschooled (1).

### 3.1 Data Analysis Method

The study used a thematic analysis framework for analyzing qualitative data collected through the interviews with participants. (Nowell et al., 2017). The data was coded by two researchers: one analyzed a complete set of interview transcripts while the second analyzed a smaller subset of transcripts as a means of validating the first coder. At each phase of the coding process, researchers met to compare their findings and reach agreement on the coding process and outputs. During the first phase, researchers familiarized themselves with the data, took notes and documented initial ideas about themes and coding structure. In phase 2, researchers generated the initial codes, capturing distinct realities, behaviors, concepts, emotions and ideas manifested in a participants’ train of thought when describing their experiences. A train of thought was determined once the researchers deemed the participant had reached a conclusion in their line of reasoning, whether this was expressed succinctly in words and/or phrases, or more discursively through connected sentences. Emerging patterns in the data were labeled, and the researchers kept notes on the development and implementation of the code, including provisions to labels’ definitions and explanations. In phase 3, the researchers searched for themes by sorting the labels into related groups and identifying unifying themes within the structure of the interview instrument. Larger main themes and their related sub-themes were established from identifying patterns of shared meaning in the words, phrases, and/or sentences used by participants to express a train a thought given in their responses to interview questions (Braun and Clarke, 2019) The researchers recorded the frequency of each label to better gauge the magnitude of these themes in participants’ narratives. This step fed into phase 4, where the researchers reviewed and further edited the themes.
by combining overlapping codes, eliminating unnecessary or irrelevant subthemes, and overall ensuring cohesion within each theme. In phase 5, the themes were incorporated into and built upon the story of the entire data set. The narrative report of interpreted findings, backed by a coding audit trail and selected quotes, is presented below. We also include demographics of the adolescent participants and their households collected via the demographic questionnaire that was used in recruitment.

4 FINDINGS

4.1 Changes that occurred in adolescents’ lives during the COVID-19 pandemic and ways in which they experienced these changes

Thirty-six (36) participants lived in areas where lockdown/stay at home measures were in effect. Ten specifically mentioned living in New York City or other urban areas that were significantly affected by COVID-19 cases (“hit hard” is a phrase that represents participants’ sentiments about the effect of pandemic on their communities). Three participants mentioned moving to another state during the pandemic, two were unsure whether their states had stay at home orders and one mentioned not experiencing stay at home orders.

While reflecting on the major changes in their lives during the pandemic, participants acknowledged changes associated with a general transition to “virtual life” (N=31). Main themes and sub-themes in participants responses are captured in Table 1 (in throughout the subsequent narrative). Fourteen participants expressed negative reactions to this transition, while ten expressed positive reactions (see Table 1). All but one home schooled participant acknowledged major changes in their school life. For some participants, their school became fully virtual, for others it started as fully virtual and transitioned to a hybrid-virtual model, and several students’ regular school attendance didn’t change except for short quarantines associated with positive COVID-19 cases. 74% (N=78) of the participants’ comments about changes in their school environment referred to negative changes, along with 23% (N=28) of the school-related comments acknowledging positive changes. Two participants mentioned moving to a private school during the pandemic, where they received more academic support. One homeschooled participant mentioned a positive change of having parents around the house more.

Table 1. Themes in participants responses about their lives and emotions during the pandemic

<table>
<thead>
<tr>
<th>Themes/sub-themes in responses (Frequencies)</th>
<th>Exemplary quotes (Participant ID, Gender, Age)</th>
</tr>
</thead>
<tbody>
<tr>
<td>General shift to virtual life (31)</td>
<td></td>
</tr>
<tr>
<td>Transition to fully virtual or hybrid-virtual school (13)</td>
<td>“I’ve been fully remote for school now. So, like I have to do all my classes online and that's affected my ability to stay motivated.” (P20, Female, 16)</td>
</tr>
<tr>
<td>Stuck at home (12)</td>
<td>“I don’t go out and see my friends as much. And I’m [...] stuck inside the house and bored.” (P16, Male, 12)</td>
</tr>
<tr>
<td>Cancellation/changes to extracurricular activities (6)</td>
<td>“There were a couple of activities that I was looking forward to that I was unable to do...One was basketball [...] I was trying out for the travel team but then with COVID couldn’t really do basketball anymore.” (P42, Male, 12)</td>
</tr>
<tr>
<td>Negative reactions to virtual life (14)</td>
<td></td>
</tr>
<tr>
<td>Increase in negative feelings (e.g., loneliness, anxiety, anger, isolation) (9)</td>
<td>“Well I have suffered from being isolated. [...] I am more of an outside kid, and not having that privilege of going outside affects me, because not only am I not interacting with other people, I'm also [...] missing out on doing everyday activities.” (P30, Male, 13)</td>
</tr>
<tr>
<td></td>
<td>“It's easy to feel isolated when you're all remote or, you know, with just social distancing in general.” (P20, Female, 16)</td>
</tr>
<tr>
<td>Inconvenience of mask (4)</td>
<td>“We have to wear a mask everywhere [...] just makes it a bit uncomfortable.” (P12, Female, 12)</td>
</tr>
<tr>
<td>Loss of privacy (due to being home w/family) (1)</td>
<td>“It's kind of awkward, I guess, because I’m [...] there with [a] mask and [...] we can’t hear each other talking.” (P27, Female, 14)</td>
</tr>
<tr>
<td>Positive reactions to virtual life (8)</td>
<td>“My dad is still working from home. So, being alone, having time for yourself is very limited.” (P23, Female, 17)</td>
</tr>
<tr>
<td>More time with family (6)</td>
<td>“Also, I can say that my interactions at home have increased a bit, because now I get to learn how my parents are at home. [...] I can say I even learn[ed] recently that my father is a person who tells jokes, because I’ve not stayed with him for such a long time. Before the pandemic, I could not [be] playful or joking but now I know he’s a real character who also likes computing quite a lot.” (P17, Male, 18)</td>
</tr>
<tr>
<td>More time for independent learning (1)</td>
<td>“It hasn’t been too bad. To be honest, I actually like spending more time with my family.” (P42, Male, 12)</td>
</tr>
<tr>
<td></td>
<td>“My parents actually homeschool me so it's a lot easier and better for me to be homeschooled now, because they have a lot more time at home with us.” (P12, Female, 12)</td>
</tr>
<tr>
<td>More time for independent learning (1)</td>
<td>“Because I spent most of my time at home, my computer time has a bit increased, and recently I’ve learned some new visualizations with my computer, and also a bit of programming, just this period, maybe I can say, because when I’m free I can look for YouTube tutorials and just engage myself with programming.” (P17, Male, 18)</td>
</tr>
<tr>
<td>Learn not to take things for granted (1)</td>
<td>“[I learned]...not to take things for granted” (P29, Male, 13)</td>
</tr>
<tr>
<td>Negative reactions associated with the change to virtual/hybrid school (78)</td>
<td>“I've definitely felt more lonely because I feel like I've less of a connection to, especially my school friends. [...] at school before [...] there’s like always little interactions walking through the halls, I’d say hi to someone, but now it’s like you really have to plan it out and be like okay I’m free on this day in two weeks [...] there aren't as many casual little conversations.” (P21, Female, 16)</td>
</tr>
<tr>
<td></td>
<td>“It would affect my mood. Sometimes this past month I’ll get very angry of being stuck at home. I would throw tantrums at the most. It was a very chaotic experience.” (P30, Male, 13)</td>
</tr>
<tr>
<td></td>
<td>“I think it definitely gave me more anxiety. I never was super anxious before. Yeah, actually would not describe myself as anxious at all before. [...] I don’t really know what it was but I had [...] like panic attacks and stuff like that.” (P46, Female, 18)</td>
</tr>
<tr>
<td>Topic</td>
<td>Quotes</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Instruction is perceived as harder/easier/less engaging (33)</td>
<td>“[Virtual school] is a bit less interactive […] when we're in person school we have labs to do for science class, and we can do a bit of group work. But online we can’t do any of that…” (P47, Female, 17)</td>
</tr>
<tr>
<td></td>
<td>“[School has been] challenging; I feel like school is going a bit slower, like we don't have as much time in school to actually complete activities.” (P19, Female, 15)</td>
</tr>
<tr>
<td></td>
<td>“It's been rough because I wasn't able to understand the information, and I had no direct help. Even though the teacher’s there like she's not really there.” (P33, Female, 15)</td>
</tr>
<tr>
<td>School changes cause feelings of being demotivated, unfocused, stressed, etc. (25)</td>
<td>“It was easy at first, but then you start to lose motivation and a temptation to do other things during that class. And I guess that school doesn't seem very real so you kind of start to pay less attention.” (P41, Female, 14)</td>
</tr>
<tr>
<td>Learning/understanding is harder (20)</td>
<td>“I'd say it's horrible in terms of actually learning. I don't really think I've learned much this year.” (P38, Female, 14)</td>
</tr>
<tr>
<td></td>
<td>“Since we're not in person, I also fall asleep during classes and I miss a large chunk of what's going on.” (P16, Male, 12)</td>
</tr>
<tr>
<td>Positive reactions associated with the change to virtual/hybrid school (28)</td>
<td>“Things are picking up a little bit more in school now. I have like seven hours of Zoom going on all day. Honestly, it's been going really well, like my grades have been higher than they were sophomore year…I feel like they're giving us more time to complete the assignments…So things are just a little bit more lenient.” (P31, Female, 17)</td>
</tr>
<tr>
<td>Lenient requirements/teachers (12)</td>
<td>“[Virtual learning is] Better cause it's easier for me to focus and […] there are no other people around that are […] distracting.” (P32, Female, 12)</td>
</tr>
<tr>
<td>Right learning environment for shy/visual/independent learners (11)</td>
<td>“I like the one day in person, one day online, since it gives you a break, and since [in] middle school, you get a bit more sleep when you're not in school.” (P11, Male, 13)</td>
</tr>
<tr>
<td>More time saved on commute to/from school (5)</td>
<td>“My social life] has changed but I don't say it's for better or worse, it's just everything is digital now instead of in real life.” (P34, Female, 18)</td>
</tr>
<tr>
<td>Changes to Social Life (174)</td>
<td>“I have to zoom [a lot more].” (P15, Male, 12)</td>
</tr>
<tr>
<td>Increased use of specific technology to support social interactions (77)</td>
<td>“I Facetime my friends very often… I think my phone usage in a week is 10 hours more.” (P20, Female, 16)</td>
</tr>
<tr>
<td></td>
<td>“We started playing video games online like Fortnite [and] Call of Duty.” (P31, Female, 17)</td>
</tr>
<tr>
<td>Increase in virtual interactions in general (24)</td>
<td>“[My social life] has changed but I don't say it's for better or worse, it's just everything is digital now instead of in real life.” (P34, Female, 18)</td>
</tr>
</tbody>
</table>
Participants’ accounts of the pandemic-related social changes focused on the changing quantity and quality of their interactions with peers, including an increase in virtual interactions in general and increased use of technology/applications in particular. Participants reported an increased usage in texting (30), video calling (19), phone calling (8), social media (5), online messaging platforms (6, including Discord (4), gaming platforms and email). Participants also commented on an inability to see friends or only seeing them outdoors during pre-planned meetings. Many participants experienced a decrease in social interactions, while some managed to maintain their connections through joint activities (Table 1).

As the restrictions lessened in Spring 2021, participants found that in-person interactions increased (16), more adolescents were able to talk to their friends in school and athletic events (7), and even host sleepovers. Participants expressed mixed sentiments about the return to in-person interactions. Some felt more connected to their friends in-person (2) and had a greater appreciation for their friends after having not seen them “I think that [...] not seeing them for so long made me realize that I needed to get closer with them or something” (P48, Female, 12), while others found the return to in-person/group interactions problematic (6) due to masks and social distancing, longer in-person talks needed “to catch up,” anxiety about the return of in-person/group interactions (2), feeling “drained by seeing people,” and readjusting to outdoor activities.

### 4.2 To what extent did adolescents experience the feeling of loneliness and what strategies did they use to mitigate it?

In the context of the reported changes in participants’ lives, school and social interactions, we asked them specifically about the feeling of loneliness they might have experienced during the pandemic. About half of the participants reported an increased feeling of loneliness and other negative feelings (Table 2).
Female, 13)
“I feel lonely when I’m just alone in the house, because I rarely go outside. And when my friends aren’t there to share feelings I just get more lonelier and just don’t know what to do with my life.” (P49, Male, 12)
“I felt very lonely… I wasn’t interacting with anyone besides interacting virtually and I’m totally a people person so that was not good for me.” (P44, Female, 18)
“[Loneliness] is like an elephant in the room that no one really wants to admit it, but it’s something that we all have.” (P33, Female, 15)

Increase in other negative feelings (8)
“I felt annoyed at the pandemic. That my friends moved away but I haven't been feeling lonely.” (P14, Male, 12)
“There’s a lot of, like, anxiety.” (P19, Male, 15)

No change in loneliness (5)
“I haven't really felt lonely, especially with my family supporting me and since I still got to see my friends. I really haven't been feeling much loneliness.” (P42, Male, 12)
“I have two sisters so it’s not really lonely.” (P32, Female, 12)

Out of the twenty reports of loneliness, four participants reported on a silver lining of experiencing quarantine isolation:

“I feel like I haven't been super, super lonely during quarantine because I feel like [it] actually almost helped me learn to be with myself better. [...] before quarantine [...] if I didn't go out on the weekend I'd freak out and cry [...] I hated not going out and seeing my friends, but [in] quarantine [I] kind of got used to it [...] I obviously do get lonely if I can't see my friends, but I don't care as much now because I know how to keep myself occupied.” (P46, Female, 18)

The majority of our participants (33) felt comfortable talking about loneliness with others. Of these, 9 were comfortable talking to friends, 5 were only comfortable with 1-2 close friends (“I have one solid person who’s [...] my closest friend that I talked to about [...] these issues [...] I don't feel lonely when I'm able to talk to her about my feelings” P20, Female, 16). Participants mentioned being comfortable discussing loneliness with the people they trust, their therapist, boyfriend, girlfriend, family (7, specifically their mother and siblings).

“I've actually been thinking about getting a therapist recently[...] I think everybody should have a therapist because everyone’s going through rough times and [...] need someone to talk to you; like someone that doesn’t know you completely personally and kind of has an outside view on things. But I think it’s harder to ask my parents about that because there’s always going to be a stigma around that issue itself.” (P20, Female, 16)

Two participants said that while they shared their feelings with others (especially parents), they didn’t think they were truly understood. One participant specifically mentioned not sharing any emotional problems with parents because of the cultural stigma associated with this behavior. One participant preferred not to share with friends due to the sense of competition and pride:

- “[I will talk about loneliness] depending on the situation…. we have [...] friends that you’re kind of in competition with, like who has the better social life.” and “[I have other really close friends that I don’t want to be vulnerable with. I want them to think like everything’s okay and I don't feel feelings like that.” (P23, Female, 17)
Two participants were not comfortable talking about loneliness and preferred dealing with their feelings alone, and one participant said they did not ever feel lonely, therefore they had no need to talk about it.

### 4.2.1 Methods for coping with loneliness

A total of 218 references to coping strategies were found in participants’ responses (Table 3). We identified two categories of resources mentioned by the participants: internal resources and coping strategies, grounded in individual abilities to cope with loneliness, and external resources, grounded in support provided by their network (Ungar, 2011; Zolkoski and Bullock, 2012). Internal resources were mentioned more frequently than external resources, and included seeking distractions, connections with others, and relying on self-care solutions. One participant mentioned that their coping strategy depended on the time of day. For example, during the day they would rather find a productive project, like cleaning, to distract themselves rather than watch TV. External resources for coping with loneliness primarily included friends and family, with fewer mentions of school and other professionals (Table 3).

### Table 3. Strategies and resources for coping with loneliness

<table>
<thead>
<tr>
<th>Themes/sub-themes in responses (Frequencies)</th>
<th>Exemplary quotes (Participant ID, Gender, Age)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Internal Strategies for Coping with Loneliness (139)</strong></td>
<td></td>
</tr>
<tr>
<td>Seeking distractions (74)</td>
<td>“I can't heal from [loneliness] so I just try to focus on something else.” (P39, Female, 14)</td>
</tr>
<tr>
<td></td>
<td>“[I look for] like distractions, I guess, like TV, or music or something.” (P26, Female, 14)</td>
</tr>
<tr>
<td></td>
<td>“I also really enjoy crocheting so I've gotten a lot of that stuff done throughout the pandemic...where it, like, just distracts me and gets me doing something.” (P43, Female, 18)</td>
</tr>
<tr>
<td>Seeking connections with others (41)</td>
<td>“When I feel pretty lonely I usually go and try to interact with people, like I'll start texting someone or I'll call them” (P27, Female, 14)</td>
</tr>
<tr>
<td></td>
<td>“I call my friends, because they always make me laugh so it's really fun to talk to them.” (P34, Female, 18)</td>
</tr>
<tr>
<td>Employing self-care strategies (24)</td>
<td>“I just try to stay in my own space, try to stay by myself and clear my head and calm down.” (P12, Female, 17)</td>
</tr>
<tr>
<td></td>
<td>“I try to go on walks to ... ease my mind on things.” (P20, Female, 16)</td>
</tr>
<tr>
<td><strong>External Resources for Coping with Loneliness (79)</strong></td>
<td></td>
</tr>
<tr>
<td>Friends (24)</td>
<td>“I know I can always talk to my friends, and my boyfriend.” (P46, Female, 18)</td>
</tr>
<tr>
<td></td>
<td>“I have like my best friend who lives next door so we talked about a lot of stuff together.” (P25, Female, 16)</td>
</tr>
<tr>
<td>Family (24)</td>
<td>“I turned to my parents a lot and they're very supportive.” (P37, Female, 15)</td>
</tr>
<tr>
<td></td>
<td>“[I have] my mom and my pets.” (P13, Female, 12)</td>
</tr>
</tbody>
</table>
4.2.2 Technology-facilitated methods for coping with loneliness

Participants reported using technology both to support internal coping strategies and access external resources. For example, various platforms and media were mentioned in the context of seeking distractions (N=94), including listening to audio content (31, music (25) and podcasts (6)), consuming video content (21, YouTube (5), movies (6), streaming services (6), TV (4)), checking social media feed (21, gaming-related activities (11)), and searching/browsing other online content (10). Participants reported the use of various apps to support their self-care exercises (16, including yoga, mindfulness, meditation, breathing). Technology was mentioned in the contexts of supporting connections with others (15) through the use of Tik Tok, Snapchat, Discord and texting applications, and supporting creative activities (painting, creating/editing of digital content).

Six participants didn’t use technology solutions for loneliness: four did not have social media accounts and two actively avoided it:

“Being on [my] phone, [...] I’m talking about FOMO. [...] At times I feel lonely and I don’t feel lonely too often, but the time I do it’s when everyone else is doing something and I’m not. So just like seeing [people together without me on Snapchat], Instagram too, and if I’m already feeling a little sad about being home, that will make it like 10 times worse. I think social media has really contributed to that because in the old days you didn’t really have a way of finding out.” (P23, Female, 17)

5 DISCUSSION

The main themes in participants’ reports of their pandemic experiences largely confirmed previous observations about the life changing effects of COVID-19 on adolescents (Gavin et al., 2020; Hoffart et al., 2020; Rawat and Sehrawat, 2021). In the discussion that follows we aim to explain our findings through the lens of resilience and other known coping frameworks.

5.1 Changes that occurred in adolescents’ lives during the COVID-19 pandemic and ways in which adolescents experienced these changes

Findings pertaining to the pandemic-caused changes in our participants’ lives support and add nuance to the prior reports (Ellis et al., 2020; Garg, 2021; Leeb et al., 2020; Rawat and Sehrawat, 2021). Almost all of the participants reported living in the conditions of lockdown, which the literature indicates imposed additional stress on adolescents (Rawat and Sehrawat, 2021; Singh et al., 2020; Zhang et al., 2020). All participants acknowledged some disruptions to their lives due to the COVID-19 pandemic, ranging from living a fully ‘virtual life’ to other social distancing/isolation measures limiting their opportunities for interactions with others. While many of these changes had negative effects on adolescents, the pandemic also brought some positive changes. In particular, participants noted having more availability of free time, resulting in the ability to spend more time with family and focus on personal hobbies which often provided mechanisms for coping with negative emotions.

Changes to school were primarily negative and involved difficulties associated with online instruction and learning, as well as its detrimental impact on student emotions (e.g., decreased motivation and focus and increased stress); this is in line with the findings of Pitt et al. (2021) previously discussed. However, some positive developments were also mentioned, including school being
The COVID-19 pandemic also brought changes to adolescents’ social interactions, forcing them from physical to virtual domains, or decreasing interactions all together. Even so, adolescents managed to maintain their social relationships, while some even reconnected with old friends during the pandemic. This points to the resilient characteristics of an internal locus of control and social competency (Benard, 1993; 1995). Internal locus of control refers to the children’s ability to feel in control of a situation and influence events (Benard, 1993; 1995; Shean, 2015). A study by Moore and Schultz (1983) suggests that lonely adolescents were more likely to have an external locus of control (believing circumstances are out of their control), while having a more internal locus of control (believing circumstances are within their control) mitigated the negative feelings. Despite the isolation measures in place during the pandemic, our participants wanted to and were able to act independently to exert some control over their environment by finding means to connect with others, combating negative feelings, and exhibiting signs of an internal sense of control—an important characteristic of resilient children (Benard, 1993; 1995). In addition, resilient children and teens are known to have social competence—a construct that works at an individual level and, amongst several other aspects, is indicative of one’s ability to evaluate social situations and determine what is expected or required (Benard, 1993; 1995; Luthar, 1991). Adolescents’ ability to maintain and reestablish connections with friends also illustrates the positive role of technology for communication and relationship maintenance (Kimm and Boase, 2019; Salzano et al., 2021). Since the study was conducted during the partial return of teen lives to normal, six adolescents shared new challenges associated with fears of going out (FOGO) and interacting with people again (Berg, 2021; Simon, 2021). Their coping strategies for the return back to physical interactions would require another study.

5.2 Adolescent loneliness and strategies for coping with it

Social isolation and virtual life caused a number of teen participants to report increased feelings of loneliness and/or other negative emotions. Only several teens reported “getting used” to the feeling of loneliness, supporting the notion that loneliness is a natural experience of growing up and realizing that it is one of the natural feelings experienced in adulthood (Sundqvist and Hemberg, 2021).

Participants reported a number of techniques for dealing with these negative feelings, including seeking distractions, engaging in self-care and creative activities, reaching out to friends, and changing their routine by getting more active (as supported by the findings from previous studies (Campbell, 2015; Moore and Schultz, 1983; Peplau and Perlman, 1982; Perlman and Peplau, 1998; Rokach, 1996; Sundqvist and Hemberg, 2021). Many of these coping strategies were grounded in the ‘physical world’ (sitting in one’s room, going outside, cleaning, engaging in creative projects, exercising, etc.) or involved creative hobbies like painting/drawing, writing, playing an instrument and baking to distract them from loneliness. Most of the adolescents found comfort by talking to others, a strategy that is a known coping mechanism for psychological stress (Forsythe and Forsythe, 2014; Seligman, 2011). However, several participants found it difficult to discuss their feelings with parents and friends due to perceived stigma associated with the topic or perceived lack of understanding from others. A study of Finnish adolescents found that a stigma of perceiving loneliness as a shameful experience made some participants initially wary of discussing their feeling of loneliness with others, potentially exacerbating their negative mood (Sundqvist and Hemberg, 2021). In the context of our larger study on the use of IPAs to support lonely adolescents, the findings pertaining to the conversation-based coping strategies are particularly important and highlight the potential of using this technology when supportive adults or peers might not be available.

Technology was mentioned by participants as the tool for facilitating interactions during social isolation, as well as the vital instrument for connecting adolescents to resources for self-care, relaxation and distractions (e.g., providing access to online content, gaming). Prior research supports technology’s potential to offer useful resources for social and emotional support. For example, online gaming has been shown to foster meaningful friendships, where players feel comfortable discussing sensitive topics, as well as enable players to build bonding social capital that can develop into offline social support (Cole, 2007; Utz, 2012). Studies have also found a positive relationship between using social networking sites and online social support (Utz, 2017), which in turn has been shown to offset negative effects of stressful life events, loneliness, low self-esteem and depression (Nick, 2018). Overall, our participants were able to generate the above listed alternative solutions for their cognitive (e.g., not realizing one’s potential) and social problems (e.g., isolation) using technology, all of which demonstrate resilience, autonomy and problem-solving skills (Benard, 1993; 1995).
However, several participants reflected on the harmful impact of technology and admitted that not all of their technology use was helpful or productive, which studies have suggested can contribute to increased psychological distress, loneliness and social isolation in adolescents with increased technology use (Maras et al., 2015; Martin, 2011; Rosen et al., 2014). By being critically conscious, some of our participants avoided the feeling of being heavily mentally burdened by social media pressures to believe that others might be having fun while one is not present or having more fun than themselves (FOMO, fear of missing out). Acknowledgement of the detrimental effects of technology attests to presence of critical consciousness - a characteristic of a resilient adolescent who is aware of the structures of the oppression/peer pressure they are subjected to (Benard, 1993; 1995).

The high frequency of reports linked to the internal resiliency strategies for coping with loneliness and emotional problems illustrate generational increase in prioritizing wellbeing, also noted in previous reports (APA, 2018; Barker, 2017) and point to the existing and potential uses of technology to support many of these strategies (e.g., use technology to connect to others, offer distraction).

While most of the strategies for coping with disruption on social, school and emotional levels are grounded in participants’ internal resilience factors, external resources available to them should also be acknowledged. Some of these external resources mentioned by adolescents align with the external support factors from resilience models, including

- **Family-level support**, coming from parents/caregivers, siblings, pets. To recall, the majority of participants live in two parent households where the combined annual income is above $100,000. Participants had socioeconomic advantages to support their resiliency with resources ranging from availability of technology to proximity to supportive and understanding caregivers. Most children who are resilient have had the opportunity to establish a close bond with at least one of their parents/caregivers. At the family level, participants reported appreciating additional time spent with family, getting to know parents, spending time with siblings and getting support from them. The fact that many family members provided time and care to children to support them while they felt lonely or isolated speaks to family cohesion and warmth that function as external support for children resilience (Cavanaugh and Buehler, 2016; Heshmat and Neustaedter, 2021; Heshmati et al., 2021). Additionally, the vast majority of participants had at least one sibling and the majority had a pet who provided emotional support and companionship during the time of social isolation. Pet companionship has previously been shown to help alleviate not only loneliness, but also other negative stressors and trauma (Friedmann and Thomas, 1995; Hoy-Gerlach et al., 2020; McConnell et al., 2015; Siegel et al., 1999).

- **Community-level support**, associated with effective schools and access to learning resources (including school counselors, helpful teachers, and school-distributed resources mentioned by our participants) and informal networks of support (e.g., neighbors, friends) also had an important role in ensuring that most of our participants were able to demonstrate resilience during the COVID-19 disruption.

While participants frequently mentioned external resilience support factors, some acknowledged lack or inadequacy of such support (e.g., lack of school resources, parents who don’t understand teens’ problems). Some of the current technological solutions (e.g., robotic pets, online community forums) can partially address the gaps in external support but were not mentioned by our participants. Additional work is needed to examine the potential of technology to support external sources of adolescents’ resilience.

### 6 CONCLUSION

Our study explored adolescents’ experiences during the COVID-19 isolation period and found evidence of negative disruptions to their social and school routines, as well as their emotional states. However, not all changes were negative, and adolescents often found a “silver lining” to their pandemic experiences (e.g., more time to sleep in the morning). The participants found ways to cope with negative disruptions and exhibited five key attributes of individual resilience: social competence, problem-solving, critical consciousness, autonomy and a sense of purpose (Shean, 2015; Zokoski and Bullock 2012). Adolescents displayed social competence by exhibiting prosocial behavior when seeking and maintaining communication with peers, as well as confiding in friends and family for emotional and social support. Benard (1991) describes problem solving as the ability to “attempt alternate solutions for both cognitive and social problems,” a skill that adolescents showed when finding resourceful solutions to coping with loneliness, which included engaging in self-care activities or changing up their routines. Related to problem-solving, adolescents expressed personal autonomy and internal locus of control by shaping up the outcomes of their environment despite the forced isolation measures (Benard, 1991). Adolescents were critically conscious of the harmful effects of their increased technology use, and exhibited a sense of purpose by keeping up with personal hobbies to cope with stressful realities and stimulate personal growth. These findings support prior studies that have shown that during periods of adversity, the majority of people will exhibit resiliency (Chen and Bonanno, 2020). In addition to these internal factors, external factors of resilience were also present for most participants at both the family and community levels. Many adolescents mentioned having family members to confide in
for emotional support (in particular mothers and siblings), as well as community-level resources like school counselors and peer support.

Our study captured adolescents’ experiences during COVID-19 isolation and its effects on their lives and wellbeing. Study findings provide baseline data for researchers interested in developing support for adolescents’ internal and external resiliency factors. Some thoughts about the study implications and possible future avenues for investigation are outlined below.

1. **Virtual life.** Virtual life that manifests itself in extreme physical isolation and pervasiveness of online interactions for personal and school purposes might be coming to an end for most of the adolescents who live in areas where pandemic restrictions are being lifted. However, it can be a routine or a new norm to other adolescents (e.g., homeschooled children, children who live in areas where isolation is imposed by wars, natural disasters, etc.). We recommend that both positive and negative factors reported by our participants in the context of virtual environments be considered in designing ‘virtual’ support for adolescents. Additional attention should be given to a transitional period between virtual and physical/normal environments. Some of our participants reported emerging challenges associated with FOGO and the return of physical interactions (the observation is supported by emerging reports on adolescents’ post-pandemic stress (Pflum, 2022)). Understanding and supporting adolescent coping strategies during the return back to physical interactions would require additional work.

2. **Virtual school.** Researchers agree that elements of virtual instruction that emerged during the strict measures of social distancing are here to stay, regardless of the COVID-19 pandemic status (Li and Lalani, 2020; Lockee, 2021; Schwartz et al., 2020). Understanding adolescent experiences with virtual instruction during the pandemic can inform future online learning solutions. For example, participants’ feedback on the virtual instruction delivery methods can lead to the design of more transparent, engaging and clearer channels of communication, and inform further research on “Zoom fatigue” and optimization of the balance between virtual v physical, synchronous v asynchronous, independent v teacher-lead learning. Effects of changing learning routines on adolescents’ wellbeing should also be acknowledged. While some of the pandemic-related stressors will fade away, helping adolescents stay organized, motivated and focused on learning will remain important, as well as minimizing teen stress and anxiety associated with the learning process. The positive experiences associated with online learning point to the need to further explore virtual instruction options for children who are anxious and shy about public speaking, could benefit from more time on assignments and fluid deadlines, prefer to learn at one’s own pace, and learn better independently without social distractions of in-person school. (Yu et al., 2021)

3. **Loneliness and decreases in physical interactions.** While feelings of loneliness and other negative states are often common during adolescence, these states were exacerbated by the pandemic and the inability to socialize with schoolmates and friends. The fact that most of the participants possessed characteristics of internal resilience that helped them recognize their problems and develop strategies to cope with them gives us some optimism that the pandemic might not cause a long-term mental health epidemic. However, most of our participants came from stable socio-economic environments where they had access to external resources (e.g., supportive parents, teachers, friends, coaches, therapists) and alternative channels for maintaining social relationships (e.g., access to information technology, social media platforms, gaming). More work is needed to understand how to foster these external support factors needed for development of adolescent self-awareness, strength in the face of disruption and access to social support networks. For example, some of our participants identified weaknesses in school counseling/mental health resources, or a family culture that stigmatizes conversations about negative emotions, or unhealthy competition instead of supportive relationships with their friends. Perhaps schools and other community centers could develop outreach programs for parents and adolescents about the importance of self-awareness and ways to proactively seek and offer emotional support. The same community centers could perhaps provide technology support for adolescents who might need it for maintaining their social relationships and using it to support other coping mechanisms.

4. **Technology as a common thread in adolescents’ coping strategies.** While the literature suggests that adolescents are ample users of technology and consumers of digital information, even pre-pandemic (Anderson and Jiang, 2018; NORC at the University of Chicago, 2017), social distancing and isolation increased this usage. We have noted creative ways in which technology solutions were used across most of the adolescents’ strategies for dealing with loneliness and other negative feelings. Technology and online content were used to connect to friends and find distractions from negative thoughts (e.g., through online reading, support for creative projects, self-care strategies, gaming, etc.) Relatively few negative effects of technology use were mentioned, pointing to a generally positive potential of online content and services to mitigate adolescent loneliness and negative feelings. Several of our participants were aware of the harmful effects of technology and knew when to stop using it. However, it’s likely that some of the negative effects of technology were underreported or not experienced by our participants, though they can be present in a larger, more diverse population
of adolescents. While our findings suggest that technology is an integral part of generation Z experiences, adolescent relationships with technology are complicated and need further examination.

The COVID-19 pandemic caused major disruptions to populations on a global scale and the full scope of its effects are not yet known. While overall, we found that our adolescent participants exhibited resilience in the face of COVID-19 changes, we don’t interpret it as a cause for adults to be unconcerned and let teens cope with their problems alone. Our work suggests that many elements of adolescent resilience come from external factors of having supportive family members, teachers, and other people from within their community (e.g., coaches, bosses, etc.). We need to continue offering this support, ranging from willingness to listen and acknowledge teen problems to seeking solutions to these problems together. Information technology was one of the common threads throughout our conversations with teens. It played a vital, though often imperfect, role in supporting virtual learning, it helped teens to maintain social connections during social distancing/isolation, and it offered entertainment and distraction during challenging times. In designing systems that both directly and indirectly support adolescent resilience, we need to actively engage teens in discussions on how to improve existing technology and develop new solutions to address their needs. For example, in the context of our broader study of intelligent personal assistants, adolescent experiences highlight an opportunity to explore the capacity of conversational agents to offer advice on wellbeing strategies, as teens often turned to technology to support self-care strategies (e.g., practicing meditation or mindfulness), as well as assist with time management and other capacities. In the context of education, our participants’ complaints about Zoom learning might inform changes to virtual classes such as shorter periods, frequent breaks to stretch, do breathing exercises, ask questions, interact with peers and other improvements. Our participants’ accounts on using gaming platforms as means to interact with peers and develop/maintain social networks signal opportunities to support conversations and social network development on these content providing platforms (e.g., ability to connect to peers who have similar tastes in music or TV shows). We hope that our report of adolescent pandemic experiences captures a fragment of this historical moment and opens further discussion on the opportunities to support them.

ACKNOWLEDGMENTS

We are grateful to our participants for sharing their stories with us. We would also like to thank our reviewers for their valuable feedback in finalizing this article and to acknowledge the work of all the student researchers who participated in this project: Daniel Anger, Craig Nielsen, Kelli Hayes, Karin Roslund, Nina Keller, Mary Dickson. We are also thankful for this study being supported by the Faculty Innovation Grant provided by the Pratt Institute School of Information.
REFERENCES


