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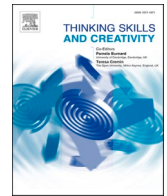
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Adolescent technology-use and creative activities during COVID-19: A qualitative study

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ABSTRACT

This study investigated how COVID-19 impacted creative adolescent engagement with their creative activities, as well as how they utilized technology to cope with the pandemic. Using qualitative methods, this study was guided by phenomenology using both constructivist and transformative paradigms. Participants were English-speaking adolescents from the Midwest in the United States. They were identified as creative by their teachers according to known creative profiles and were invited to attend an all-day creative career workshop over Zoom, where the focus groups occurred for this study. Five focus groups, consisting of 25 participants, were conducted, guided by semi-structured interviews. The transcripts from the focus groups were analyzed using reflexive thematic analysis by the first, second, and third authors. Results indicated that COVID-19 affected creative adolescent engagement with creative activities in positive and negative ways, caused changes in emotions and motivation, and increased virtual creative engagement. Creative adolescents coped with COVID-19 using digital technology to connect with others virtually, to engage in virtual creative expression, inspiration, and growth, and to meet their personal needs. Implication of results is discussed.

1. Introduction

Since March 2020, the COVID-19 pandemic has caused many changes to the daily structures and routines people engage in. School-age students have been particularly vulnerable as they have participated in remote or hybrid learning and lost direct access to many of their schools' resources (Masonbrink & Hurley, 2020; Zacher & Rudolph, 2021; Zaeske et al., 2022). The increased time spent at home and social distancing seemed to leave everyone spending more time on technology. Popular opinion and some studies suggest that limiting time spent on technology, as well as following more friends rather than non-acquaintances, can benefit well-being (Hunt et al., 2021). Adolescent technology-use is often an even more controversial topic, as some research cites technology as contributing to depression in adolescents (Twenge, 2020); however, a recent review of the literature suggested more conflicting and confounding results (Odgers & Jensen, 2020). Contrary to these negative or confounding outcomes, technology has been cited as a contributor to adolescent creativity (Kerr et al., 2021). Since everyday creativity increased throughout the pandemic (Mercier et al., 2021), what ways did technology contribute to this pandemic creativity?

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Researchers have often believed that creativity consists of two components: novelty and usefulness (e.g., [Plucker et al., 2004](#), [Runco, 2004](#)). Though this definition describes what may be defined as creative, the aims and pathways of creativity may vary based on the meaning associated with that creativity. [Kaufman \(2018\)](#) explained that different foci or meaning associated with creativity can result in different products or aims. Broadly, individual creativity enables a person to transform their perspectives on life, provide meaning to novel situations, and find solutions to problems ([Kaufman, 2018](#)), but it is necessary to remember these responses take place in a broader socio-environmental context according to renowned creativity definitions and theories (e.g., [Amabile, 2018](#); [Harrington, 1990](#); [Plucker et al., 2004](#)). For adolescents, social context is particularly important to creativity, but often socio-contextual factors go vastly unaccounted for in research of adolescent creativity ([van der Zanden et al., 2020](#)).

As creativity occurs in a socio-environmental context, and COVID-19 has transformed the current context creative adolescents find themselves in, how has technology-use increased during the pandemic in both coping and creative activities? The present study used qualitative methods to examine these questions.

1.1. Adolescents and technology-use

Different technological platforms provide different functions, and the types of creative interactions taking place is dependent on the specific applications ([Sibert & Laverick, 2020](#)). Among adolescents, Snapchat is the favorite technological platform (35% share) followed by TikTok (30%) & Instagram (22%), to name a few popular applications ([Piper Sandler, Inc., 2021](#)). As technology-use has continued to grow in popularity, research has begun to investigate the impacts of technology-use on adolescent consumers. A recent study summarized narrative reviews and meta-analyses, large-scale preregistered cohort studies, and intensive longitudinal and ecological momentary assessment studies to understand the relationship between adolescent technology-use and mental health ([Ogders & Jensen, 2020](#)). Their review determined that most studies focused on negative effects of technology-use, while also addressing that the most recent large-scale preregistered studies found only small associations between adolescent technology-use and well-being, which suggested questionable clinical or practical significance. One of the recent systematic reviews, included in the [Ogders and Jensen \(2020\)](#) review, analyzed 13 studies and found a general correlation between technology-use and mental health problems in adolescents, while also noting that most included study authors stated that the relationship between the two is complex ([Keles et al., 2020](#)). Though the review found mental health problems and technology-use to relate, the included studies were not consistent in their findings. While some findings indicated a relationship between depression and time spent on technology or technology-related activities, other studies found contrary evidence.

1.2. Adolescents and COVID-19

Adolescence involves complex physical, neurological, affective, and cognitive changes. Adolescents are considered to possess the ability to learn skills for not only self-regulation and self-direction, but also to make meaningful societal contributions through their own agency and independence ([Hansen & Jessop, 2017](#)). These authors contend that cognitive and affective abilities do not necessarily determine an adolescent's success at a developmental task, however, but rather that society's support holds greater significance and influence. Adolescent self-determination, then, is encouraged by free agency and the support they receive to develop their own sense of identity ([Hansen & Jessop, 2017](#)). But how do adolescents develop their identity and self-determination amid wider societal change?

The impact of the COVID-19 pandemic on adolescents is multifaceted. Closure of schools and change in routine caused additional stress on top of typical adolescent anxiety ([Imran et al., 2020](#)). Support from students and teachers typically present at school was drastically reduced ([Zhou, 2020](#)). Though researchers note interpersonal relationships are a key part of social development during adolescence, the pandemic created a new barrier for these relationships through social distancing mandates across the nation (e.g., [Ravens-Sieberer et al., 2020](#)). Adolescents, however, demonstrated conscientiousness throughout the pandemic, being cited by [Oosterhoff et al. \(2020\)](#) as being motivated to social distance to be socially responsible and prevent others from becoming ill. Though consequences of the pandemic are largely negative, the present study is concerned with identifying how adolescents exercised their developing agency in their creativity and technology-use amid a global pandemic.

1.3. Creativity and COVID-19 as the social context

Multiple theories of creativity assert the inextricable connection between creative processes and the social environment in which the creative person lives (e.g., [Amabile's \(2018\)](#) componential theory of creativity; [Csikszentmihalyi's \(2014\)](#) Systems Model of Creativity; and [Harrington's \(1990\)](#) ecological model of human creativity). Within [Amabile's \(2018\)](#) componential theory of creativity, the creative process is understood as an interaction of task motivation, domain-relevant skills, and creativity-relevant processes with the five stages of the creative process: problem or task identification; preparation; response generation; response validation and communication; and outcome. This theory is founded in the social nature of creativity, with socio-environmental factors being considered to directly influence one's sense of task motivation, whether intrinsic or extrinsic. Socio-environmental factors including autonomy, competence, or task involvement are considered to positively influence motivation, such that participants with these qualities are more likely to initiate new creative endeavors, whereas socio-environmental factors resembling control or constraint on creativity negatively influences motivation. Similarly, [Harrington \(1990\)](#), in their ecological model of human creativity, presented creative processes as the interaction of personal resources and ecosystem resources, with creative people meeting the psychosocial demands placed on them. Though it is understood that socio-environmental influences are inescapably interwoven in the creative process, in applying these theories to the present study, socio-environmental changes of COVID-19 can be expected to impact the

creative processes and outcomes of creative individuals.

Creativity has uniquely emerged as a response to dealing with circumstances of COVID-19. Many people explored their creative potential during lockdown, such as spending time typically used to commute to engage in personal interests instead (Schivavo et al., 2021). Another study reported that overall creativity and openness to new creative actions were welcomed during lockdown (Mercier et al., 2021), including creativity based in technology. For example, Glăveanu and de Saint Laurent (2021) analyzed coronavirus memes from the Reddit communities, investigating the intersections of creativity and culture, particularly in how they communicate understanding and meaning of the pandemic and the anxiety that has come with it. Their study acknowledged coronavirus memes as creative, elaborate, meaningful, surprising, and funny, and as a unique form of creative expression in the unique sociocultural context of the pandemic (Glăveanu & de Saint Laurent, 2021).

Whether people are consuming creative content, engaging in the act of creating (e.g., baking bread), Kapoor and Kaufman (2020) contend, “making meaning through any kind of creative expression is an adaptive and resilient response to the ongoing pandemic” (p. 5). Consequently, creativity cultivates well-being and seems to be broadly accessible, though everyone finds themselves at home. Little research, however, has characterized adolescent experiences of creativity during a global crisis and how it was used as a protective factor.

1.4. Adolescent creativity, technology use, and COVID-19: the current study

What distinguishes creative adolescents from the general adolescent population? Previous studies have identified certain qualities and characteristics that make up a unique profile of the creative adolescent, such as being independent, open to experience, and demonstrating high creative ability in a particular domain (Kerr & McKay, 2013).

Few studies have observed technology-use in creative adolescent populations for creative purposes. In one study, Kerr et al. (2021) found that social media was used by creative adolescents to grow in their creativity, especially if their creative domain involved technology. Their participants also reported that social media allows for them to find communities of like-minded individuals. The negative effects reported, however, included feelings of comparison with others who share the same creative domain, while also being flooded with negative news and media (Kerr et al., 2021). Consistent with other studies on adolescents and technology-use, their study’s outcomes suggested a complex relationship of both positive and negative effects.

Previous research has used quantitative methods to investigate adolescent technology-use during COVID-19. For example, Cauberghe et al. (2021) found that social media use served as an effective coping strategy for Belgian adolescents during the pandemic. In another study observing Italian adolescents, technology use was reported as being crucial for the development of new skills both recreationally and academically (Salzano et al., 2021). Though these quantitative studies captured the “what,” measuring the amount of technology use and what it related to during the COVID-19 pandemic, these studies don’t necessarily address the “how” – the way through which technology was used to grow in creativity, for example. Though research has addressed creativity’s functionality during COVID-19, to the authors’ knowledge, no research has studied how adolescents’ creative activities were affected by COVID-19, nor the influence of social media and technology on adolescent coping and creativity. This study aims to bridge this gap in the current literature through qualitative analysis of focus group interviews with creative adolescents. The following research questions drive this study:

- 1) How has COVID-19 affected adolescent engagement with creative activities?
- 2) How are creative adolescents coping with COVID-19 using social media and digital technology?

2. Method

2.1. Research design

Because of COVID-19’s novel impact, as well as the lack of quantitative measures to address the present study’s research questions, a qualitative research design was conducted. This qualitative study was guided by phenomenology embedded in primarily constructivist and transformative paradigms (Mertens, 1999; Moustakas, 1994). Phenomenology aims to describe or interpret the phenomena being studied and the meaning of participant experiences (Padilla-Diaz, 2015; Usher & Jackson, 2014). The goal in phenomenology is to convey the essence of and how participants experienced their lived experiences (Moustakas, 1994). The constructivist paradigm assumes that truth is subjective, and that multiple realities exist, with meaning being co-constructed between the researcher and participants (Guba & Lincoln, 1994; Morrow, 2007). Together, phenomenology through a constructivist lens allows for the researcher to validate the lived experiences of participants, while also acknowledging the realities of both the researcher and participants. The transformative paradigm focuses on the lived experiences of marginalized individuals and accurately representing those experiences (Mertens, 1999). Creative adolescents are an understudied population whose voices are often not given positions of power and influence within United States society. Particularly in the context of COVID-19, adolescents uniquely experienced the burdens associated with the pandemic, for example feeling burdened by contact restrictions (e.g., Ravens-Sieberer et al., 2020). The present study seeks to elevate their subjective lived experiences in accordance with phenomenology through constructive and transformative paradigms.

Patton (2002) describes the mixing of paradigms as being acceptable and appropriate, depending on the research interests. Because the present study is interested in not only understanding the individual experiences but also advocating for adolescents as a marginalized group lacking power in United States society, constructivism and transformative paradigms both prove relevant and

cohesive to the purposes of the present study.

2.2. Sampling and participants

Ethical approval for this study was granted by the University of Kansas Institutional Review Board before it was conducted. This study was a part of an ongoing yearly research-through-service workshop based out of the Counseling Laboratory for the Exploration of Optimal States (CLEOS) project at the University of Kansas. Run by counseling psychology graduate students and faculty, this workshop provides creative adolescents with one-on-one creative career counseling with a counseling psychology master's or doctoral student, a group mindfulness activity, a group psychoeducation session about creative flow, and a focus group discussing relevant topics impacting the adolescents. The data in the present study was collected during the focus group portion of the workshop, discussing technology-use and COVID-19 in the context of their creativity.

Inclusion criteria for the study required participants to be an adolescent in high school, and to be determined creative according to validated profiles as developed by Kerr and McKay (2013). The profiles include having a high number of creative accomplishments, an interest in creative careers, and characteristics of openness and autonomy (Kerr & McKay, 2013). Participants were recruited using purposive sampling (e.g., Padilla-Diaz, 2015; Silverman, 2015) in this study. Teachers of English-speaking gifted students from eight Midwestern high schools in the United States were contacted via email to invite their creative students for participation based on the inclusion criteria. Based on the availability of sponsoring teachers and consented students, five focus groups were conducted on days of the creative career workshop between February and April 2021.

Twenty-five adolescents participated in five focus groups ($n_1 = 7$ participants; $n_2 = 2$ participants; $n_3 = 8$ participants; $n_4 = 2$ participants; $n_5 = 6$ participants). Participants were, on average, 15.72 years old ($SD = 1.10$, range = 14 – 17) and most were in ninth grade in high school. Sixty-eight percent of participants were male ($n = 17$), 28% of participants were female ($n = 7$), and 4% were non-binary ($n = 1$). Four percent of participants were Black/African American ($n = 1$), 4% were Asian American ($n = 1$), 4% were Hispanic ($n = 1$), 20% were multiracial (4% Hispanic/White, $n = 1$; 16% Black/White, $n = 4$), and 68% of participants were White ($n = 17$). For participants who reported GPA ($n = 20$), their GPAs ranged from 1.57 to 4.26, with a mean of 3.69 on a 4.0 scale ($SD = .61$).

2.3. Data collection

Focus group interviews were selected because they can create non-hierarchical dynamics and provide a comfortable environment for participants to interact with their peers, or those who are like them (e.g., Liamputtong, 2007; as cited by Braun & Clarke, 2013). Focus group interviews also provide opportunity to empower participating individuals, which aligns with the advocacy-based motives of the transformative paradigm (Braun & Clarke, 2013). The participants in the present study meaningfully reported that they experienced the focus group as a safe space to share their experiences, be vulnerable, and find community with their peers.

The authors designed an interview protocol consisting of rapport building questions, interview questions, and wrap-up questions. A semi-structured interview was chosen for its “discovery-oriented approach...that includes a list of questions that is permitted to adapt with each participant, and as new insights emerge throughout the course of the study” (Heppner et al., 2016, p. 374). The interview questions were open-ended and written to address the research questions (e.g., “How have you used social media or technology to cope with COVID-19's effects on your creativity?”)

Prior to attending the workshop, participants were sent a Qualtrics link to complete a variety of measures relating to demographics, creativity, career interests, and values. The survey data were used in the one-on-one career counseling sessions on the day of the workshop. The only data collected relevant to the present study were student demographic information regarding age, gender identity, race/ethnicity, grade level, and GPA.

All interviews were conducted on Zoom, facilitated by the first and second authors. No others were present during the interviews, besides staff assisting with the CLEOS workshop (including the sixth author, who hosted the virtual focus groups). Each interview involved informing the participants of the purpose of the interview and confidentiality, and then following the semi-structured interview protocol. If any participants were not responding to questions as frequently as others, the authors would ask them if they would like to add to the discussion, ensuring that all members of the focus group had opportunities to share their experiences. The interviews were scheduled for one hour, and typically lasted between 35 to 50 min, depending on the number of participants present.

2.4. Data analysis

The data was analyzed using reflexive thematic analysis (TA; Braun & Clarke, 2013). Reflexive TA is a “theoretically flexible” method comprised of six-steps that the researcher follows for systematic identification of themes and patterns across a dataset, particular to a certain research question (Braun & Clarke, 2013, p. 178). Braun & Clarke, 2013 describe three to six focus groups to be provide sufficient data for medium sized projects being analyzed with TA, which justifies the use of five focus groups in the present study.

TA can be considered appropriate for use when “The analytic interest is on how personal experiences are located within wider socio-cultural contexts” (Braun & Clarke, 2021, p. 42). As the present study is concerned about creativity amid COVID-19 and participants' own socio-cultural context, reflexive TA proves appropriate. Reflexive TA consists of six steps: familiarization; coding; generating initial themes; reviewing and developing themes; refining, defining, and naming themes; and writing up (Braun & Clarke, 2013). The data was analyzed using a top-down approach driven by the research questions (Braun & Clarke, 2013). To organize, code, and analyze data, MAXQDA 2020 (VERBI Software, 2019) was the software used, offering features that allowed the authors to code and

annotate transcripts, as well as organize and rearrange codes in the process of formulating themes.

Phase 1 of TA is familiarization with the data (Braun & Clarke, 2013), which involved the first, second, and third author transcribing the focus group data, listening to the interviews, and reading and re-reading the transcript data. Initial observations (e.g., what was learned from the data), ideas (e.g., noticing patterns that may contribute to theme development), and reactions (e.g., what was surprising about the data) to the data were noted and discussed amongst the coding team.

Phase 2 is the generation of initial codes (Braun & Clarke, 2013). Coding team members individually coded the data, using the research questions as the filter for coding. Any data appearing to relate to the research questions was coded by each coder. The coding team then met virtually over Zoom and shared their reactions, biases and assumptions, and initial data observations. Then, the first author shared her coded transcript from MAXQDA 2020 (VERBI Software, 2019), and the coding team discussed each code. The second and third authors expressed either agreement, disagreement, and/or suggested additional codes or rewording of codes. After coming to consensus on codes for the transcript, each member of the coding team recorded their answers to the research questions based on the transcript on a shared virtual document. This process occurred for each of the five focus group transcripts.

Phase 3 is searching for themes (Braun & Clarke, 2013). This process involved collating individual codes into candidate themes, as well as bringing together all data potentially related to the theme. During this phase, the potential answers to the research questions gathered by the coding team during Phase 2 were evaluated to find commonalities across the transcripts.

Phase 4 is reviewing themes (Braun & Clarke, 2013). The first and second author reviewed the potential themes identified in Phase 3 and returned to the dataset to determine whether the potential themes reflected the coded content and raw dataset. This phase involved flexibility, with willingness to consolidate themes, or let go of themes that did not justifiably reflect the data. For example, all changes that occurred to adolescent creative activities (e.g., activity policies adjusting for COVID-19, or activities being cancelled) were originally conceptualized as themes but later were consolidated to become subthemes to “The positives and negatives: changes in and around creative activities.”

Phase 5 is defining and naming themes (Braun & Clarke, 2013). At this point in the process, themes that reflected the coded and raw dataset in Phase 4 were defined, with each subtheme also being defined as it relates to the data. Themes and subthemes reported represented patterns of recurring ideas, phrases, and keywords expressed across the five focus groups.

In Phase 6, the last phase, the first and second author produced the report, selecting data extracts that reflected the themes and answered the research questions (Braun & Clarke, 2013).

2.5. Positionality

The authors acknowledge that coding qualitative data is an active process, which is influenced by the coders’ identities, biases, assumptions, and worldviews, reflecting the values and standpoints represented in TA’s reflexivity (Braun & Clarke, 2013). Thus, a crucial part of the coding and interpretive qualitative processes was acknowledging the different and shared multicultural identities of the coding team to establish researcher credibility and acknowledge relevant personal and professional information that may have affected interpretation and analysis (Patton, 1999). Though the following statements are limited in their precision of reflecting the multicultural identities of the coding team (i.e., first, second, and third authors), the authors made these efforts to provide a sense of their perspectives.

Table 1
Summary of findings.

Research question	Themes	Subthemes
How has COVID-19 affected adolescent engagement with creative activities?	Engagement dependent on waves of emotion and motivation (5)	
	The positives and negatives: changes in and around creative activities (5)	Activity policies adjusted for COVID-19 (5) Activity cancelled or adolescent quit (5) Changed or exchanged creative activities (4) Changed frequency of engagement with activity (5)
How are creative adolescents coping with COVID-19 using social media and digital technology?	Increased engagement with creative activities virtually (5)	
	Connecting with others virtually (5)	Shared creative interests (4) Unity in identity, opinions, and advocacy (3) Maintaining friendships (4)
	Virtual creative expression, inspiration, and growth (5)	
	Resilience and adaptability: Meeting personal needs with social media and technology* (5)	Distraction, escape, and entertainment (5)

Note. Numbers in parentheses next to themes and subthemes indicate the number of focus groups, out of five, which endorsed the theme either directly or as interpreted by the authors.

* Other forms of resilience and adaptability were displayed by participants, but the ways they met their personal needs with technology throughout the pandemic was the most salient.

The first author identifies as a Christian White cisgender heterosexual able-bodied female from the Midwest, who is a first-generation college student. The second author identifies as a Jewish American cisgender heterosexual able-bodied female from the Southeast. The third author identifies as a White cisgender heterosexual able-bodied female. The authors were motivated by their desires to advocate for adolescents, understand their creative resilience, strengths, and creative and biopsychosocial behaviors, and understand technology through a strengths-based approach. Each of the authors has experience providing mentoring and/or counseling to adolescents, as well as involvement researching creative adolescents through CLEOS. Additionally, the fourth and fifth authors are experienced creativity researchers, with the fifth author being the founder of CLEOS. The sixth author has extensive experience working with creative adolescents through CLEOS and conducting creativity research.

2.6. Trustworthiness of results

The authors utilized techniques to improve the quality and validity of the data, particularly to demonstrate trustworthiness. The authors debriefed the results with an independent external auditor (Glesne, 2006); the first and second author received feedback from the auditor and noted their agreements and suggestions. Interestingly, a few negative cases (Patton, 1999) were identified, where participants either denied experiencing any changes in their creativity or coping due to COVID-19 or chose to get off technology or limit their technology-use for portions of time during the pandemic. Lastly, when formulating themes, the authors searched for rival explanations, attempting to find evidence that other theme schemas were plausible (Patton, 1999). These efforts to find rival explanations ultimately informed the final themes presented as results.

3. Results

The results are presented as themes and subthemes specific to each research question and are based off recurring patterns of ideas communicated across the five focus groups (See Table 1). Each theme and subtheme will be defined, described, and accompanied by evidence in the form of participant quotes.

When reference is made to “creative activities,” the authors are referring to the self-defined creative experiences of the participants. Participants referenced a wide array of creative activities throughout the interviews, and though not all will be highlighted here, the following are examples of participants’ diverse creative interests: cooking, debate, music (e.g., choir, band, piano, rap, percussion), athletics (e.g., track, cheerleading, basketball), writing, science (e.g., robotics), video games, and making creative content (e.g., meme edits, TikTok videos).

Additionally, when reference is made to technology-use throughout these results, technology-use includes websites, social media platforms and chat boards, and applications for phone or computer. Some technology-use may be specifically listed throughout the results, but an inclusive list of specific applications mentioned by participants is the following: TikTok, Pinterest, YouTube, Zoom, Remind, GroupMe, Snapchat, Note Flight, Garage Band, MuseScore, Vex, Anchor, VSCO, Discord, Reddit, Facebook, Twitter, Instagram, and Voice Memos.

Notably, the two research questions investigated were distinct and inquired about different aspects of adolescent creativity, how it was affected by COVID-19, and how they coped using technology. Though themes and subthemes may seem to relate across research questions, it is important to remember that each research question addressed a different purpose; each theme and subtheme were formulated and established independently of one another in response to each research question.

3.1. How COVID-19 affected creative activities

Three overarching themes summarized the findings from research question one, “How has COVID-19 affected adolescent engagement with creative activities?” The pandemic firstly affected the affective state of creative adolescents, which impacted the extent to which they practiced their creative activities. The theme “Engagement dependent on waves of emotion and motivation” refers to changes in emotional states experienced by adolescents, which in turn, altered their engagement with their creative activity, increasing or decreasing engagement depending on the emotion. Participants reported experiencing a wide-array of pandemic-related emotions (e.g., motivation in Focus Group 2 (FG2), stress and boredom in Focus Group 1 (FG1)). For example, one student from FG2 experienced an oscillation between waves of motivation and lack of motivation from the start of the pandemic through Summer 2020:

Yeah, um, during the first, like, beginning parts of it, I got, like, a super huge boost to play my instrument more and, like, I learned how to play the kalimba and the ukulele, and I was going through, like, all sorts of different, “I want to become good at everything, like, musical,” and so I was trying a bunch of new things there. And then a couple months into it, I just got unmotivated to do, like, anything, and I just... besides the Sims 4. The Sims 4 was a very big flow experience for me. I have not stopped playing that for five months. I’ve gotten very good at this game. Um...and yeah, I think I just got unmotivated to do anything but play video games for a while.

Similarly, waves of feeling stressed and not stressed ebbed and flowed with participants when it came to engaging in their creative activities, as a participant from Focus Group 3 (FG3) described their experience starting the pandemic with little stress, and then experiencing stress further into the pandemic that inspired creativity:

So, I’m actually perfectly in the middle of the two ideas we have here of stress and no stress. It started out really nice and it was an elongated break, but then it got to the point of there was absolutely nothing new to do, and so it was just stressful in the way

of you wanted to do something different. And so, I ended up writing, like, 18 pieces of music and without sleeping. It was a lot... It was quite a bit, and it was just me not knowing what to do, so I stayed up and wrote music because it was new and exciting. And then I got washed out of it and haven't touched it since.

The second theme developed was "The positives and negatives: changes in and around creative activities," which refers to ways that adolescents either increased or decreased engagement with their creative activities, with creative activities changing depending on how COVID-19 affected the individual and/or the organization hosting their creative outlet. The first subtheme was "Activity policies adjusted for COVID-19," representing the ways different school-related extracurricular activities created different protocols for accommodating COVID-19 precautions. One FG2 participant shared about their experiences participating in school-hosted band practices during the pandemic:

...band was another really weird shift, because they had to fight to, like, get us in a marching band environment so we could play. And so, the compromises they made made it so weird, like, we had to social distance, uh, we weren't allowed to play in the building for a very long time, so we had to do all of our practices out on the field no matter what the temperature was. And we have bell covers. So, every single instrument has, like, a cover at the end, and we have these really weird masks we have to wear that have, like, holes in them...but that made, like, school band really weird because, in general, it's just, like, very different. And we can't play the music that we used to play, and we can't, like, march the way we used to march, because we have to, like, space.

Another student from Focus Group 4 (FG4) described how their robotics team changed meeting locations to continue building robots to accommodate changes caused by the pandemic:

I know, like, at first, uh, we- we started robotics in June, and normally we would start going to school, but, uh, we ended up practicing at one of my teammate's house, and we ended up, like, meeting there and building our robot there 'cause we couldn't go to the school for a really long time.

"Activity cancelled or adolescent quit" as a subtheme refers to activities that were cancelled due to COVID-19 or activities that were never resumed, or activities that participants quit due to the changes caused by COVID-19. One FG3 adolescent mentioned quitting show choir due to their school district opting out of competitions:

I know I actually quit, um, show choir, because of how it was affected by COVID, um, for this year, um because...our district decided just to opt out of those competitions, um, as well as opting out of a bunch of the usual stuff we do. Um, so I didn't really have much of an interest in doing it this year 'cause of how different it was from the usual season.

"Changed or exchanged creative activities" refers to new or different activities that adolescents engaged in or switched to based on how the pandemic affected their primary creative activity. One student from FG3 described learning to embroider from their grandma and making cake pops as new creative endeavors. A FG1 participant taught themselves percussion based on videos posted by artists:

[The artists], like, sometimes they post videos of them like - 'cause it was in the drumline thing, so I just, like, watch those videos and practice with that. I mean I have, like, um drumsticks, but, ya know, last time I used those I broke something, so I'm just like, yeah, I'mma use pencils - so I just, like, copy, like, what they're doing with pencils.

"Changed frequency of engagement with activity" as a subtheme referred to increased or decreased engagement with creative activities, which in turn either positively or negatively affected participant growth in the creative activity. For example, one FG3 participant described losing athletic skills due to COVID-19: "I know personally, um, our track season last year got cancelled, and I had to do hurdles again this week, and I completely forgot how to do hurdles. So, I definitely lost a skill because of the pandemic." Other students, however, reported positive impacts on their creativity, including increased time to devote to their individual music skills, even after COVID-19 negatively impacted, or as a Focus Group 5 (FG5) participant described, "nuked," their marching band season:

But I think there were some positive impacts in a way. Um, because - because we couldn't do as much group work in band, um, I feel like the directors - at least the professional director, like, had us emphasize our individual playing and, like, had us play solos and stuff like that. Um to take advantage of this time to like really, like, build up our foundation for practicing... We had a lot more time to really work on our, like, skills as an individual and playing. (FG5)

The third theme, "Increased engagement with creative activities virtually," referred to adolescents moving to online platforms in order to continue pursuing their creativity. FG5 participants shared how their debate and band competitions were moved online. Another FG5 participant mentioned that, after their piano lessons were cancelled due to COVID-19, they found piano music online from one of their favorite video game soundtracks to practice. In FG1, one participant described engaging with making their music more during the pandemic using technology:

before COVID, me and my friends, we weren't really, like, posting music or, like, talking that much, I guess. But, like, now, like, we get to do more creative, like, we can find different ways to, uh, like, different apps especially like to edit our music and, like, post the music and, like, meet new people.

Another adolescent from FG3 also discussed using technology to compose music:

I use Note Flight. Uh, yeah, it's wonderful, especially with the free- it's just you're limited to so many pieces at once, and so at uh some point you'll have to delete pieces you already made, but I've saved them all. Yeah, I literally - that's all I did, yeah.

3.2. Coping with COVID-19 using technology

Three themes relating to how students coped with COVID-19 using technology were determined to answer the second research question: “How are creative adolescents coping with COVID-19 using social media and digital technology?” The main purpose in asking this research question is to understand specifically how technology was used as a coping mechanism, and particularly its creative application.

The first theme, “Connecting with others virtually,” refers to participants coping by connecting with others over technology. Three subthemes were developed pertaining to the different forms of connection developed virtually. “Shared creative interests,” as the first subtheme, reflects connections adolescents made with others over shared appreciation for creative activities. A FG5 participant described, “I think, uh, with social media, they gave me that platform, it enhances your creativity and gives you a place where you can show it off, it gives you a place where you can, uh, tap into that and show people your creative side.” An FG4 participant shared: “social media has really been a place for, like, it shows me that I’m not alone in my interests, and the way I feel about certain topics, and it’s just a way for me to, like, connect with other people.”

This same participant not only expressed how technology provides a platform for connecting with others over interests, but that she also finds to be a place for forming opinions and developing her own identity among others, which reflects the second subtheme, “Unity in identity, opinions, and advocacy”: “so social media is, like, a way for me to be able to understand both sides of everything, and then form my opinion on it, which helped a lot with writing, and it being election year and everything.” Just as this quote suggests, “Unity in identity, opinions, and advocacy” as a second subtheme refers to how adolescents coped with the pandemic by connecting with others through a sense of unity online, particularly with others who share similar experiences, opinions, identities, and how connecting with others in this way provided a sense of solidarity and belonging. In FG1, participants reflected on the “sides” of TikTok they are on, and the resonance they have with those virtual communities (e.g., “Gay TikTok” and “Hood TikTok”).

A third subtheme, “Maintaining friendships,” reflects adolescent use of technology to cope by keeping up with peers and friends that they couldn’t see, either due to lockdown or hybrid education. In FG1, one participant described using Snapchat as their primary form of communication and technology-use with their friends during the pandemic: “Uh, I mainly just been using Snapchat just to text my friends and stuff. That’s, like, about it.” Another FG3 student described keeping up with their friendships over video games: “I mean like, when we were in online school, I played a lot of video games with my friends.”

“Virtual creative expression, inspiration, and growth” is the third theme for the second research question. This theme reflects adolescents coping with the pandemic by engaging in virtual forms of creativity or being inspired by content they interact with on technology to inspire or grow in their creativity. One FG5 participant described using TikTok to create content to pass time with friends during the pandemic:

So, me and my friend had this challenge, right? And because we were bored, and we were, like, who can get TikTok famous, right? And so, I made this video, and it was like – it was like a cooking video where you could make, like a, like an Oreo mug cake, and I did surprisingly well. Okay so I got, like, my video to, like, 12K views.

A FG2 participant described using technology to inspire interest in new forms of creative activities:

Um, I feel like with TikTok and creativity, it’s a lot easier for me to get inspired to do stuff. Like I get in certain moods where it’s just like “I don’t know what I want to do,” but I feel super creative, and so I want to do, like, all of the things. And TikTok helps with that because like tagging system is really nice there...it’s just, like, a lot of videos that, um, inspire me to do cute things, like, with the stuff I’m already doing. Um, also I don’t know why, but it made me grow an obsession with paper. Like, really high-quality paper. So, I’ve started doing, like, paper stuff, like, art with it. Um so yeah, it branched me out into doing, like, new things.

Two participants (i.e., FG1 and FG4) also mentioned using technology (e.g., TikTok, YouTube, and Vex) to pique their interests in science and robotics, being inspired by ideas they found online.

The last theme is “Resilience and adaptability: Meeting personal needs with social media and technology,” which refers to ways adolescents coped using technology to fulfill specific needs for themselves. This theme also demonstrated participant ability to overcome barriers that arose due to the complications of the pandemic, and then act in ways that allowed them to still cope and adjust to foster their own well-being, particularly using technology. One FG4 adolescent shared using an app called Anchor to record spoken “diaries” of her writing and reflections on her feelings amid COVID-19. In doing so, she felt she was outward processing her thoughts to others, while keeping these personal recordings to herself. This same participant also reported finding encouragement and validation for her mental health experiences on VSCO:

Oh yeah, there are different, like, there’s contests on there. I don’t normally, like, enter the contest, because I don’t like to write, like, and then share it like that, but I do have a lot written that’s up on VSCO. And it’s basically, like, I put it out there and people, like, respond to it. It’s not, like, negative comments or anything like that; it’s basically them reading it and deciding like if that’s something that they can agree with, or if it’s something that they feel, and I really enjoy putting, like, my writing on VSCO just to, like, if there’s other people out there, let them know that, hey, you’re not the only one that feels like this, or you’re not alone and you can always talk about it.

The subtheme, “Distraction, escape, and entertainment,” represents how participants met their personal need to escape and be distracted and entertained using technology. One participant from FG5 described their technology-use to be a response to boredom from being in their house all day due to lockdown.

4. Discussion

Orkibi (2021) presents a conceptual framework of creative adaptability (CA), which they define as “one’s ability to respond creatively and adaptively to stressful situations. More specifically, CA involves the ability to generate personally new and effective cognitive, behavioral, and emotional responses to stressful situations that may lead to positive outcomes” (p. 3). In the context of the present study, creative adolescents seemed to generate these aspects of CA, demonstrating an ability to generate different ideas and perspectives, behaviors and actions, and effective emotional responses that helped them creatively adapt to the pandemic. Whether adopting different perspectives based on creative content seen on platforms, deciding to engage in creativity to cope with the pandemic, or using technology to process pandemic emotions, creative adolescents demonstrated effective CA at the intersections of creativity, technology, and connectivity.

Creative adolescents’ adaptability to the changes that occurred in their creative activities may point to qualities of being comfortable with ambiguity, making it easier for them to transition and find fulfillment in new creative endeavors, rather than grieving the loss of old creative roles. The adolescents demonstrated the diverse ways their creativity was actively shaped by the pandemic, adapting to the changing landscape of emotions and circumstances surrounding COVID-19. Technology played a major role in furthering adolescent engagement with their creativity, whether independently finding YouTube or TikTok videos that align with their creative interests, or very practically moving piano lessons to a Zoom format, which is consistent with Kerr et al.’s (2021) findings that technology-use is central to adolescent’s creative development during the COVID-19 pandemic.

Additionally, creativity seemed to be prioritized by participants throughout the pandemic. Not only did the results suggest consistent technology-use for creative purposes, but the adolescents also demonstrated arguably unique and creative use of technology itself, for example using applications for purposes other than their intended use (e.g., using a podcast application to record personal audio diaries). Kaufman (2018) suggests that engaging in creativity can be a protective factor, serving as a barrier to “potential intruding negative thoughts or anxiety” (p. 742). Engaging in this form of protective creativity that cultivates joy and encourages connection with others “can remind people of their worth and importance in the world” (Kaufman, 2018, p. 742).

Creative adolescents also notably used technology for non-creative purposes, particularly as methods of coping with the pandemic. Their technology-use also reflected a need for distraction and entertainment amid the challenges of COVID-19. Engaging in creativity, however, may have also offered a form of distraction in and of itself (e.g., Kaufman, 2018).

Glăveanu et al. (2020) stated that interactions of creativity, learning, and technology are “highly complex,” reminding researchers that “technology doesn’t automatically make us more creative even if it shapes to a great extent the ways in which we engage in creativity (Literat & Glăveanu, 2016)...Equally, they don’t squash creativity or hamper authentic dialogues, online and offline” (p. 3). It is necessary to hold in tension both the positive examples of technology-use as an adaptive means for creativity throughout the pandemic or as a platform participants needed to take time away from throughout the pandemic.

4.1. Limitations

Though the authors were diligent to execute valid data analysis and present trustworthy results, a few limitations are still evident in this study. Because different schools recruited and consented differing numbers of creative adolescents to participate in the CLEOS career counseling days, focus group participants ranged from two to eight persons. Having a different number of participants in each focus group may have affected the extent to which participants responded while in the groups, especially in the online format. It seemed that the smaller focus groups had more chances to speak about their experiences, but the larger groups led participants to bounce off one another’s thoughts and experiences being presented. Braun and Clarke (2013) cite one limitation of focus groups being the inability to follow up with individual responses in a thorough way. Additionally, in the larger focus groups, it became easy for participants to get off topic as they followed up on the responses of others (Braun & Clarke, 2013).

Participant responses were a reflection on their experiences throughout the duration of the pandemic. Though at times they provided time frames to provide context to the experiences they described (e.g., “during this summer” refers to Summer 2020), oftentimes an ambiguous and subjective timeline was communicated, ranging sometime between the start of March 2020, through to the time of interview in the Spring 2021 semester.

5. Conclusion

These results suggest COVID-19 not only encouraged creative online engagement, but that technology provided grounds to facilitate creative coping, as well as an arena to inspire creativity and harness creative resources, implying that creative adolescent technology-use is not as aimless or detrimental as it is often popularly conceived. In spite of the changes caused by the pandemic, creative adolescents displayed adaptability in using technology as a method for both personal and creative growth.

These findings are unique to the experiences of adolescents during the wave of COVID-19 – but may be applicable to life post-pandemic. As the world figures out a new normal, technology is still a familiar platform for many adolescents. Educators of creative adolescents may benefit from having open and encouraging conversations with students to learn about the extent to which their creativity benefits from technology-use, while also exploring and communicating effective use of technology that can push them towards their goals. Exploring unconventional means of creative growth using technology may not only encourage healthy use of technology, but also inspire more meaningful avenues for cultivating adolescent creativity.

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CRedit authorship contribution statement

Lauren M. Zaeske: Conceptualization, Investigation, Methodology, Formal analysis, Writing – original draft, Writing – review & editing. **Taylor P. Harris:** Conceptualization, Investigation, Methodology, Formal analysis, Writing – original draft. **Amanda Williams:** Methodology, Formal analysis, Writing – original draft. **Haiying Long:** Conceptualization, Writing – original draft. **Barbara A. Kerr:** Conceptualization, Methodology. **Maxwell Birdnow:** Methodology, Investigation.

Declaration of Competing Interest

The authors report no known conflict of interest.

Data availability

The authors do not have permission to share data.

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