

Constancy (the New Media “C”) and Future Generations

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Abstract

In the past, researchers would consider media’s impact on youth in terms of three “Cs”: consumption, content, and context. This article introduces a new construct—constancy—which supplants the previous terms. Constancy refers to the ubiquitous and continuous state of connected screens in the lives of children and adolescents. Constancy characterizes media content and use, which can be proactive, incidental, or contextual, exerting positive or negative effects on different users. Constancy can influence child development, as persistent access to smartphones and reception of messages will affect future generations’ cognition and education, social interactions, emotions, and health. It will be important to address the developmental needs of the child or adolescent and not the smartphone in his or her pocket. Constancy requires pragmatic and innovative methodologies to understand the new circumstances around children, adolescents, and media. The landscape has changed and so must our approach to research and investigation of media effects.

Keywords

adolescents, children, cognitive development, emotional development, health, social development, social media

In the past, researchers have considered media’s impact on youth in terms of three “Cs.” Here, we first discuss these three Cs of consumption, content, and context before introducing a new media “C” (Barr, Danziger, Hillard, Andolina, & Ruskis, 2010; Borzekowski, 2014).¹ To start, the “C” of consumption refers to the amount of time a child or adolescent spends in front of a television set or sits on the couch playing video games. Data collected less than a decade ago offered that in a day a typical American 5- to 8-year-old would spend around 2 hours watching TV, DVDs, or videos; 40 minutes playing media games; and another 7 minutes with other computer activities (Common Sense Media, 2011). A follow-up survey in 2017 by the same group reported that 5- to 8-year-olds spent 2 hours and 56 minutes of total screen time, of which 1 hour 2 minutes was on a mobile device (Rideout & Robb, 2018). In this 6-year period from 2011 to 2017, television watching went from 51% to 42% of a child’s screen time, while mobile device use went from 4% to 35% of the screen time (Rideout & Robb, 2018). Multi-multitasking is the norm, where young people simultaneously interact with various screens. A Kaiser Family Foundation 2010 study found that 40% of 7th through 12th graders used another medium most of the time they were listening to music (43%), using a computer (40%), or watching TV (39%; Nightingale, 2014; Rideout, Foehr, & Roberts, 2010). Adolescents media-multitask, especially while doing homework. Around half of adolescents watch TV or use social media, 60% text, and another 76% listen to music

while doing their schoolwork; almost two thirds believe that these simultaneous activities do not affect the quality of their assignments or study (Rideout, 2018).

When amount of media use seems alarming, researchers raise concerns about the displacement of potentially healthier activities. A study of 4,770 Lebanese children showed that those who exceeded the recommended daily amounts of screen activity had significantly lower odds of engaging in physical activity and reading (Samaha & Hawi, 2017).

Content has to do with the messages one sees, hears, and interacts with. Researchers systematically analyze media to quantify which messages are most prominent. For example, a study of original Netflix and Amazon Prime video on demand programming delivered in the United Kingdom found that tobacco and alcohol content appeared in 74% and 94% of the episodes, respectively (Barker, Smith, Hunter, Britton, & Murray, 2019). An observational study of children using social media revealed that adolescents are more likely than children to see food marketing, and the messages most frequently promoted were for fast foods and sugar-sweetened beverages (Kent, Pauze, Roy, de Billy, & Czoli, 2019).

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Studies of top-selling video games in the U.S. market offer evidence that female characters are significantly more likely to be partially nude than male characters. The clothing these characters do wear is often sexually revealing and inappropriate (Downs & Smith, 2010). Researchers have examined the relationships between media content and subsequent attitudes and behaviors. Although effects are usually modest, media portrayals of tobacco, alcohol, e-cigarettes, and marijuana shape adolescents' social and cultural norms and in turn the use of these substances (Jackson, Janssen, & Gabrielli, 2018). There is unwavering literature supporting the fact that unhealthy food and beverage marketing affects children's food choices and diets (Robinson et al., 2017). Using an experimental manipulation, Belgian college students who were exposed to sexualized content delivered through a video game were more likely to participate in online sexual harassment following game play (Burnay, Bushman, & Laro, 2019).

Many explorations of media's influence on youth focus on context, the individual and environmental factors affecting exposure and use. A practical way to think about context is to apply Bronfenbrenner's ecological systems theory (Bronfenbrenner, 1979; Takeuchi & Levine, 2014). Along with individual characteristics (i.e., sex, age, cognitive development, and personality), nested and interrelated relationships and systems shape what children see and come to understand from different media. The microsystem, which is the first system encircling the individual and includes family, peers, and school community, manages and regulates one's immediate experiences. Research by Lauricella, Wartella, and Rideout (2015) suggested that parents' screen time and attitudes about media strongly predicted the child's screen time. Additionally, family demographics and the home media environment affect media use. There is a significant association between the number of media devices owned by parents and the number of devices used and children weekday media use (J. Lee, Kubik, & Fulkerson, 2018). The next two classification levels, the mesosystem and the exosystem, dictate what media and technology are even available. The quickly evolving consumer electronics sector and constant introduction of new social media and applications fuel the need to purchase the next new thing (Takeuchi & Levine, 2014).

Illustrating the way in which researchers have considered these three Cs, consider the growing public health problem of obesity. To date, researchers have investigated how media use affects children's overweight and obesity, revealing significant relationships between the consumption, content, and context of media. Each of these aspects come into play in altering the relationship, from changing time amounts spent doing a sedentary behavior, to exposure to advertisements and food portrayals, and to social interactions where family and friends eat junk food while watching a movie or playing video games. Randomized controlled trials that reduce screen time, reducing amounts of sedentary behavior as well as constant exposure to high-calorie, low-nutrient food and

beverage marketing, have lessened weight gain among children (Robinson et al., 2017).

This article asks that we reconsider how we think of media in the lives of children and adolescents. While youth may resemble their peers from a generation ago, the media world they live in has morphed into something completely different. In contrast to these previous and distinct media Cs of consumption, content, and context, we advance that a new C—constancy—requires that all Cs be considered simultaneously.

Constancy is qualitatively different. Constancy refers to the ubiquitous and continuous state of connected screens in the lives of children and adolescents. It involves active and passive media use, in terms of pulled and pushed messages, at any time of day or night. Today's youth are never without their technology. Constancy captures a new reality that like the air one breathes one is never without access. From the moment they wake, often through an alarm buzz on his nightstand, a child or adolescent is connected. Through the day, one can multitask regardless of location. There may be downtime, where a young person may put their phone in her pocket during class or flip it over during a meal, but technology is rarely outside of immediate reach. Furthermore, a young person can always be contacted (or tracked).

To explicate constancy, one can think of three dimensions of current media including proactive, incidental, and background. Media in children and adolescents' lives is always one of these dimensions. The child may be actively seeking out content, sending messages, or choosing to watch a recommended YouTube video. As the user, this child has agency, deciding on what communication is happening. Incidental users have less agency, where content is being pushed at the individual. Here, the child may be getting texts or images, sent by classmates or friends of friends, or receiving pop-up advertisements or even spam. Finally, there is media as background. While children are not sending or receiving messages, there is the constant potential of these activities. The unused mobile phone laying on a bed or table is still a presence, ready for use.

Constancy, especially in the background dimension, quite possibly, resembles "being on call." Some professions ask employees, such as fire fighters, doctors, midwives, and utility workers, to be available on an "as needed basis." Characteristically, being on call involves dealing with an unscheduled emergency. Workers who are on standby or experience the uncertainty that they may be called into work at any moment suffer from increased stress, poorer quality and quantity of sleep, imbalance of work-home duties, and performance difficulties (Nicol & Botterill, 2004; Ziebertz, van Hoof, Beckers, Hooftman, Kompier, & Geurts, 2015). There is a balance of activity and passivity with being on call. If one is already at work, being on call may not alter one's activities; in contrast, being on call while not at work involves the unknown, which can affect day-to-day life and relationships.

Almost 20 years ago, Prensky (2001a, 2001b) coined and described digital immigrants versus natives. Adults, not born into the digital world but who have adopted technology, are

Table 1. Features of the Smartphone.

Primary Built-in Applications	Available for Download
1. Texting	1. Social Media (Instagram, Snapchat, WhatsApp)
2. Web browser	2. Internet radio (Spotify, Pandora, etc.)
3. Predictive typing	3. Games and entertainment
4. Alarm clock, stopwatch, timer	4. YouTube viewer
5. Phone and contact address book	5. School Apps (Google classroom, grades, test prep)
6. Email	6. Video calling (Skype)
7. Weather	7. E-book reader
8. Camera (still and video)	8. Travel Apps (Uber, Lyft, airlines, bus apps)
9. News Apps	9. Retail store finders
10. Video calling (FaceTime)	10. Photo editing Apps
11. Music player	11. News, weather and stock markets
12. Photo album	12. Voice recorder
13. Calculator	13. Converters (money, measurements)
14. GPS navigation	14. Music identifier
15. Calendar	15. Flashlight
16. Note taker	16. Language translators
17. App store search	17. Compass
18. Flashlight	18. Dictionaries, encyclopedias
19. Voice-activated virtual assistant (i.e., Siri)	19. Mobile tag readers
20. Voice dictation	20. Magnifying glass and mirror

digital immigrants. They have had to learn devices and platforms, often requiring new languages of symbols and icons. Digital immigrants retain an “accent,” marking their tie to the past. They compare today’s experiences with the way it used to be (Prensky, 2001a). In contrast, digital natives have always lived with technology. They are used to receiving information quickly, enjoy parallel processing and multitasking, prefer graphics, and function best when networked (Prensky, 2001a). Prensky (2001b) advanced that children raised in the digital environment “think differently,” putting forward that “their brains are almost certainly physiologically different.” Constancy takes this concept further. Youth born into perpetual access develop differently than those who have known times when they may or may not have been able to log on, immediately gain information, or connect with friends or loved ones (Prensky, 2001b).

In this article, I describe youth’s current access and use of media, providing data on media ownership from current U.S. and global samples. Then I describe how this new concept of constancy may alter child and adolescent development, affecting cognition and education, social interactions, emotions, and health. As the landscape has changed, so must our examinations; new approaches and questions need to be employed to study media effects. The article concludes with recommendations for accepting this new world of constancy.

Media Ownership and Use

Rather than thinking about how much technology exists in a typical household, with a count of telephones, radios, televisions, video players, game consoles, and computers, we now should inquire whether or not one possesses a smartphone (or mobile tablet). The smartphone is a portable device that

addresses a variety of functions (see Table 1), replacing and superseding previous forms of technology. The most recently released iPhone XR, which will be old technology by the time this article is published, launched with a retail price of US\$749. Like the Apple models offered since 2007 as well as those put out by competitors such as Samsung and Google, smartphones take advantage of Internet and advanced operating systems, to provide free and paid applications.

Up from 73% in 2014–2015, it has been reported that ownership or access of smartphones by American teenagers aged 13 to 17 years is around 95% (Pew Research Center, 2018b). Across the U.S. adolescent population, ownership is ubiquitous; demographic characteristics such as sex, ethnicity, socioeconomic background, and even parent education are not significantly associated with having a smartphone (Pew Research Center, 2018b). Universal smartphone ownership ($\geq 95\%$) by youth is reported in many countries beyond the United States, including the United Arab Emirates, the United Kingdom, Germany, Australia, Singapore, South Korea, and Hong Kong (Census and Statistics Department, 2018; Statista, 2018). Even in low- and middle-income countries, mobile and smartphone ownership is growing and high. In Brazil, 86% of adults own a cell phone, and 54% have a smartphone. In South Africa, 91% have a cell phone, and 51% have a smartphone (Pew Research Center, 2018a).

Researchers describe the complications of quantifying time with media. In a recent study of adolescent media use and risk factors for obesity, researchers noted the difficulties of separating distinct types of screens. They lumped all but TV viewing into one measure and then discussed how it did not capture the nuanced use or engagement of the sample with their devices (Kenney & Gortmaker, 2017). Other researchers complain about the challenges of capturing

media multitasking (Deng et al., 2019). Diverging from these approaches, we suggest that constancy does not lend itself to counting minutes or hours. Such estimates may be an unreliable and inappropriate representation of smartphone activity. How can a researcher accurately estimate time when pings indicating incoming messages, via individual and group chats or other social media, cut into ongoing facetime conversations with others or even the same friends? If a researcher were to look at time on the smartphone, he or she might record 10 online minutes—but does that accurately represent time spent communicating? While it has been a problematic measure in past research, time spent with media may be inadequate in characterizing the proactive, incidental, or contextual presence of the small screen.

Cognitive Development

Cognitive development now occurs in the presence of always available media. Infants hear and watch stories, learn their letters and numbers, and can communicate with grandma through the smartphone. A toddler and parent can sit together playing a matching game, just as or maybe more easily, using a hand-held device in contrast to physical cards laid out on the floor. Six-year-olds will choose touchscreens over books when presented with learning tasks and questions about unfamiliar topics (Eisen & Lillard, 2016). There is growing evidence from developed and developing countries that educational content delivered through small and connected electronic media can, at low cost, improve educational outcomes and school readiness for at-risk and vulnerable young children (Keengwe & Bhargava, 2014; Kokkalia, Drigas, & Economou, 2016).

Often replacing books, computers, and tablets, the smartphone can enhance and boost students' learning (Alzubi, Singh, & Hazaea, 2019; Sormunen, Lavonen, & Juuti, 2019). From the struggling to the facile learner, a student can turn to his handheld device to acquire knowledge, see real-world examples, manage data, and organize the learning process. Besides offering equitable access to information, a smartphone can customize education, supporting different learning styles and intelligences (Collins & Halverson, 2018). Mobile and digital technology allow students to take hold of their own education, scaffolding and promoting lessons beyond what is presented in classrooms and groups (Alzubi et al., 2019). For example, Taiwanese students developed and demonstrated their own additional mathematical models in their high school physics labs when they were allowed access to their mobile devices (Liu, Wu, Wong, Lien, & Chao, 2017). Iranian researchers Miangah and Nezarat (2012) report that Mobile-Assisted Language Learning (MALL) offers foreign-language students a more personalized, spontaneous, informal process; learners have greater freedom, and this results in more effective absorption and use of a new language. Meta-analyses reveal that mobile devices compared with traditional teaching can yield better performance across all subject areas

(Sung, Chang, & Liu, 2016; Tingir, Cavlazoglu, Caliskan, Koklu, & Intepe-Tingir, 2017). Constancy may be like a veteran teacher, who can provide tailored support and scaffolding, potentially resulting in the individual's deeper appreciation and level of learning.

In his 1985 book *Amusing Ourselves to Death*, Neil Postman complained about the children's television show *Sesame Street*. Postman felt that after exposure to fundamentals presented via muppets, celebrities, catchy tunes, and colorful animations, children would reject traditional education. Anything presented in a typical classroom would pale in comparison with what this show delivered. A similar argument is made about smartphones. While many teachers find digital technology to encourage interactivity and engagement, others find this technology threatening. Some teachers, rightfully so, criticize that smartphones use in the classroom can be distracting or disruptive. While sending and receiving of messages unrelated to class content can negatively affect learning (Kuznekoff, Munz, & Titsworth, 2015), the problem of uninspiring lessons is not the fault of new media. The challenge is to use ubiquitous media to provide appropriately personalized and captivating lessons.

Social Development

As children and adolescents develop, social relationships change in number, pattern, and nature. Some temperament and personality traits that will affect relationships are genetically predetermined (Jacobson & Rowe, 1999; Steinberg & Morris, 2001); while others are influenced by home environment and cultures (Steinberg & Morris, 2001). Media constancy affects social development as opportunities to know and interact with others are easily available, even from early childhood.

Smartphones and social media platforms connect people, offering limitless opportunities for relationships and learning about others. In contrast to previous generations when it was not until early adolescence when one went beyond his or her immediate family and neighborhood to discover other cultures, ethnicities, religions, and behaviors, the hand-held device brings potential interactions with diverse others sooner and in a more intimate and immediate way. Youth can actively seek out communication, passively receive messages, or just know that the potential is always there. Castells (1996) coined the term *network society*, and researchers have provided data ever since showing how technology supports "more frequent and diverse connections across time and space" (Baldassar, Nedelcu, Merla, & Wilding, 2016, p. 134).

The research to date suggests that constancy's impact on interactions, and subsequently social development, can be both beneficial and harmful. When asked about their perceptions of media's social aspects, adolescents were divided. Around 31% of teenagers believed social media to have a mostly positive impact, 24% said it is mostly negative, and the remaining 45% said it is neither positive nor negative

(Pew Research Center, 2018b). Among those with positive attitudes, 40% reported improved connectivity with family, friends, and new people, and 15% said that social media allowed them to meet others with similar interests. Among adolescents who believed social media to be mostly negative, 27% cited issues with bullying and rumor spreading. Another 17% felt social media harmed relationships and in-person contact. Fifteen percent felt social media led to unrealistic views of others' lives (Pew Research Center, 2018b).

Kraut et al.'s (2002) rich-get-richer hypothesis suggests that those who already have strong social networks and skills gain more from digital technologies. An alternative but also positive thought is the social compensation hypothesis, where online communication is more beneficial to people who are socially anxious and isolated (McKenna, Green, & Gleason, 2002). There is evidence for both hypotheses. Researchers surveyed German players of the popular role-playing game *World of Warcraft*, revealing that extroverted players communicated and self-disclosed more extensively, engaged in team play more frequently, and built up more social capital compared with their introverted peers. Additionally, the study showed a positive pathway for introverts and less socially adept players where online play compensated for in-person awkwardness and in turn resulted in more social capital acquisition (Reer & Krämer, 2017). A recent study of Palestinian adolescents ($N = 567$) also explored these two contrasting hypotheses. Researchers discovered that among this politically challenged group, those who already had a strong off-line community of friends and family benefited more from using social media (Abbas & Mesch, 2016).

Cyberbullying is a sociobehavioral problem often raised when discussing new media and social development. Cyberbullying involves the use of Wi-Fi enabled devices by a person or group of people with the purpose of intentionally and repetitively behaving in a hostile way to harm others (Hinduja & Patchin, 2014). Prevalence estimates vary widely (2%-40%); this disparity in rates comes from using measures with dissimilar definitions, thresholds, and contexts (Olweus & Limber, 2018). Consistently though, researchers find a great deal of overlap between cyberbullying and traditional bullying. A study of Korean high school students revealed that 6.3% had been a cyberbully, 14.6% a cybervictim, 13.1% had been both. This same study showed through a logistic regression that off-line bullying significantly predicted online bullying (C. Lee & Shin, 2017). Studies of Norwegian students report that around 92% who have been cyberbullied have also been bullied in at least one traditional (off-line) way (Olweus, 2012). Constancy suggests that unfortunately for some it may be very hard to escape aggressive, mean, and antisocial behavior.

On the other hand, constant media access can improve the interactions and social development of youth who have previously been more separate and vulnerable. Lesbian, gay, bisexual, transgender, and queer (LGBTQ) youth report using social networking sites to receive social

support, connect with LGBTQ communities, and solicit health and identity-related information (Fox & Ralston, 2016). These online functions play important roles in positive identity development, especially among youth who have had fewer in-person resources (Fox & Ralston, 2016; McConnell, Clifford, Korpak, Phillips, & Birkett, 2017). Similarly, digital modalities and platforms provide adolescent with chronic diseases and disabilities more and positive opportunities to engage with not only health providers but also peers with similar experiences and challenges (Devine, Viola, Coups, & Wu, 2018; Perales, Drake, Pemmaraju, & Wood, 2016; Vaala, Lee, Hood, & Mulvaney, 2018). Media facilitates friendships for youth who have felt isolated in the past.

Emotional Development

Emotional development is a complex process, with the goal of optimal psychological experience and functioning (Ryan & Deci, 2001). As children grow, they develop skills including emotional self-awareness, recognizing other people's emotions, and regulating and managing emotions effectively.

In relation to digital media use, researchers have examined outcomes including loneliness (Cigna, 2018), anxiety (Hoge, Bickham, & Cantor, 2017), stress and quality of life (Bevan, Gomez, & Sparks, 2014), depression (Tandoc, Ferrucci, & Duffy, 2015), and life satisfaction (Chou & Edge, 2012). Others have looked at mental health issues, including disordered eating, body dissatisfaction (Meier & Gray, 2014), and suicide ideation (Mackin, Perlaman, Davila, & Kotov, 2017). While there are studies showing that media use is associated with problematic emotional symptoms and harm, there is also evidence that digital technologies can be harnessed to improve mood and strategies among youth (Hoge et al., 2017).

In thinking about media use and emotional well-being, we need to be reminded that correlation does not imply causation (Weinstein, 2018). A recent survey found that members of Generation Z (ages 18-22 years) and Millennials (ages 23-37 years) reported higher levels of loneliness than older groups (Cigna, 2018). While younger people indicate heavier media engagement than older people, social media use alone did not explain the findings on loneliness (Cigna, 2018). When two separate studies employed similar methodology (experience sampling) and constructs, one found that greater Facebook use predicted decreased affective well-being and lower levels of life satisfaction (Kross et al., 2013) while the other observed no such relationships (Jelenchick, Eickhoff, & Moreno, 2013). Coming from another angle, some studies have found greater stress and anxiety among frequent users when access to media is decreased or eliminated. The desire to be constantly connected and FOMO (fear of missing out) when off-line makes it difficult for highly invested adolescents to be emotionally calm when disengaged from their social media (Scott & Woods, 2018). Digital natives and

those who have always lived in constancy become anxious and stressed when separated from their media.

Personality differences can explain variations in how media is related to emotions. Off-line characteristics can predict online characteristics; similarly, online characteristics can predict real-world affect. Whaite, Shensa, Sidani, Colditz, and Primack (2018) explored social media use, personality characteristics, and perceived social isolation among a large sample of young adults. They found that while greater social media use was significantly associated with feeling real-world social isolation, individual differences mattered. Extraversion and agreeableness were associated with lower odds of social isolation, and neuroticism was associated with higher odds of social isolation (Whaite et al., 2018). One's conscientiousness interacted with social media use; those who acted with less care were at greater risk of feeling isolated. In contrast, people who were more organized and considerate of their online posts did not feel social isolation regardless of how much time they spent with social media (Whaite et al., 2018).

Current statistics offered by the U.S. National Alliance on Mental Illness (2018) include that one in five (21.4%) youth aged 13 to 18 years will have a serious mental illness, 11% have a mood disorder, 10% have a behavior or conduct disorder, and 8% have an anxiety disorder. It is expected that future generations will continue to face these and other mental health issues. What has changed is children and adolescents now develop emotionally alongside steady, uninterrupted access to all types of media. The emerging tasks of self-awareness, recognizing other's emotions, and regulation may be helped or hindered by constancy. Psychologists and mental health specialists should study constancy and best employ media to effectively support healthy development and reduce emotional suffering.

Health

Similar to its impact on other developmental tasks, constancy will affect children and adolescents' physical health, as the threats and benefits associated with media use never go away. The following few paragraphs present how constant media may harm and benefit health, paying particular attention to physical activity and exposure to unhealthy messages.

The emergence of different media has been met with concern that much use is sedentary. Researchers have investigated whether watching videos, playing video games, and using computers is related to physical activity. A cross-sectional study of Kuwati adolescents showed that most were physically inactive and exceeded screen time guidelines. In this sample, just 3.4% spent ≥ 60 minutes per day in moderate to vigorous physical activity, while only 21% met the guideline of less than 2 hours per day of screen time (Hashem et al., 2018). In nationally representative and large samples of Norwegian youth, researchers report a decrease in physical activity alongside an increase in time spent doing sedentary activities (Dalene et al.,

2017). Inverse relationships exist but is this a causal, direct association, or is there another variable of interest? Some point out that obese children and adolescents refrain from exercise, choosing sedentary activities over physical activity to avoid discomfort or embarrassment. Others call attention to environmental factors. Sallis et al. (2018) found that American adolescents living in walkable neighborhoods reported less screen time.

Many smartphone features, both built-in and downloadable, can offer insight and possibly improve our understanding of the relationship between screen time and physical activity. Data collected through wearable technology (i.e., Fitbit) can be consolidated with online screen behaviors, to inform who is engaging in and when activity is occurring. Constancy removes the concept that screen time can occur only at distinct times and places; perhaps without these restrictions, a child or adolescent will feel liberated to participate in more activity. For example, on an autumn Saturday, the teenager can enjoy playing in a neighborhood pick-up basketball game, and watch the college football game in its entirety later that evening.

Past and future generations must address the constant bombardment of unhealthy and risky messages. For decades, children and adolescents have encountered media messages about low-nutrition foods and sugar-sweetened beverages; we know this exposure is associated with poor nutrition as well as overweight and obesity around the world (Borzekowski, 2014; Institute of Medicine Committee on Food Marketing and the Diets of Children and Youth, 2006; Nishtar, Gluckman, & Armstrong, 2016; Story & French, 2004). Exposure to tobacco and alcoholic marketing predicts early uptake and use of these products (Jernigan, Noel, Landon, Thornton, & Lobstein, 2016; Strasburger, 2014). Messages communicated via digital media are correlated with off-line risky behaviors and product use (Moreno & Whitehill, 2014; Yoo, Yang, & Cho, 2016).

With constancy, children and adolescents never escape marketing and promotion, either subtle or overt. Messages about products are personalized and targeted more than ever before. Additionally, users are monitored through their smartphones; preferences and purchases, as well as paths traveled, are recorded. Information on frequently visited markets, from corner bodegas to the online retail shops, results in more effective advertisements. It is unlikely that children can successfully maneuver in such a space, as sparkly items are dangled in front of them. Mature understanding of marketing requires not only that one distinguish between what is or is not an advertisement or promotion but also know that advertisements involve a biased voice (Institute of Medicine Committee on Food Marketing and the Diets of Children and Youth, 2006; Kunkel, 2001). Children and adolescents often have difficulty seeing the boundaries between advertising, information, and entertainment content (van Reijmersdal, Boerman, Buijzen, & Rozendaal, 2017). Many recommend media literacy as well as disclosures around

advertising to safeguard youth from persuasive commercial messages and such interventions have had some success (De Jans, Hudders, & Cauberghe, 2017; De Jans, Hudders, & Cauberghe, 2018; van Reijmersdal et al., 2017). Protecting future youth from constant and harmful messages will require an exhaustive consideration of the individual's personal characteristics within a concentric and interacting ecological systems theory (Takeuchi & Levine, 2014).

In contrast to these harmful effects and worries, the literature is loaded with examples of effective eHealth interventions for young people (Devine, Viola, Coups, & Wu, 2018; Van Germert-Pijnen, Kelders, Kip, & Sanderman, 2018; Widman, Nesi, Kamke, Choukas-Bradley, & Stewart, 2018). An article on adolescent cancer survivors reviews studies where digital and smartphone health interventions resulted in improved health behaviors (e.g., physical activity, nutrition, tobacco cessation, condom use), enhanced emotional well-being, more carefully tracked relevant symptoms, and better health care delivery (Devine et al., 2018). Interventions communicated via eHealth methods (including the Internet, computers, tablets, smartphone applications, and text) can also reduce risk behaviors (i.e., alcohol use, regular and e-cigarette use, poor diet, physical inactivity, sedentary behavior, and poor sleep duration and quality; Granja, Janssen, & Johansen, 2018; Van Germert-Pijnen et al., 2018). These eHealth interventions provide hope that through constancy young people can unceasingly be offered tailored messages and relevant guidance on well-being.

A potential benefit of constant technology may be the ability to meticulously and systematically track individual and public health. One need not be ignorant of steps taken, calories consumed, or hours of rapid eye movement sleep. Continual records, easily accessible by an individual, parent, or health provider, will be a part of life, potentially reducing emergency health concerns. Future applications will be able to access, assess, and compile biometrics.

Conclusion

Many feel uncomfortable with the status quo relationship between youth and media. To improve child development, they suggest we should separate the child from his or her smartphone. This recommendation is unrealistic, as we will not return to a time before constancy was a reality.

Constancy may invalidate Marshall McLuhan's (1964) concept "the medium is the message." That messages cannot be divorced from the way they are transmitted seems outdated. Imagine a viral video. Such content may come to an adolescent via a variety of platforms, including social media, YouTube, or websites. Incessantly, adolescents are alerted and communicating through an assortment of media, choosing to receive and send. It is now the content and the communication actions that matter and not the platform messages are delivered through.

To improve and advance child development, we advise that attention pivot from the medium to the user. Media

expert danah boyd remarked in a *New York Times* OpEd (2016) that children "turn to technology to socialize, learn, and decompress. Why are we blaming the screens?" Interestingly it is the digital immigrant and not the digital native who perceives current media use to be problematic (Ahn & Jung, 2016; Prensky, 2001b). It is the rare digital native growing up in constancy who thinks the solution is to get rid of smartphones.

Understanding youth and media requires that researchers change their focus; in a world of constancy, we need to pay more attention to the child rather than the media they use. How we investigate media effects has to change. It is no longer practical or informative to measure only the old Cs of consumption, content, and context. We have to conduct naturalistic studies where we return to the ecological systems theory and associated methodological approaches. Focusing on the individual level, we may need to examine child or adolescent's emotional state, assessing if they are experiencing stress, like the worker who is constantly on call. Researchers could employ introversion or extroversion scales to explore a child's use of social media applications. One might also consider the family relationships and environment. How does the parent use media to interact with the child? Does the parent regularly text with the child or even use applications to monitor where the child is during the day? On the next system level, the researcher could explore available media in the community. What media and messages are present in the child's typical environments; what is being used and what is sitting stagnant on the shelf? The Measuring Youth Media Exposure methodology may be helpful. This methodology considers the individual moving through different media environments (Rich, Bickham, & Shrier, 2015). Capturing the complex world of constancy, this methodology integrates recall estimates, time-use diaries, and two forms of ecological momentary assessment, including experience sampling and audio-video observation of the environment (Rich et al., 2015).

The smartphone is not going away—we are not returning to a world without technology. It will be important to address the developmental concerns of the child or the adolescent and not the smartphone in his or her pocket. Understanding that future generations around the globe will always live with constancy, we should emphasize skills to better use technology in learning and improved cognitions. Parents and caregivers must assist the child to have valuable social interactions and manage his or her emotions both off-line and online. Healthy users will need to be critical consumers of their information environments and take advantage of the tools that media has to offer. Constancy requires pragmatic and innovative approaches to understand the new landscape of children, adolescents, and media.

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Note

1. Researcher Lisa Guernsey described similar Cs (content, context, and child) in her work on media use and children aged 5 years and younger (Guernsey, 2007; Guernsey & Levine, 2015). These Cs have also been used by the advocacy group Zero to Three in its guides for parents on young children's screen use (Barr, McClure, & Parlakian, 2018).

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