

# Identity development in the digital context

Serena Soh<sup>1</sup>  | Sanaz Talaifar<sup>2</sup>  | Gabriella M. Harari<sup>1</sup> 

<sup>1</sup>Department of Communication, Stanford University, Stanford, California, USA

<sup>2</sup>Department of Management and Entrepreneurship, Imperial College London, London, London, USA

## Correspondence

Serena Soh, Stanford University, Department of Communication, 450 Jane Stanford Way, Building 120, Room 110, Stanford, CA 94305, USA.

Email: [sjsoh@stanford.edu](mailto:sjsoh@stanford.edu)

## Abstract

Digital media is ubiquitous in adolescence and young adulthood. These are key developmental periods when people explore who they are and who they want to become. However, researchers have yet to fully understand digital media's role in shaping identity and its development. We build on prior work conceptualizing identity development as a contextually embedded process to describe how identity influences and is influenced by one's digital context. We propose a systematic framework for investigating the relationships between identity and digital environments (i.e., mediums and platforms, which vary according to their content and affordances) through four mechanisms: selection (i.e., choosing or avoiding digital environments), manipulation (i.e., intentionally altering or changing digital environments), evocation (i.e., unintentionally eliciting responses from digital environments), and application (i.e., integrating or applying experiences from digital environments). To conclude, we outline future directions for research that may clarify how identity development unfolds in the digital context.

## KEYWORDS

context, digital media, environment, identity, identity development

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## 1 | INTRODUCTION

Digital media is a core feature of young people's daily lives (Auxier & Anderson, 2021; Vogels et al., 2022). Rates of digital media use differ by country and demographic characteristics, but people in their teens and twenties continue to be the largest group using digital media (e.g., internet, smartphones, social media; Ghai et al., 2022; Silver, 2019). A recent survey across 18 countries with advanced economies around the world (e.g., Canada, Spain, Hungary, Israel, Malaysia, Japan) found that at least 93% of emerging and young adults own a smartphone or use the internet, and at least 84% use social media (Wike et al., 2022). Rates of digital media use among adolescents are estimated to be similar or even higher in some countries and regions (e.g., Brazil; South Korea, CETIC, 2023; Ministry of Science & ICT, 2022). Considering the ubiquity of digital media in young people's lives, research in psychology and communication has begun to examine digital media's role in shaping identity and its development.

To date, empirical research about digital media and identity among young people has developed in a piecemeal manner with most studies focusing on identity *content* (i.e., what people consider when they think about who they are across domains), while only speculating about identity *processes* (i.e., how people engage in the process of figuring out who they are through exploration and commitment; McLean et al., 2016). This is unfortunate because developmental researchers have emphasized that both content and processes must be examined to comprehensively study identity and its development (McLean et al., 2014; Syed & McLean, 2015). Moreover, adolescence and emerging or young adulthood are developmental stages that are particularly critical periods for undergoing identity processes (e.g., exploration, commitment, reconsideration; Crocetti et al., 2008) across identity domains (e.g., personal, vocational, sexual, gender, ethnic-racial) (Arnett, 2000; Erikson, 1968; Schwartz, 2001).

During these developmental stages, developmental trajectories vary across individuals: Some develop a coherent and positive sense of self (Schwartz & Petrova, 2018), whereas others struggle to do so (Schwartz et al., 2005). Although the processes underlying identity development are not inherently positive or negative, research has shown that some processes are more or less adaptive in certain cultural contexts due to their association with consequential outcomes at the individual level (e.g., health risk behaviors, psychosocial functioning, well-being; Meca et al., 2023; Schwartz et al., 2013; Sugimura, 2020). For example, studies of adolescent and emerging adults in various countries (e.g., Italy, Poland, Romania, Japan, U.S.) found that identity commitment was associated with positive well-being outcomes (e.g., Berzonsky & Cieciuch, 2016; Hatano et al., 2016; Karaś, et al., 2015; Waterman et al., 2013), suggesting that commitment processes can be considered more adaptive for young people in these countries. The role of identity processes in explaining such life outcomes has prompted research investigating the factors that promote and/or hinder identity development (e.g., Crocetti et al., 2023; Schwartz & Petrova, 2018). However, one factor that remains under-examined is the role of digital media in identity development.

Critically, the research to date lacks a systematic framework for conceptualizing the relationships between digital media and identity in ways that allow for an investigation of the mechanisms by which identity influences, and is influenced by, digital media over time. Here, we build on prior work conceptualizing identity development as a contextually embedded process to describe how identity influences and is influenced by one's *digital context*. In what follows, we integrate independent lines of theory and research from psychology and communication to propose a systematic framework for investigating the reciprocal relationships between identity and digital environments through four mechanisms: selection (i.e., choosing or avoiding digital environments), manipulation (i.e., intentionally altering or changing digital environments), evocation (i.e., unintentionally eliciting responses from digital environments), and application (i.e., integrating or applying experiences from digital environments). This framework enables us to synthesize the existing literature to provide a narrative review of studies examining digital media, identity and its development in relation to each of the proposed mechanisms. Doing so helps provide a better understanding of how the digital context may promote or hinder identity development, and identify what remains unknown about identity in relation to the various digital environments young people inhabit. We conclude with suggestions for future directions.

## 2 | THE DIGITAL CONTEXT

Scholars of identity development have long recognized the importance of context in shaping developmental trajectories. Traditionally, when studying the contexts in which identity development occurs, researchers have distinguished between social and cultural contexts (e.g., networks, community, society, culture, designed and natural environments; Lerner & Castellino, 2002) and/or different contextual levels (e.g., microsystems of one's family or school, exosystems of one's school and neighborhood community; Bronfenbrenner, 1994). Here, we propose that digital media offer yet another important, though under-conceptualized, context in which identity development occurs.

Researchers have also recognized the importance of media—both traditional (e.g., television, magazines) and newer forms (e.g., social media, smartphones)—for young people's development (e.g., Craig & McInroy, 2014; Davis & Weinstein, 2017; Krcmar & Cingel, 2019; Slater, 2007; Valkenburg & Peter, 2013). However, much of the existing work examines digital media and identity content with speculations about identity development (e.g., Marshall & Naumann, 2018; Metcalfe & Llewellyn, 2020; Taylor et al., 2014), rather than examines identity development processes directly. Studies that have examined digital media use in relation to identity processes have also primarily focused on the personal identity domain (e.g., Agbaria & Bdier, 2021; Raiziene et al., 2022; Yang, Holden, Carter, et al., 2018). Furthermore, digital media are often conceptualized as a general behavior (e.g., duration or frequency of use, active or passive use, "screen time"; Kaye et al., 2020), rather than as a context in which behavior and psychological processes unfold.

In recent years, some identity researchers have called for more thorough conceptualizations of digital media as a contextual factor for identity development (e.g., online context, virtual microsystem, digital environment, hybrid reality; Granic et al., 2020; Navarro & Tudge, 2022; Talaifar & Lowery, 2023; Wängqvist & Frisé, 2016). Yet, a consistent conceptualization of the digital context and framework for studying relations between identity and the digital environment remains missing. Such a conceptualization would allow researchers to draw useful theoretical and empirical connections to the way physical and natural environments are studied in research on person-environment relations (from social and personality psychology and environmental psychology; e.g., Buss, 1987; Graham et al., 2011; Misra & Stokols, 2012; Talaifar & Lowery, 2023) and to research on everyday media practices (from communication; Steele & Brown, 1995; Brown, 2006). Considering digital media as a contextual factor thus allows us to propose a framework for studying the *digital environments* that young people inhabit and engage with, and which may in turn be influencing the development of their identities.

Digital environments can be categorized by mediums and/or platforms (see Table 1). *Mediums* refer to the digital channels or devices through which individuals communicate and interact (e.g., smartphones, virtual reality; Sundar & Limperos, 2013), while *platforms* refer to branded spaces with particular features (e.g., Instagram, TikTok; Bayer et al., 2020; Rhee et al., 2021). Each person's digital context may consist of several digital environments at any one time. Naturally, not all digital environments a person engages with will relate to, or influence, their identity. Some digital environments will be more relevant than others for understanding identity development due to the *content* and *affordances* that characterize them. Given that these characteristics can be shared across mediums and platforms, studying content and affordances may lead to insights that are more generalizable across digital environments and over time.

### 2.1 | Content within digital environments

Content refers to information and data transmitted via mediums and platforms (Okdie et al., 2014), such as specific songs, TV shows, and social media posts. Examining content tells us more about what kinds of information people encounter and engage with in digital environments, which is helpful for understanding the experiences that may be influencing their identity development. For example, people may choose to engage with television (medium) and watch specific telenovelas (content) that reflect their lived experiences and commitment to their ethnic and gender

TABLE 1 Common digital environments.

Digital environments	Description	Example references
<b>Mediums</b>	Digital channels or devices through which individuals communicate and interact. Examples: <i>Smartphones, Social media, Television, Virtual reality, Video games</i>	Sundar & Limperos, 2013 Bayer et al., 2020 Fox et al., 2009 Harari et al., 2016 Hoffner & Buchanan, 2005 Granic et al., 2014
<b>Platforms</b>	Branded spaces that individuals occupy, which may include:	
Dating platforms	Online dating and geosocial networking apps that mainly differ in affordances and content offered. Examples: <i>Grindr, Tinder, Bumble, OkCupid</i>	Albury et al., 2017 Duguay, 2017 Van De Wiele & Tong, 2014;
Gaming platforms	Interactive games that mainly differ in affordances and content offered. Examples: <i>Fortnite, Minecraft, World of Warcraft</i>	Baek & Touati, 2017 Bessière et al., 2007 McInroy & Mishna, 2017 Navarro, 2021
Mobile application platforms	Self-contained software that mainly differs in affordances and content offered. Designed for mobile devices that perform specific tasks for users. Examples: <i>Calendar app, Mail app, Camera app</i>	Amalfitano et al., 2013; Stachl et al., 2017 Sust et al., 2023
Music-streaming platforms	On-demand music and digital content streaming services that mainly differ in content offered and recommended. Examples: <i>Apple music, Spotify, Pandora</i>	Prey, 2018 Webster, 2020 Werner, 2020
Social media platforms	Computer-mediated communication channels that allow users to engage in social interaction with broad and narrow audiences in real time or asynchronously. Examples: <i>Facebook, Instagram, Snapchat, TikTok, Twitter/X, YouTube</i>	Bayer et al., 2020 Bond & Miller, 2021 Rhee et al., 2021 Jiang & Ngien, 2020 Montag et al., 2021 Murthy et al., 2016 Vaterlaus et al., 2016

TABLE 1 (Continued)

Digital environments	Description	Example references
Video-streaming platforms	On-demand movie and TV show streaming services that mainly differ in content offered and recommended.	Gaw, 2022
	Examples:	Sanson & Steirer, 2019
	<i>Hulu, Netflix, Prime Video</i>	Tefertiller & Sheehan, 2019

Note: The table lists examples of common digital environments young people inhabit at the time of this writing. Digital environments are categorized into mediums and/or platforms, which can be further characterized by their content and affordances. Some mediums (e.g., film, music, podcasts) are primarily experienced via auditory or visual experiences and are not inherently interactive environments. However, people engage with such media via platforms (e.g., video or music streaming platforms, mobile apps), which are interactive environments. The example references are to papers that provide more information about the respective mediums and/or platforms, and how they can be studied.

identities (Mayer, 2003). Some may also engage with certain music genres to signal their identification with and commitment to their racial identity, while others may do so to explore their racial identity (Myrie et al., 2022).

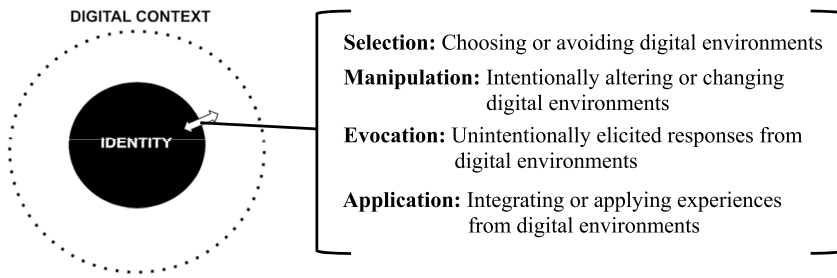
## 2.2 | Affordances of digital environments

Affordances refer to the range of possibilities for action enabled by the dynamic relationship between a person and a medium or platform (Evans et al., 2017; Fox & McEwan, 2017). They dictate what people *can and cannot do* in their digital environments, as well as *what* content is presented and *how* the content is presented (Sundar, 2008). For example, social media platforms (i.e., characterized by profiles, networks, streams, and messages; Bayer et al., 2020) like Instagram offer the affordance of editability, which enables people to edit their photos as means of exploring different versions of themselves (Moreno & Uhls, 2019). Affordances like persistence (e.g., extent to which content is viewable upon posting) and anonymity (e.g., ability to omit identifiable information online) can also enable and/or restrict one's ability to freely express and explore oneself online (Bayer et al., 2020; Talaifar & Lowery, 2023).

## 2.3 | Relations between identity and digital environments

Next, we unpack the ways in which identity influences and is influenced by the digital environment. To do so, we build upon and integrate two theoretical accounts from the fields of psychology and communication: the person-environment literature (Buss, 1987; Misra & Stokols, 2012) and the Media Practice Model (Brown, 2006; Steele & Brown, 1995). Broadly, the person-environment literature describes how people's personal characteristics lead them to choose or avoid certain environments (i.e., selection), intentionally change or alter their environments (i.e., manipulation), and unintentionally elicit responses from their environments (i.e., evocation; Buss, 1987). The Media Practice Model similarly argues that a person's identity influences the media they select and attend to (i.e., selection). However, this model further adds a description of how people's identities influence their engagement with media (i.e., interaction), and how the selected media impacts their life through incorporation of or resistance to media messages (i.e., application). In our framework, we drop the interaction mechanism from the Media Practice Model in favor of the manipulation and evocation mechanisms from the person-environment transaction literature because the latter mechanisms describe more specific ways in which people interact with digital environments.

Studying relations between identity and digital environments through the mechanisms of selection, evocation, manipulation, and application (see Figure 1) enables a principled synthesis of the literature, highlights what remains unknown, and provides insight into how digital media may promote or hinder identity development. In principle, any identity construct (both content and processes) can be studied in relation to digital environments using



**FIGURE 1** Relations between identity and digital environments. Listed are the key mechanisms proposed for studying the relations between identity and the digital environments that make up one's digital context.

this framework, and the mechanisms do not have to occur as an ordered sequence nor during engagement with every digital environment. As further described in the following sections, some mechanisms (e.g., selection) may be well-suited to be studied independently, while others (e.g., application) will likely be better understood in relation to other mechanisms.

In what follows, we provide a narrative review of findings from studies in psychology and communication research organized using our framework's four mechanisms. The *Selection* section primarily reviews studies about how identity processes relate to the degree to which people select to engage with digital environments. The *Manipulation* section focuses on research about how people manipulate their digital environments by making identity claims via online self-presentation. The *Evocation* section describes initial studies about how identity evokes different responses from algorithms in digital environments. Finally, the *Application* section examines findings about how people may apply social comparisons and feedback gleaned from their digital environments in ways that can influence their identity.

### 2.3.1 | Selection

Selection describes how people's identity informs which digital environments they choose to engage with or avoid. Studying selection can reveal whether and why individuals select certain mediums and platforms over others, and the degree to which they engage with their selected environments. In media research, studies most relevant to selection focus on understanding media use versus non-use (e.g., who uses what types of media; Correa et al., 2010; Harari & Gosling, 2016; Hargittai, 2007; Vaid & Harari, 2021), degree of engagement (e.g., the frequency or duration of media use; Huang, 2017; Marciano et al., 2022), and motivations for use (e.g., why people use media; Katz et al., 1974; Sundar & Limperos, 2013). Of these topics, the degree of engagement with digital environments people select has garnered the most attention.

In studies of young people from predominantly Westernized countries (e.g., Australia, Finland, Italy, Latvia, and Israel) excessive engagement across internet, social media, and gaming environments (e.g., long duration, high frequency, problematic use) has generally been associated with identity processes that are considered to be less adaptive (e.g., ruminative moratorium, diffused status, reconsideration of commitment process; Agbaria & Bdier, 2021; Bacchini et al., 2017; Mannerström et al., 2018; Mazalin & Moore, 2004; Monacis et al., 2017). For instance, a study of over 900 Finnish adolescents found that those with identity statuses considered to be more adaptive (e.g., achievement and searching moratorium statuses) were less prone to excessive digital media use, whereas those in the ruminative moratorium status (e.g., lacking commitment, looking for direction) tended to engage more in excessive use (Mannerström et al., 2018). Studies of Italian and Latvian adolescents and young adults have found that those with a tendency to avoid engaging with identity development (i.e., a diffuse-avoidant identity processing style) tended to engage more excessively with the internet, social media, and gaming, whereas those with a normative identity processing style (i.e., a tendency internalize others' expectations) tended to spend less time using such media (Monacis et al., 2017; Sebire & Miltuze, 2021).

In other words, those with less adaptive identity processes tend to select into digital environments more excessively. However, there are some exceptions to this pattern of findings in the literature. For example, from studies showing that in some cases the relatively more adaptive processes (e.g., informational style, in-depth exploration) have been associated with excessive media engagement (e.g., in social media environments, among females in gaming environments; Monacis et al., 2017; Müller & Bonnaire, 2021). Ultimately, a consideration of *why* young people choose to engage with a digital environment will be needed to understand the ways in which their use may be promoting or hindering identity development over time.

The digital context does not play a uniform role in identity development because individuals have agency in their selection and extent of engagement with digital environments. The research reviewed here suggests that, at least in Westernized cultural contexts, people with less adaptive identity processes (e.g., ruminative moratorium, diffused status, diffuse-avoidant style) tend to select to excessively engage with digital environments. Less work, however, has examined how identity processes relate to why people select into certain digital environments over others in the first place (e.g., motivations of self-exploration, information-seeking, social connection; Manago, 2014; Valkenburg et al., 2005; Yang & Brown, 2013). Thus far, relevant studies have only examined a limited variety of activities that young people engage in after selecting into a digital environment (e.g., communicating with others; looking up information; shopping online; Mannerström et al., 2018; Raiziene et al., 2022).

### 2.3.2 | Manipulation

Manipulation involves individuals intentionally altering or changing their digital environments. For our purposes, manipulation is particularly relevant in digital environments that permit identity-relevant forms of manipulation, such as those characterized by interactive affordances like personalization and editability. Social media platforms are particularly relevant to manipulation because their affordances often allow individuals to change their environments by posting, sharing, or blocking content (Ashokkumar et al., 2020; Santer et al., 2022) and by changing preferences in their account settings (e.g., adjusting content recommendations, the privacy of their profiles) in an effort to explore or commit to an identity. For example, those who are exploring their identities may tailor their social media feeds and follow the content of specific influencers on various platforms (e.g., YouTube, Instagram, TikTok) as a form of manipulation that facilitates their self-exploration process. To date, most studies relevant to manipulation have examined how people alter their digital environments through the self-presentation of identity content on social media.

Early work on Facebook showed that adolescents tend to manipulate their social media environments by engaging in identity-based self-presentation online (e.g., presenting as older or more beautiful; Valkenburg et al., 2005). This holds true today, nearly 20 years later, as social media continue to provide affordances that promote different ways of presenting the self. For example, manipulation in digital environments can take the form of sharing or posting self-directed and other-directed identity claims (Gosling et al., 2002). Identity claims are statements that serve to reinforce and signal one's self-views and can be explained by long-standing theories of self-verification and identity negotiation. These theories propose that people are driven by a need for coherence and thus strive to select and maintain environments and relationships that are consistent with their existing self-views (Swann, 2012; Swann & Bosson, 2008). One way people elicit self-verifying feedback from their environment is by strategically exhibiting certain aspects of their identities in their environments (e.g., via identity claims) or during social interactions (Swann, 1987).

Manipulation in the form of identity claims have been studied in early digital environments like personal websites (Vazire & Gosling, 2004) and online chat rooms (Subrahmanyam et al., 2006), and more recently, on social media (e.g., via profile information, feed content; Manago et al., 2008). In particular, several studies have found that American emerging adults tend to manipulate their social media environment by posting identity claims on Facebook about their personal, gender, and/or ethnic and racial identities (e.g., posting cultural content relevant to their ethnic and racial identities; Grasmuck et al., 2009; McKenzie, 2022; Michikyan, Subrahmanyam, & Dennis, 2015; Zhao et al., 2008).

However, another study of American emerging adults found no relationships between the sharing of self-relevant information and identity processes, suggesting that self-disclosure may be better explained by the culture of social media platforms (Jordán-Conde et al., 2014). Other studies have focused on the relationship between manipulation via self-presentation on social media and identity clarity (Michikyan, Dennis, & Subrahmanyam, 2015; Yang & Brown, 2016; Yang et al., 2017), finding, for example, that American young adults with higher identity clarity, which is considered to be more adaptive, were more likely to present their authentic self on Facebook, whereas those with lower clarity were more likely to present false or ideal selves (Michikyan, Dennis, & Subrahmanyam, 2015). Moreover, studies of young adults in the U.K. have found that self-presentation strategies driving manipulation are used to negotiate identities and manage audiences across multiple social media platforms (Davidson & Joinson, 2021; Duguay, 2017). For example, people tend to change the ways they present themselves on professional platforms (e.g., LinkedIn; more censored self) compared to more social platforms (e.g., Facebook; more authentic self; Van Dijck, 2013).

Given that social media environments are more easily changed than many other kinds of media (e.g., television, e-books), they are particularly well-suited for manipulation through self-presentation and displays of identity. Based on the reviewed studies from young people in the United States who use Facebook, it seems that there is a relationship between identity content and how people manipulate their social media environments by making identity claims. However, researchers have yet to study identity processes in relation to manipulation of digital environments more broadly.

### 2.3.3 | Evocation

Evocation refers to how individuals unintentionally elicit responses from their digital environments. The behaviors people engage in within digital environments can evoke responses directly from the environment itself (e.g., via artificial intelligence and algorithm-driven content recommendations in social media and streaming platforms) and from other people within the digital environment (e.g., via reactions, comments, messages, and other forms of feedback). For example, one's TikTok 'For You Page' may show comedic content about the Asian-American experience based on previous viewing behaviors, while one's Instagram Explore feed may show lifestyle content based on the accounts followed. Further, people may receive different feedback from others on social media (e.g., through likes, comments, direct messages) as a result of who they are.

As in the case of manipulation, it is important to note that evocation occurs only in digital environments characterized by interactive affordances. For instance, one cannot evoke responses from mediums low in interactivity like cable television, but can do so if the television content is viewed through more interactive video-streaming platforms (e.g., Hulu, Netflix; Evens et al., 2023). The study of evocation requires an understanding of what individuals' idiosyncratic media experiences look like within platforms, making it a challenging mechanism to study. Thus far, relevant studies have begun to examine how identity content may evoke responses from social media algorithms.

Given the inherent difficulties in understanding the black box of proprietary social media algorithms, initial work relevant to evocation has been qualitative and focused on understanding perceptions of and beliefs about algorithms. Such studies suggest that people believe their identities evoke different responses from social media algorithms, and that the algorithms become tailored to, contradict, and perhaps influence, people's identities (Bhandari & Bimo, 2022; Simpson & Semaan, 2021). For example, Lee et al. (2022) found that American emerging adults perceived their self-concepts to be reflected in the types of content recommended through their TikTok algorithms. Another study of U.S. emerging adults found that TikTok users also tend to perceive the algorithm as actively evoking and amplifying some identities and suppressing or filtering out marginalized social identities (e.g., ethnic, sexual, political; Karizat et al., 2021). If online behaviors do in fact evoke personalized content relevant to one's identity based on algorithmic recommendations, digital environments may be guiding people on certain paths that influence their identity development (e.g., by reinforcing or discouraging certain behaviors, self-views, beliefs, values, perspectives).

While researchers have yet to directly investigate the role of evocation in relation to identity processes, initial studies relevant to this mechanism that have primarily been conducted in the U.S. suggest that social media algorithms



are likely related to identity and may have downstream impacts on identity development. The extent of evocation's role more broadly likely depends on a number of factors including the individual's current stage of identity development, the particular medium or platform from which the responses are being elicited, what kinds of content are being elicited by algorithms, and what kinds of feedback from others is being evoked (e.g., positive vs. negative; Koutamanis et al., 2015; Valkenburg et al., 2006) and from whom (e.g., friends vs. strangers; Carr & Foreman, 2016).

### 2.3.4 | Application

Not all engagement with the digital environment impacts identity, but a more focused examination of application will reveal when, how, and why digital environments play a role in identity development. Application refers to how experiences in the digital environment can in turn be integrated into a person's self-view via incorporation or resistance, thereby shaping their identity and its development. People engaging with the same digital environment can come away with vastly different experiences. Depending on who they are (in terms of their identity content and processes) and the nature of the digital environment, an individual may incorporate their experiences into their identity or actively resist them. Unlike the manipulation and evocation mechanisms, the relevance of application is not limited to digital environments with certain affordances (e.g., being an avid e-book reader can impact identity development even though the medium itself is characterized by low interactivity and editability). Instead, it seems that understanding the types of content individuals engage with in any given digital environment will be an important characteristic to account for when studying the application process. Thus far, the research most relevant to application is about how experiences of social comparison on social media platforms relate to identity processes, and how experiences of manipulation via self-presentation in digital environments can be incorporated into self-views.

Social comparison, or comparing oneself to others, is commonly studied in terms of comparison of ability (i.e., achievement and performance) and comparison of opinion (i.e., thoughts, attitudes, values, and beliefs; Festinger, 1954). Studies about social comparison are relevant to application because they focus on a psychological process that helps explain why people might incorporate (or resist) experiences within social media environments. Findings regarding identity processes and social comparisons have generally been mixed based on the platform studied, as well as the characteristics of the participants (e.g., age, gender, country where they reside; Noon, 2020; Noon et al., 2021; Noon et al., 2023). For example, a set of studies of American emerging adults found that those with less adaptive identity processes (e.g., rumination, diffuse-avoidant style, lower identity clarity) tended to experience comparison of ability on social media, while those with more adaptive processes (e.g., informational and normative styles) tended to experience comparison of opinion (Yang et al., 2018a, 2018b). However, studies of adolescents in European countries (e.g., U.K., Romania, Serbia) have shown more mixed findings for Instagram in particular. For example, a mix of processes (e.g., in-depth exploration, reconsideration of commitment) were associated with comparisons of opinion among U.K. adolescents (Noon, 2020), but no processes were related to comparisons of opinion among Romanian and Serbian adolescents (Noon et al., 2021). While past studies have examined how identity processes relate to experiences of social comparison in social media environments, what remains unclear is the extent to which people in turn incorporate or resist these experiences in their identity development. It is possible, for example, that people with less adaptive processes integrate their social comparison experiences into their self-views in negative ways (e.g., experiencing comparisons of ability and perceiving oneself to be less accomplished), whereas people with more adaptive processes integrate their social comparisons experience in more positive ways (e.g., experiencing comparisons of opinion and changing one's beliefs), or even resist applying such social comparison experiences to their identities altogether.

In contrast, there is initial work examining how experiences of manipulating digital environments via self-presentation impact identity (e.g., how identity experiments influence self-concept unity; Valkenburg & Peter, 2008). The closest work to causally test the application mechanism stems from experimental work on identity shift theory, which proposes that intentional self-presentation in digital contexts can result in changes in how people

perceive themselves as people integrate their online experiences into their self-views (Gonzales & Hancock, 2008). In one of the first identity shift studies, American emerging adults were asked to present themselves as introverts or extroverts in a public versus private online context. Those who self-presented online in a public context 'shifted' their identity by integrating their experience in the digital environment into their self-view, such that their identities became more consistent with their self-presentation (Gonzales & Hancock, 2008). In other words, depending on the type of digital environment people manipulated (e.g., public vs. private) and the nature of the manipulation (e.g., self-presentation as an introvert or extrovert), individuals incorporated their experience into their self-view to be consistent with how they presented themselves. Identity shift studies have since suggested that factors like receiving feedback from others or making assumptions about one's audience play a role in changing the effects of identity shift, in terms of the extent to which experiences in digital environments change one's self-views (Carr, 2021; Carr et al., 2021; Walther et al., 2011). For example, lab experiments have shown that even receiving non-personalized, one-time positive feedback in digital environments influenced people's self-perceptions to be more in line with online self-presentations (Walther et al., 2011), as did feedback posted publicly on Facebook and by someone who was relationally close to an individual (Carr & Foreman, 2016).

While all of the mechanisms in our framework can be examined to better understand the relationships between identity and digital environments, the application mechanism enables an understanding of how digital environments more directly shape changes in identity. The research on social comparison and identity shift reviewed here, which has largely taken place in a Westernized cultural context, indicates that the study of application has just begun. Additional research must continue examining these and other psychological processes, such as those relevant to the potential impacts of media representation, belonging to online communities, and parasocial relationships on identity and its development (e.g., Besana et al., 2019; Frey et al., 2022; Hoffner, 2008; Mclnroy & Craig, 2017, 2020).

### 3 | SUMMARY AND FUTURE DIRECTIONS

In this article, we proposed a framework for more comprehensively studying how identity influences, and is influenced by the digital context. This is important to study given that identity development in digital environments may lead to consequential outcomes that affect individuals (e.g., self-esteem, mental health; Cingel et al., 2022; Granic et al., 2020) and societies (e.g., political polarization; racial socialization; Barberá, 2020; Frey et al., 2022). We first emphasized the importance of the digital context for understanding identity development. We then introduced our conceptualization of digital environments (i.e., mediums and platforms characterized by their content and affordances) and outlined our framework's mechanisms: selection, manipulation, evocation, and application. Our framework enables a more complete understanding of identity development in the 21<sup>st</sup> century and provides insights into how digital media may promote and/or hinder identity development.

However, many pressing questions remain, so we conclude by highlighting three broad suggestions for future research that apply to the study of all mechanisms in our framework: (a) greater breadth and depth in the conceptualization of digital environments and identity constructs, (b) the use of study designs and methodologies that permit the examination of causal and longitudinal relationships between identity and digital environments, and (c) a greater appreciation of the role of cultural contexts when studying identity development in relation to digital environments. We also point to future research directions that arise from our framework in Table 2, where we describe the common research topics relevant to each of the four mechanisms as well as illustrative research questions and brief examples of possible studies.

First, more research should examine identity in relation to a greater breadth and depth of digital environments. Most of the existing research has focused on social media environments. This makes sense given the sheer amount of content available on social media, coupled with its interactive nature and many affordances relevant to identity development and other relevant psychological processes (e.g., self-presentation, social comparison). Examining more "traditional" media and less interactive environments (e.g., television and music-streaming platforms) can help reflect

TABLE 2 Illustrative examples of future research directions.

Mechanisms	Research topics	Descriptions	Illustrative research questions	Example study
Selection	Media use versus Non-use	Research about media use and non-use provides insight into the digital environments that people choose to select into or avoid. Relevant studies in the literature have examined individual characteristics (e.g., age, gender, personality traits), but have not examined identity content and processes as they relate to the selection of mediums and platforms.	How do identity content and processes relate to use versus non-use of digital environments?  How do changes in media use versus non-use over time relate to identity development?	A large-scale survey study from a representative sample that explains who uses or does not use various gaming platforms based on their identity content and processes.
	Degree of engagement	Research about engagement with digital media provides insight into the degree to which people interact with their selected digital environments. Relevant studies have often examined excessive engagement in relation to identity processes, but less is known about other forms of engagement in relation to identity and its development (e.g., active, passive, or habitual engagement with digital environments).	How do identity processes within particular content domains relate to the degree of engagement with digital environments?  Do identity content and processes explain active, passive, or habitual engagement with digital environments?	A mobile sensing study that collects objective mobile app log data to examine how habitual app use is related to identity development.
	Motivations for use	Research about motivations for digital media use provides insight into why people select digital environments. Relevant studies have often focused on the relationship between identity processes and the particular activities people engage in, rather than the specific motivations driving people to select into the digital environment (e.g., uses and gratifications, to satisfy needs for self-presentation and belonging).	For various digital environments, what uses and gratifications are associated with identity content and processes?  In daily life settings, to what extent do identity processes explain motivations for engaging with digital environments to satisfy needs for self-expression and belonging?	An experience sampling study that examines whether identity processes explain momentary motivations for self-expression and connection on social media platforms.

(Continues)

TABLE 2 (Continued)

Mechanisms	Research topics	Descriptions	Illustrative research questions	Example study
Manipulation	Posting or sharing identity claims	Research about posting or sharing of identity claims provides insight into how people manipulate their digital environments via self-presentation. Relevant studies have primarily examined identity content claims in social media platforms, but more work is needed about identity processes as they relate to identity claims, and the affordances that promote or hinder such forms of manipulation in digital environments.	Do identity processes explain the ways in which people manipulate social media environments to make identity claims?  Which affordances are driving the manipulation of digital environments via the self-presentation of identity claims?	A mixed methods study that asks people about their identity content and processes via survey and relates their responses to the ways in which they manipulate their avatars in virtual environments.
	Changing account settings	Research about the changing of account settings in digital environments provides insight into how people manipulate their digital environments to suit their needs and preferences. Relevant studies have examined content recommendation systems, as well as content and privacy preferences (e.g., what content or people individuals “follow” or “block”). However, very few studies have examined these topics in relation to identity and its development.	How do identity content and processes relate to the content preferences people set within their digital environments?  How do identity content and processes relate to the privacy preferences people set when manipulating their audiences within social media environments?	A survey study that links people's self-reported identity content to responses about the extent to which they have changed various social media account settings and their motivations for doing so (e.g., for liking, commenting, following, blocking).
Evocation	Algorithmic recommendations	Research about algorithms provides insight into how people evoke content recommendations from digital environments. Relevant studies have qualitatively examined people's beliefs and perceptions about the extent to which social media algorithms respond to their identities, but more work is needed to examine the kinds of content recommendations being evoked based on an individual's identity and its development.	To what extent are people's identities reflected in the content recommendations evoked by algorithms in digital environments?  How do identity processes relate to the kinds of content algorithms recommend in social media environments?	A naturalistic observation study (e.g., using screenomics) that objectively examines the extent to which people varying in identity content and processes are recommended different genres of music through the algorithmic recommender systems within music-streaming platforms.

TABLE 2 (Continued)

Mechanisms	Research topics	Descriptions	Illustrative research questions	Example study
	Feedback received from others	Research about feedback provides insight into how people elicit responses from other people in digital environments. Relevant studies have broadly examined the influence of positive and negative feedback in social media environments on people's identities, but less is known about how identity explains the types of feedback received (e.g., through likes, comments, direct messages).	To what extent does identity content help explain the types of feedback received from others in social media environments?  How do affordances relate to the kinds of identity-relevant feedback people receive from others in digital environments?	A longitudinal panel survey that examines identity content across domains (e.g., gender, sexual, ethnic/racial, vocational) and types of feedback people receive on social media over time (e.g., in terms of frequency, positive vs. negative).
Application	Experiencing social comparison	Research about social comparison provides insight into the psychological processes that may be driving the application of experiences in the digital environment to one's identity and its development. Relevant studies have primarily examined the relationships between identity processes and social comparison within social media environments. However, more research is needed to understand the extent to which social comparison explains the incorporation or resistance of experiences in digital environments into one's identity.	What kinds of content within social media environments drive experiences of social comparison?  To what extent does social comparison in digital environments influence identity and its development?	A qualitative interview or survey that asks people about the kinds of content they engage with in social media platforms, and whether they experienced social comparison that shaped their own identity and its development.

(Continues)

TABLE 2 (Continued)

Mechanisms	Research topics	Descriptions	Illustrative research questions	Example study
	Changes to self-views	Research about changes to self-views provides insight into the ways in which experiences in digital environments may be driving identity development. Relevant studies have focused on testing identity shift theory, which focuses on whether changing self-presentation behaviors in digital environments brings people's self-views in line with their expressed behavior. Future studies should examine other experiences driving changes to identity-relevant self-views, and explore the possibility that interventions targeting changes to digital environments might be effective for promoting positive identity development.	To what extent does identity shift theory help explain changes in identity content as a result of self-presentation behaviors in social media environments?  How can interventions be designed to leverage affordances of digital environments in ways that promote positive identity development?	An intervention study that examines changes in identity commitment processes after participants are assigned to self-present in one (of two) social media platform conditions (e.g., Instagram vs. Reddit), which differ in their affordances.

the broader media ecology in which young people develop their identities. Furthermore, future studies should focus more closely on the content and affordances available in digital environments because they can be shared across mediums and platforms. Studying these characteristics may lead to insights that are more generalizable across digital environments, and over time as new mediums and platforms are introduced.

Similarly, researchers should examine a greater variety of identity constructs and in ways that assess both content and processes simultaneously. As noted previously, the existing research on digital media and identity development to date has primarily focused on the assessment of identity content in various domains (e.g., gender, sexual; Bates et al., 2020; Manago et al., 2008), rather than assessing processes in particular. Furthermore, those studies that have focused on processes specifically tend to focus solely on *personal* identity development (e.g., as conceptualized in identity statuses, identity processing styles, and dimensions of identity development; Berzonsky et al., 2013; Luyckx et al., 2008; Marcia, 1966), rather than applying the process approach to development in other content domains (e.g., ethnic-racial, gender, or vocational identity development). Identity scholars have called for the study of both content and processes in tandem for understanding identity development (McLean et al., 2016; McLean & Syed, 2015), so this points to a promising avenue for future research that seeks to understand the role of digital environments in shaping identity and its development. For example, research relevant to the manipulation mechanism has primarily focused on identity content, while little remains known about how processes of exploration and commitment relate to manipulation, or what other forms of manipulation young people engage in (e.g., managing content or privacy preferences on social media) that may be influencing their identity and its development. Future research should thus focus on identity content and processes together by examining the different processes across content domains in relation to digital environments.

Second, future research on identity and the digital environment should use study designs and methodologies that permit the examination of causal and longitudinal relationships between identity and digital environments (e.g., lab and field experiments, panel studies, intensive longitudinal studies). The majority of the work relevant to digital media and identity has been cross-sectional and correlational in nature, either relying on qualitative or quantitative survey methods (e.g., interviews, open-ended or one-time surveys). This is a critical limitation since the mechanisms we described imply underlying causal and longitudinal processes that cannot be established or examined well using cross-sectional methods. Experiments can be designed to alter people's digital environments (e.g., interventions to promote specific types of digital engagement, researcher manipulation and re-design of digital environments; Guess et al., 2023) and/or their identities (e.g., identity shift studies; identity interventions; Carr & Foreman, 2016; Gonzales & Hancock, 2008) in ways that enable researchers to draw causal conclusions regarding the relationships between identity and digital environments. Moreover, identity development is inherently a longitudinal process and that digital media engagement changes over time (e.g., at the momentary or daily level, longitudinally over months or years), which necessitates longitudinal research methods (e.g., panel studies, experience sampling). For example, some intensive longitudinal methods like mobile sensing and screenomics could enable a greater understanding of people's smartphone environments (e.g., via mobile application use logs, screenshots revealing what content people engaged with and how; Harari & Gosling, 2023; Reeves et al., 2021), by providing more objective assessment of selection, manipulation, and evocation in an ecologically valid manner as they occur when people interact with mobile media applications.

Lastly, cultural context is inherently important when studying identity development because people's norms, beliefs, cultural practices, and social structures can affect one's life experiences, leading to several calls for studying identity and its development across cultures and in more diverse samples (Arshad & Chung, 2022; McLean et al., 2018; Schwartz et al., 2012). Therefore, future research should more directly consider and address the potential influence of culture on the relations between identity and digital environments being studied. As the reviewed studies suggest, much of the research on digital media use and identity among young people has been conducted in more Westernized countries with advanced economies (e.g., in North America, Europe). The extent to which past study findings generalize to countries in other regions of the world and cultural contexts remains unknown (e.g., in North and sub-Saharan, the Middle East, Central and South America, South Asia; Schwartz et al., 2012). This is a problem for many reasons. For example, it is possible that certain identity development trajectories are more or less adaptive, or may be more common and accepted in certain cultures over others (e.g., Crocetti, 2018; Hatano & Sugimura, 2017). It is also possible that identity development simply occurs in altogether different ways in other cultural contexts, which may not yet be understood because existing theories and measures have primarily been derived from studying people in the West. Furthermore, the digital environments available for individuals to select into and the manners of engagement may also vary across countries (e.g., Lim & Goggin, 2014; Manago & McKenzie, 2022). By accounting for and acknowledging the role of cultural context, future research can incorporate the lived experiences of people from non-Westernized countries in the literature, adding needed nuance to the theoretical and empirical work on identity development in the digital context.

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## CONFLICT OF INTEREST STATEMENT

None.

## DATA AVAILABILITY STATEMENT

Data sharing not applicable to this article as no datasets were generated or analysed during the current study.

## ORCID

Serena Soh  <https://orcid.org/0009-0002-4045-6523>

Sanaz Talaifar  <https://orcid.org/0000-0002-4918-9575>

Gabriella M. Harari  <https://orcid.org/0000-0001-9258-9075>

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## AUTHOR BIOGRAPHIES

**Serena Soh** is a Ph.D. candidate in the Department of Communication at Stanford University.

**Sanaz Talaifar** is an Assistant Professor in Organisational Behavior in the Department of Management and Entrepreneurship at Imperial College London.

**Gabriella M. Harari** is an Assistant Professor in the Department of Communication at Stanford University.

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