“Fitstagram”: Investigating Fitness-Related Instagram Use and Physical Activity Participation Among Emerging Adults

A Dissertation
SUBMITTED TO THE FACULTY OF THE
UNIVERSITY OF MINNESOTA
BY

Stephanie M. Grace

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

Daheia J. Barr-Anderson, Ph.D.

February 2024

Acknowledgements

I would like to acknowledge so many individuals who have supported, mentored, and cared for me over the years. Without all of you, I would not have made it this far.

First, I'd like to acknowledge my advisor, friend (can I say that, yet?!), and mentor, Dr. Daheia Barr-Anderson. Thank you for caring about me as a human first and a scholar-in-training second. I will miss our weekly meetings turned connection sessions that always go over the scheduled time.

I'd also like to acknowledge my partner and best friend, Dallas. He was willing to uproot our lives and move to "Minne-snowta" so I could pursue these degrees. Through so much uncertainty, he has been my truest and most unwavering supporter. I cannot wait to see how our lives continue to grow from here.

To my favorite colleague turned close friend, Amanda, I cannot express how much I have enjoyed this time with you. How does anyone survive grad school without an Amanda?! I'll never know. To many, many more years collaborating and travelling together.

So many family members have supported me during this time. I'm especially thankful to my Grandma Jean and Merry who inspired me to go to grad school and take a gamble on my curiosity; thanks for providing me with so many friendly conversations, game nights, and meals away from home. I owe a big thanks to my siblings who have had endless phone and Facetime conversations with me when I was celebrating a small win or

avoiding writing, and to many more family members who have expressed their pride and kind thoughts during this journey. I love you all very much.

Finally, thank you to all my friends and colleagues in the School of Kinesiology; happy hours and vent sessions with you all helped grad school feel way less isolating and way more enjoyable. Thank you to my committee, Drs. Antunovic, Eisenberg, and Weiss, who have helped me to consider difficult questions and find my philosophy as a researcher by providing continuous verbal encouragement. Each of you has shaped me in a unique way, and this process was so much richer due to the feedback you all provided.

Here's to many more years of community with you all. I am sincerely grateful.

Dedication

This dissertation is dedicated to younger versions of myself who persevered despite adversity to lead a life that prioritizes stability, growth, and joy. It is also dedicated to any young person trying to figure things out about themselves and the world during a time of information overload. I hope we may continue to find parts of ourselves that do not only aim to serve our professional endeavors.

Abstract

Many emerging adults use (aged 18 to 29) social media and cite them as primary sources of health-related information, including physical activity (PA) information. Instagram is among the most popular social media sites, and fitness-related content on Instagram is commonly researched, particularly regarding negative well-being outcomes associated with its use. However, PA promotion professionals are turning to Instagram (and other sites) to create innovative strategies that reach larger, more diverse populations. Yet, there is a limited understanding of emerging adults' behavior and experiences regarding fitness-related Instagram use, and little work that investigates these topics among samples diverse in gender and racialized/ethnicized identities. This dissertation uses mixed-methodologies to (1) gain a more comprehensive understanding of young people's fitness-related Instagram use and how it relates to their PA participation and (2) investigate the role of relevant psychosocial and behavioral factors in the relationship between fitness-related Instagram use and PA participation among a diverse sample of emerging adults.

This dissertation includes three study manuscripts in Chapters 4, 5, and 6. Participants (N=247) completed a cross-sectional survey regarding their demographic information, fitness-related Instagram use, PA participation, PA information seeking behavior, and exercise self-schema. Chapter 4 discusses descriptive characteristics of participants' fitness-related Instagram use and explores differences by gender and racialized/ethnicized identities. Chapter 5 examines the relationship between fitness-related Instagram use and PA, including the roles of PA information seeking and exercise

self-schema. Chapter 6 reports findings from focus groups with 17 emerging adults who access fitness-related Instagram content daily, specifically related to their use practices and perceptions of content and its influence on their PA behavior. Overall, this dissertation uses a mixed-method approach to yield a more comprehensive understanding of fitness-related Instagram use among a diverse sample of young people so practical suggestions can be made to strengthen PA promotion programs and be mindful of cultural factors. Further, this dissertation provides insight into how emerging adults experience fitness-related Instagram content and mitigate potential harm that can occur while accessing it.

Table of Contents

List of Tables

List of Figures

Chapter 1. Introduction

1.1 Background

Regular physical activity (PA) participation yields many benefits including reduced risk of chronic disease such as cardiovascular disease, type II diabetes, and heart failure (Piercy & Troiano, 2018). Yet, only 23% of the US population meets the Physical Activity Guidelines for Americans (Centers for Disease Control and Prevention, 2019) which state that individuals should participate in at least 150 minutes of moderate or 75 minutes of vigorous cardiovascular PA each week, in addition to at least 2 muscle strengthening sessions targeting major muscle groups. While there are many barriers cited for lack of participation in regular PA, barriers relevant to the present study include lack of time, weak social support, high costs, and lack of skill (Centers for Disease Control and Prevention, 2022; Trost, Owen, Bauman, Sallis, & Brown, 2002). Conversely, individuals report that the involvement of supportive others bolsters PA engagement (Giles-Corti & Donovan, 2003; Hamari & Koivisto, 2015).

Past reviews have shown social media, or interrelated sites that allow for browsing, posting, and sharing of user-generated content (Lombard et al., 2018), have the potential to positively influence PA behaviors (Mujller, Alley, Schoeppe, & Vandelanotte, 2016; Petkovic et al., 2021). The accessibility and affordability of social media platforms may enhance convenience of PA engagement (e.g., through participation in online workouts) and social support through interactions with supportive others and those with similar PA-related interests (Goodyear, Boardley, Chiou, Fenton, Makopoulou, et al., 2021). Some studies have investigated the relationship between

social media use and PA behavior (T. J. Burke & Rains, 2019; Duplaga, 2020; Goodyear, Boardley, Chiou, Fenton, Makopoulou, et al., 2021; Vaterlaus, Patten, Roche, & Young, 2015) yielding mixed results including social media acting as both a barrier (by serving as a distraction and being a sedentary activity) (Mitchell Vaterlaus, Patten, Roche, & Young, 2015) and a facilitator (by allowing access to new exercises and supportive others) (Goodyear, Boardley, Chiou, Fenton, Makopoulou, et al., 2021; Mitchell Vaterlaus et al., 2015) to PA participation.

Social media create opportunities for health communication, as users can post and interact with a variety of health-related resources (Lundgren & McMakin, 2009). In fact, accessing and sharing fitness content on social media is growing in popularity (Jong & Drummond, 2016; Marika Tiggemann & Zaccardo, 2018), which is apparent by the abundance of fitness content that exists on social media. Although this content is user-generated, which limits accurate tracking and regulation of fitness-related content, a user searching for fitness-related information on Instagram with the term "#fitness" will yield over 529 million results as of November of 2023. A lesser-explored behavioral factor that may be positively associated with PA participation is health information seeking behavior (Y. J. Lee, Boden-Albala, Jia, Wilcox, & Bakken, 2015), defined as the way individuals search for information related to risks, illnesses, and health-protective behaviors. Health information seeking behavior is cited as a key coping strategy related to health-promotive activities (Lambert & Loiselle, 2007), like PA participation. The internet is a major source of information for those engaging in health information seeking behavior (Jacobs, Amuta, & Jeon, 2017), with young people citing social media as a source of PA-related

information (Jong & Drummond, 2016). Seeking health information that is related to PA topics is sometimes considered PA information seeking (Hirvonen, Huotari, Niemelä, & Korpelainen, 2012).

Although there are many popular social media sites, Instagram is among the most used by young people. In fact, 71 percent of emerging adults (aged 18 to 29) report use of Instagram, which is greater than any other social media platform, apart from YouTube (Pew Research Center, 2021b). Additionally, emerging adults are undergoing major life transitions and identity exploration (Arnett, 2000, 2003, 2007) which could influence their PA participation (Bell & Lee, 2005; Brown & Trost, 2003). Self-perceptions are important to consider when exploring PA participation and related factors among this age group, as they motivate individuals to participate in behaviors that align with their self-perceptions and avoid those that create dissonance (Stets & Burke, 2000). When considering fitness-related Instagram use and PA information seeking among emerging adults, self-schemata are particularly important to explore, as they are mental shortcuts derived from past experience that allow for efficient information processing relevant to the self (Markus, 1977). Schemata specific to exercise-related self-perceptions are termed exercise self-schemata (Kendzierski, 1988), and having an exerciser self-schema is associated with PA-promotive behaviors (Estabrooks & Courneya, 1997; Kendzierski, 1990; Yin & Boyd, 2000).

Researchers have conducted work examining social media use and its relationship with health-related behaviors in many fields, including kinesiology, health communication, and public health. The present study took a multidisciplinary approach

by utilizing concepts and methodologies originating from these fields that complement one another. PA information seeking allows for an assessment of information acquisition related to PA on Instagram, while exercise self-schema aids in the understanding of how said information is organized relevant to one's self-perceptions. Investigation into these behavioral and cognitive components is warranted as these factors could explain or change the nature of the relationship extending our understanding of how fitness-related Instagram use may play a role in PA participation among emerging adults and possibly improving PA promotion that utilizes social media.

1.2 Rationale

The present study furthers existing research in the following ways.

(1) This study investigated fitness-related Instagram use among a diverse sample of emerging adults, with a focus on diversity regarding gender and racialized/ethnicized identities. Past research has focused primarily on women (DiBisceglie & Arigo, 2021) and individuals identifying as White (Williams, Hamm, Shulhan, Vandermeer, & Hartling, 2014). An intentional recruitment strategy and the acquisition of a diverse sample is needed to account for differences in social media experiences across identities (Goodyear, Boardley, Chiou, Fenton, Makopoulou, et al., 2021).

(2) Exploration of the relationship between social media use and PA engagement is still novel, with only a handful of studies investigating this complex relationship and related factors. Further, our understanding of how to tailor social media based PA promotion to specific populations and sub-groups of populations is limited (Goodyear, Boardley, Chiou, Fenton, Makopoulou, et al., 2021). The present study focused on one highly

relevant social media platform (i.e., Instagram), a developmentally appropriate age group (i.e., emerging adults), and pertinent information-related concepts (i.e., PA information seeking and exercise self-schemata) to examine this relationship among a diverse group of participants and effectively further existing knowledge regarding fitness-related communication on Instagram and its relationship with PA participation.

(3) A recent review indicates that the internet has been investigated thoroughly in relation to health information seeking behavior (Wang, Shi, & Kong, 2021), yet little work was identified that investigates health information seeking on social media sites, much less on the topic of PA. Some researchers have investigated health information seeking on social media in general (Y. Li, Wang, Lin, & Hajli, 2018) and on Facebook (Oh, Lauckner, Boehmer, Fewins-Bliss, & Li, 2013). However, the present study focuses on Instagram to extend the field's knowledge of how young people leverage fitness-related information on the app when acquiring information related to PA, which furthers our understanding of health-communication and information acquisition among young people in digital spaces.

(4) Exercise self-schema is an underused theory that explains how individuals' cognitive shortcuts aid in the processing of self-relevant information and predict future PA behavior, yet it has not been examined in relation to fitness-related social media use. This investigation is important to disentangle other factors that may explain the relationship between fitness-related Instagram use and PA participation.

(5) By conducting qualitative focus groups with a sample of emerging adults who regularly access fitness-related social media use, we are better equipped to interpret the quantitative findings between fitness-related Instagram use and PA levels. Further, our

investigation of emerging adults' perceptions of fitness-related Instagram content allows us to look more closely at strategies they use to mitigate potential risks of accessing the content, in addition to finding useful and validating content.

1.3 Specific Aims

To address the gaps in the literature outlined above, the present study explored three specific aims:

Aim 1: a) To describe fitness-related Instagram use among a diverse sample of emerging adults. **b)** To explore whether fitness-related Instagram use differs by gender and racialized/ethnicized identity.

Hypotheses: 1a) Participants were expected to engage in approximately two hours of Instagram use per day (Liu, Perdew, Lithopoulos, & Rhodes, 2021) with majority of participants viewing fitness-related content 1 to 5 times daily (DiBisceglie & Arigo, 2021). **1b)** Participants who identified as White women were expected to participate in the highest fitness-related Instagram use as most fitness-related content on Instagram features individuals who present as White women (Marika Tiggemann & Zaccardo, 2018).

Aim 2: a) To determine whether fitness-related Instagram use is associated with PA participation controlling for gender and racialized/ethnicized identities. **b)** To explore whether fitness-related Instagram use and PA information seeking are associated with PA participation controlling for gender and racialized/ethnicized identities. **c)** To determine whether exercise self-schema moderates the

relationship between fitness-related Instagram use and PA participation controlling for gender and racialized/ethnicized identities.

Related Hypotheses: 2a) Fitness-related Instagram use was expected to be positively associated with PA levels. **2b)** Higher levels of Instagram use and PA information seeking were expected to be positively associated with PA participation. In addition, it was expected that those higher in fitness-related Instagram use and higher in PA information seeking participate in higher levels of PA. **2c)** For those who were exercise schematic, a strong relationship between fitness-related Instagram use and PA participation was expected. For those who were not exercise schematic, a weak relationship between fitness-related Instagram use and PA participation was expected (refer to Figure 2 on subsequent pages).

Aim 3: To conduct 3-4 qualitative focus groups with 15-20 emerging adults who engage in daily fitness-related Instagram use to gain deeper understanding of their perceptions of relevant content and its influence on PA behavior.

Chapter 2. Review of Literature

The following literature review will detail the importance of regular PA participation, in addition to fitness-related social media use among young people and its association with PA behavior. Because social media is considered a source of health information, PA information seeking will be discussed. Additionally, the concept of

exercise self-schema will be described, as it is important to consider how individuals' fitness-related Instagram content consumption is related to their self-perceptions regarding exercise. Exercise self-schemata (or schemas) guide information processing related to the exercise domain (Kendzierski, 1988) and have been shown to predict future PA participation (Banting, Dimmock, & Lay, 2009; Estabrooks & Courneya, 1997). The chapter will conclude with a discussion of emerging adulthood, with a focus on the distinct developmental characteristics and PA behavior of emerging adults, as this is the chosen age group for the present study.

2.1 Physical Activity: Benefits, Barriers, and Facilitators

PA is defined as any bodily movement that expends energy (Caspersen, Powell, & Christenson, 1985). Exercise is a subset of PA in that it is structured, planned, and completed with an intention to improve or maintain physical fitness. Regular PA is proven to help individuals improve their physical health, such as increasing their endurance, flexibility, and strength (Piercy et al., 2018), in addition to cognitive function and emotional health (Fox, Boutcher, Faulkner, & Biddle, 2003). Participating in PA also decreases the risk of chronic diseases like cardiovascular disease and diabetes (Warburton & Bredin, 2017). Despite the plethora of benefits regular PA provides, many individuals fail to meet the Physical Activity Guidelines for Americans, which state that healthy adults should participate in 150 minutes of moderate or 75 minutes of vigorous aerobic exercise per week (US Department of Health and Human Services, 2018). Additionally, individuals should complete strength-training exercises on at least 2 days while training same muscle groups on non-consecutive days. While 53% of the US adult

population meet the guidelines for cardiovascular exercise, only 23% meet the guidelines for resistance training activities (Centers for Disease Control and Prevention, 2019).

Commonly cited reasons for lack of participation in regular PA include convenience or availability of facilities, programs, or transportation (Humpel, Owen, & Leslie, 2002), which was also prevalent during the COVID-19 pandemic and found to be associated with impacts in participation (Farah et al., 2021). Many also cite a lack of time and energy as a barrier to PA (Farah et al., 2021; Trost et al., 2002). Others may lack the skill or social support to participate in PA (Centers for Disease Control and Prevention, 2022). Alternatively, factors that bolster participation in PA include access to facilities and programs (Bauman et al., 2012; Ding, Sallis, Kerr, Lee, & Rosenberg, 2011), convenience, and exercising with supportive others (Giles-Corti & Donovan, 2003; Hamari & Koivisto, 2015). Social media may mitigate some of the barriers (and bolster facilitators) to PA, as fitness-related content providing services such as free workouts and connections with supportive others is highly accessible and readily available on these sites (Goodyear, Boardley, Chiou, Fenton, Makopoulou, et al., 2021). Work has shown exercise/fitness to be a topic of high interest among young people (Escoffery et al., 2005), with the internet, including social media, cited as a primary tool used to seek out related information (Basch, MacLean, Romero, & Ethan, 2018; Jacobs et al., 2017).

2.2 Social Media Use and Associations with Health Behavior

2.2.1. Definition and User Statistics

Social media are interrelated sites that allow users to share and create content (Lombard et al., 2018). In the United States, 72% of the adult population uses one or

more social media site (Pew Research Center, 2021a). Social media use is highest among 18-to-29-year-olds compared with all other adult age groups, with YouTube, Facebook, and Instagram most commonly used (Pew Research Center, 2021a). Access to these sites is free, and users can create, share, and engage with (e.g., like, comment, etc.) content making them an easy way to spread information quickly. Additionally, sourcing health information from social media sites, including information regarding PA and exercise, has become increasingly prevalent with the rise of Facebook and Instagram (Feng & Xie, 2015; Oh et al., 2013).

2.2.2. Fitness-Related Social Media Use

Research has shown that social media is a source of PA information and supportive others (Goodyear, Boardley, Chiou, Fenton, Makopoulou, et al., 2021; Mitchell Vaterlaus et al., 2015; Raggatt et al., 2018). A study utilizing an online survey during the COVID-19 pandemic found that participants whose PA levels were lower prior to the pandemic utilized social media to participate in online workouts and interact with supportive others, whereas those who were active prior to the pandemic used social media as an additional source of social connection with fellow exercisers (Goodyear, Boardley, Chiou, Fenton, Makopoulou, et al., 2021). Similar themes resulted from three qualitative studies with young adult participants (Jong & Drummond, 2016; Mitchell Vaterlaus et al., 2015; Raggatt et al., 2018). Social media could serve as a motivator, by learning new exercises and viewing other users' body transformations, or a barrier, by being a distraction and spending too much time using social media. Regarding individuals' consumption and attitudes of fitness-related content, participants mentioned

that viewing others' posts about fitness is common, and that they may find these posts either inspirational or annoying. The most accessed fitness-related content among young adult women was produced by personal trainers and athletes (Raggatt et al., 2018).

Generally, social media is a frequented source of fitness information and supportive others, and users perceive use as a potential barrier and facilitator to PA engagement. However, most researchers that have examined these associations did so among samples that were mostly women and mostly White (or did not report race and ethnicity information). Therefore, further exploration among a more diverse sample regarding gender and racialized/ethnicized identities is warranted. Further, it should also be noted that, while social media is recognized as a source of PA information, many studies have reported that users are generally critical of the information they find on social media sites (Goodyear, Armour, & Wood, 2019; Goodyear & Quennerstedt, 2020; Jong & Drummond, 2016; Mitchell Vaterlaus et al., 2015; Raggatt et al., 2018). However, more work is needed to understand how fitness-related social media users perceive content, find preferred content, filter disliked content, and apply concepts from content to PA engagement.

Individuals may prefer some content characteristics over others and/or lead to varying reactions. A study among individuals who post and follow fitness-related content found that followers who were men desired content that focused on the process of earning fitness, whereas followers who were women preferred content that depicted the benefits of exercising (DiBisceglie & Arigo, 2021). Both people who post fitness content and people who follow fitness content reported mixed feelings regarding the content, with

women more often reporting negative experiences. The authors note that social media may be a feasible tool for health promotion, but it is necessary that users' preferences are met. Further, reactions to content posted by peers may be different depending on who posted it (T. J. Burke & Rains, 2019). That is, when participants make upward comparisons with their peers, pro-exercise attitudes result, whereas, when comparisons were made with similar peers, greater weight concern result.

Little is known regarding individuals' motivations to generate or contribute to fitness-related content on social media. In fact, only one study was identified that examined predictors in posting or engaging with fitness-related social media use (n=439 undergraduates) (Zhang et al., 2017). Findings indicated that those who had greater emotional responses (e.g., enjoyment) during leisure-time PA discussed fitness on social media more often compared with others. Additionally, individuals who produced more fitness-related content were found to be more likely to seek out similar information. Therefore, those who have an emotional connection with PA or exercise may be more likely to post fitness-related content which may, in turn, lead to greater seeking behavior of similar content.

Some work has examined individuals' fitness-related social media use and their PA motivation and participation. Among young men, greater fitness-related social media use was associated with greater appearance-based motivation for exercise and less health-based motivation for exercise (Fatt, Fardouly, & Rapee, 2019), whereas, among women (n=106 undergraduates), exposure to any type of fitness-related content (i.e., athletic ideal, thin ideal, or muscular ideal) did not motivate increased PA participation

(Robinson et al., 2017). However, other work has reported a positive relationship among fitness-related social media use and PA participation. Adults who accessed PA-related YouTube videos were more likely to meet PA recommendations (J. Lee, Turner, Xie, Kadhim, & Hong, 2022) and young women who accessed fitness-related influencers' social media sites exercised more compared to young women who did not (Duplaga, 2020). Many factors that could relate to fitness-related social media use and PA participation are left unexplored, and more work that identifies such factors is needed to better determine how social media might be used in the promotion of PA participation.

Finally, only one study was identified that utilized Instagram data to assess fitness-related likes and followings on Instagram to explore the relationship between individuals' social media use and PA participation (n=76) (Liu et al., 2021). Liu and colleagues also examined whether exercise identity mediated this relationship. Findings showed that exercise identity significantly played a role in participants' fitness-related Instagram posts and followings on PA engagement indicating that one's exercise-related self-perceptions should be considered when investigating social media use and PA behavior. Yet, the study only included university students and was limited by a small sample which restricts the reliability of the findings. The present study furthers these findings by assessing a similar relationship between fitness-related Instagram use and PA engagement while accounting for exercise self-schema as a moderating variable among a larger and more diverse sample. Additionally, the mixed method nature of the present study adds valuable context to aid in the interpretation of quantitative study findings.

These studies show that individuals experience social media as consumers and as producers of fitness content and that reasons for engagement differ between individuals. Further, although fitness-related social media use is a common activity, users engage critically with content and may experience different reactions and influences on PA based on content and poster characteristics. However more work that characterizes emerging adults' behavior regarding fitness-related content on social media is needed, especially regarding individuals who identify as part of marginalized groups such as those identifying as gender diverse and/or as Black, Indigenous, or other persons of color (BIPOC) as most studies conducted thus far are among White women (or no data about race is reported). Investigating beyond the perspectives of White women is important given that fitness is often considered a "White thing", and it is important to challenge racialized and gendered narratives that reinforce such thoughts (Azzarito, Simon, & Marttinen, 2017).

2.3 An Introduction to Instagram

2.3.1. User Statistics and Features

Instagram is the most popular social media site utilized by emerging adults (with the exception of YouTube) with 71% of individuals aged 18 to 29 reporting its use (Pew Research Center, 2021b). The image-based social media site features a variety of ways users can participate in fitness-related Instagram use (https://about.instagram.com/features). The most known feature is a user's *Feed*, which includes a continuous stream of photos and videos that have been posted by the accounts they follow. Other features include *Reels*, short videos with a maximum duration of 1

minute; *Stories*, photos or videos that are only available for followers to view for 24 hours; *Messenger* to send content privately; *IGTV* to post long videos that are up to 60 minutes in duration, and *Explore*, which displays suggested content for the user. A user can type a search term into the *Explore* interface to yield specific content or they can peruse a variety of suggested posts provided to them by Instagram. Hashtags (symbolized by "#") are used for identification in searches when using the *Explore* interface. For example, if a user entered the search term "#fitness" in the *Explore* tab, posts labelled as such would appear. When posting their own content, a user who is modelling fitness-related elements (i.e., branded athletic apparel, body poses emphasizing musculature, motivational text, etc.) may label their photo with "#fitness" to ensure the post appears in corresponding searches. It should be noted that, due to the unregulated nature of user-generated content, a post labelled "#fitness" does not guarantee that is it truly related to fitness, therefore a search using the term "#fitness" is likely to yield a variety of content, including some starkly unrelated to PA. All the aforementioned features could be utilized by Instagram users to engage in fitness-related social media use.

Another notable feature of Instagram is in-app photo editing and filtering features. These in-app features allow users to alter the contrast, brightness, saturation, and other visual characteristics of their posts. Additionally, apps are available in which users can alter the shape of their body features before posting to make them appear more toned or elongated (McBride, Costello, Ambwani, Wilhite, & Austin, 2019; McComb, Gobin, & Mills, 2021). These photo editing tools are commonly used before posting content on social networking sites (Mills, Musto, Williams, & Tiggemann, 2018). The practice of

editing photos to be posted may change the way users engage with fitness-related content. That is, they may be more critical of content they are viewing and doubt its authenticity. Goodyear et al. (2019) discuss this type of critical engagement that was expressed by a male, adolescent participant. He mentioned that body transformation photos taken at only minutes apart can show dramatic differences – "so quite a lot of them can be fake." (pg. 684). Exploring the importance of authenticity and other related user preferences was a key element of the third, qualitative aim in the present study, as these factors may influence individuals' perceptions of fitness-related Instagram content.

2.3.2. Users and Content Creators

Users on social media, including Instagram, can create, post, and/or follow content. Individuals who post content to the site are "posters," whereas individuals who are viewing content on the site are called "followers." Users are generally both posters and followers as they post and view content simultaneously. Some users can monetize from their following by partnering with brands, featuring advertisements, and selling merchandise, termed "influencers" (https://business.instagram.com/creators/earn-money). They are often individuals who are viewed as experts on a specific topic they post about (Geyser, 2021). Content creators are defined as individuals who create material that is educational or entertaining and expressed through any medium (Lenkert, 2020). In the present study, any mention of people who create content that are not participants are referred to as content creators. The reasons for this are twofold: (1) to avoid overestimating the following and/or influence of the content creators the participants discuss and (2) to avoid the stigma that is commonly associated with the term

"influencers." The present study assumes that all influencers are content creators, however, not all content creators are influencers.

In a recently published article, Pilgrim and Bohnet-Joschko (2019) argue that influencers "sell" happiness by sharing strategies to optimize "body perfection" through discipline and control relating to health behaviors. Influencers post body shape focused content while wearing branded fitness apparel to discuss a variety of fitness-related topics (usually focused on enhancing one's appearance in a simplified way). More recently, fitness-related Instagram content has shifted to value "authenticity" and self-disclosure. Reade (2020) discusses how influencers are "keeping it raw on the 'gram" – a statement which refers to how individuals remain authentic to their followers by avoiding "picture perfect" ideals. After analyzing the content of 21 Australian women aged 20-35, Reade found that they remained authentic via three mechanisms: (1) posting photos of the body without photo enhancements or posing, (2) documenting every day, mundane events, and (3) divulging information about mental health and body image related topics. As mentioned, users are critical of the fitness-related content they view especially with regards to its authenticity, yet even seemingly authentic content can be a curated or "manufactured" moment by the poster (Toll & Norman, 2021). Authenticity is explored further in Chapter 6 (Study 3) of this dissertation, particularly whether emerging adults value authentic content and characteristics they use as indicators of content creators' authenticity.

2.3.3. Defining the Algorithm

A recently published blog from Instagram.com shares that the site began in 2010 with a simple concept – a user's feed was comprised by a series of posts shown in chronological order (Mosseri, 2021). This design was problematic for the site because users were missing 70% of total posts in their feed. Therefore, Instagram launched an algorithm based on a ranking system for connections their users might care about most. Generally, Instagram collects data about users' preferences (called "signals") and utilizes them to display posts that they believe will be interesting to the user. These signals include characteristics of the post (including popularity), information about the person posting, and the activity of the follower (including their viewing and engagement history). Therefore, it is likely that individuals who frequently engage with (or seek out) fitness-related content will be provided more fitness-related content via the algorithm as a result.

2.4 Health Information Seeking

Considering individuals' health information seeking behavior (i.e. how individuals seek out new information to fulfill health-related needs (Lambert & Loiselle, 2007)) is warranted when investigating fitness-related social media use and PA participation because social media has been shown as a source of health information, especially among young people (Goodyear et al., 2019; Goodyear, Boardley, Chiou, Fenton, Makopoulou, et al., 2021; Goodyear & Quennerstedt, 2020). Health information seeking on the internet has been extensively researched (Wang et al., 2021), however few studies have examined health information seeking on social media. Facebook users with a

health concern may refer to Facebook in order to seek health-related social support (Oh et al., 2013). Additionally, benefit (e.g., emotional and informational support) and risk (e.g., privacy and time risk) factors were shown as important predictive factors considering one's health information seeking and intentions to share health information on social media (Y. Li et al., 2018). It should be noted that many studies investigating online health information seeking do so regarding general information related to health and do not utilize a diverse sample of young people (Wang, Shi, & Kong, 2021). However, some work has found that adults who access PA-related YouTube videos (J. Lee et al., 2022) and content creators' pages (Duplaga, 2020; Tricas-Vidal et al., 2022) are more likely to exercise compared to adults who do not. The present study sought to investigate health information seeking that is specific to PA information (hereafter: PA information seeking) among a sample of emerging adults diverse in gender and racialized/ethnicized identities.

Considering health information seeking not specific to PA-related topics or social media, a recent review found the internet as the most popular modality, by far exceeding health care professionals, traditional media, and family, friends, and coworkers (Jacobs et al., 2017). Additionally, predictive models showed that those who were younger, had higher socioeconomic status, and internet skills were more likely to use the internet as a source of health information. Other works have shown that racial/ethnic subgroups may be at a disadvantage when utilizing the internet for health information (Y. J. Lee et al., 2015). General trends indicate that more women than men participate in health information seeking online and that individuals seeking wellness information (like PA-

related information) view themselves as healthy and may participate in information seeking as a proactive measure for health promotion (Weaver et al., 2010). These findings provide further evidence supporting the importance of investigating PA information seeking among a sample of young people diverse in gender and racialized/ethnicized identities when considering the relationship between fitness-related Instagram use and PA participation.

2.5 Exercise Self-Schema

2.5.1. Conceptual Overview

Another important factor to consider when investigating the relationship between fitness-based social media use and PA participation is self-schema introduced by Markus (1977). Self-schemas are cognitive generalizations about the self that are derived from past experiences and used to guide the processing (i.e., storage and recall) of domain-specific information quickly. Individuals who have developed self-schemas use them to quickly process stimuli relevant to their self-image and inform their future behavior (Markus, 1977).

A self-schema is formed when cognitive representations of past behavior are established, and the behavior is meaningful to the individual in some way. Further, the behavior must represent a generalization of the self (Markus, 1977; Samendinger & Hill, 2021). An example of this relevant to the present study is exercise self-schema, which is a type of schema that is specific to one's generalizations about their own exercise behavior (Kendzierski, 1988).

According to the exercise self-schema framework, participants can be classified in any of four ways. First, individuals with an exercise self-schema, or exerciser schematics, consider "exerciser" extremely descriptive of themselves and find that attribute extremely important to their self-image. Individuals who are exerciser non-schematic find "exerciser" extremely non-descriptive of themselves and, like exerciser schematics, find that attribute extremely important to their self-image. Finally, individuals who are exerciser aschematic find "exerciser" moderately or non-descriptive of themselves and not important to their self-image. Additionally, some individuals do not meet the requirements to be considered exerciser schematic, non-schematic, or aschematic and are therefore considered unclassified (Kendzierski, 1988).

Considering one's exercise self-schema is important in the present study as those with an exerciser self-schema may be more likely to devote their attention to fitness-related Instagram content compared to those without an exerciser self-schema given they find exercise important to and descriptive of themselves. If this is the case, one's exercise self-schema (or lack thereof) may play a role in the relationship between fitness-related Instagram use and PA participation.

2.5.2. Categorizing Unclassified Respondents

A recent study categorized individuals into three groups: two that were previously described as part of the exercise self-schema original framework (exerciser schematic and aschematic) and one that was deemed the "pre-exerciser schematics" which replaced the original exerciser non-schematic group (Samendinger & Hill, 2021, p. 5). These individuals rated the importance of the exerciser descriptive items higher than they rated

their descriptiveness in relation to their self-image. That is, they do not think "exerciser" is extremely descriptive of themselves, but they do find it very important that they are someone who exercises regularly. These groups were determined using latent profile analysis along with the exercise self-schemata and self-determination theory frameworks to understand profiles of individuals relating to their PA behavior (Samendinger & Hill, 2021). Latent profile analysis was used due to participants generally deemed unclassifiable by the original exercise self-schema scale (Kendzierski, 1988).

Other studies have considered all participants who do *not* possess an exerciser self-schema as "unschematic" (Berry, Strachan, & Verkooijen, 2014; Sheeran & Orbell, 2000), whereas another study categorized individuals who were unclassified as "unschematic" (Thomas, VanNess, & Cardinal, 2016). Thus, methodological inconsistencies exist in the literature when categorizing participants who do not meet the requirements for the original scale and/or do not possess an exercise self-schema. The present study categorized participants as having an exerciser self-schema or not having an exerciser self schema (i.e., non-schematic, aschematic, or unclassified) to avoid having unclassified participants that would otherwise likely be excluded from analysis.

2.5.3. Exercise Self-Schema vs. Exercise Identity

A recent thematic review examined exercise self-schema and exercise identity literature (Rhodes, Kaushal, & Quinlan, 2016). Authors concluded that the frameworks are similar in the PA domain which was supported by correlational analyses (Berry et al., 2014). Historically, the self-schema framework was more heavily related to one's processing efficiency (i.e., the speed at which one may sort and recall information)

(Markus, 1977), while the identity construct pertains to how one is viewed or relates to societal and personal standards and their motivations to uphold those standards (Stets & Burke, 2000). However, societal influences are also bound to affect one's self-schemas, leading Markus and Wurf (1987) to call them convergent concepts. One study examined the relationship between exercise self-schema and role identity (Berry et al., 2014), which is defined as the extent to which being an exerciser has been assimilated into one's identity. Results showed that exerciser schematics had higher role identity compared with un-schematics, and non-schematics had lowest role identity compared to all other groups. These findings support the notion that exercise self-schema and exercise identity are similar, conceptually, yet it is unclear whether these constructs are similar in the way they predict exercise or exercise-related constructs.

2.5.4. Exercise Self-Schema and Physical Activity

A few studies have examined the association between exercise self-schema and PA behavior (Estabrooks & Courneya, 1997; Kendzierski, 1990; Yin & Boyd, 2000), as well as whether exercise self-schema moderates the intention-behavior relationship (Banting et al., 2009; Rhodes et al., 2016; Sheeran & Orbell, 2000). Regarding PA behavior, exerciser schematics compared with non-schematics and aschematics were more likely to expend more calories (Yin & Boyd, 2000), report greater intentions to exercise and exercise behavior (Estabrooks & Courneya, 1997), and engage in pro-exercise behavior (i.e., report taking the stairs rather than an elevator) (Kendzierski, 1990). Additionally, a meta-analysis compiling related studies (n=32) that examined exercise self-schema and/or exercise identity in relation to PA behavior reported reliable

evidence that these self-image based constructs do, in fact, moderate the intention-behavior relationship regarding PA (Rhodes et al., 2016). It was also reported that exercise self-schema was associated with quicker processing of relevant information. Finally, the only longitudinal study that was identified occurred over the course of two weeks and aimed to apply the theories of planned behavior, past behavior, and exercise self-schema to test their relation to exercise among a sample of undergraduates (n=163) (Sheeran & Orbell, 2000). Investigators reported that self-schemata did moderate the intention-behavior relationship. That is, exerciser schematics were more likely to follow through with their intentions to exercise compared with unschematics (i.e., non-schematics, aschematics, and those individuals who were unclassified).

Only one study was identified that examined the relationship between exercise self-schema and measures of physical fitness – these measures included body composition, cardiovascular fitness, and upper-body muscular endurance among male and female college students (n=62) (Thomas et al., 2016). While findings showed that exerciser schematics had significantly higher percentage of lean body mass compared with non-schematics, there were no significant differences in cardiovascular fitness between groups. Additionally, exerciser schematics had more upper body endurance compared to non-schematic and aschematic participants.

2.6 Taking a Developmental Perspective to Social Media and Physical Activity Participation

2.6.1. Characteristics of Emerging Adults

As previously mentioned, emerging adults are using Instagram at the highest rates of any other adult age group (Pew Research Center, 2021b). Emerging adults also report using the internet to seek health information (Jacobs et al., 2017). This developmental period is described by Arnett (2000) as a time separate from adolescence and adulthood that includes ages 18 to 29, with a focus on ages 18 through 25. It is a time characterized by feelings of possibility related to one's careers, relationships, and worldviews. The present study will recruit emerging adults due to the distinct developmental characteristics of this age group including instability, feeling in-between, self-focus, experimentation, and identity exploration (Arnett, 2000, 2007), in addition to their Instagram use, interest in fitness, and use of the internet as a source of health information.

The first feature of emerging adults is *negativity/instability* which refers to the many transitions that occur in most emerging adults' lives whether it is moving residences, changing romantic partners, and/or shifting jobs (Arnett, 2000; Arnett & Mitra, 2018). Emerging adults could be weathering multiple shifts in different domains of life at once, which may create feelings of instability. Role transitions experienced by emerging adults contribute to another characteristic of this developmental period: *feeling in-between* (Arnett, 2000; Arnett & Mitra, 2018). Adults in this age group often report feeling older than an adolescent, but not yet an adult. It should be noted that characteristics deemed necessary to reach adulthood differ between individuals of various

backgrounds and cultures, however Arnett mentions that among most, demographic transitions (e.g., becoming a parent, finishing school) are ranked towards the bottom when considering importance to adulthood. Instead, emerging adults cite personal characteristics such as "taking responsibility for one's actions" and "becoming financially independent" as most important when transitioning to adulthood (Arnett, 2000, p. 473).

Another feature of this age group is their tendency to be *self-focused* (Arnett, 2000; Arnett & Mitra, 2018). That is, their own lives require most of their attention, as they are attempting to navigate life themselves. Most emerging adults are transitioning from living with their parents to living alone, with roommates, or a romantic partner. This might result in situations where emerging adults must resort to their own strategies to find solutions to problems they may have not faced before. Further, this developmental period is uniquely free from the supervision of childhood and adolescents and the responsibility of adulthood (Arnett, 2000), which may allow emerging adults to focus primarily on their own needs. *Experimentation* is another characteristic of this age group, referring to their belief in the notion that "anything is possible" due to the amount of opportunity that lies ahead (Arnett, 2000; Arnett & Mitra, 2018). Emerging adults often report optimistic feelings about their future.

The final feature of emerging adulthood, and perhaps the most important feature for the present study, is *identity exploration* (Arnett, 2000; Arnett & Mitra, 2018). Adults in this age group are exploring the many possibilities related to their career interests, romantic partners, and worldviews. It tends to be a time characterized by individuals "figuring it out" and being especially vulnerable to outside influences. Further, self-

perceptions, such as one's identity, play a key role in behavior, including PA as individuals tend to participate in activities that enhance their self-perceptions (Stets & Burke, 2000).

2.6.2. Physical Activity Participation Among Emerging Adults

Most recent data from the Centers for Disease Control and Prevention show that 65% of emerging adults, aged 18-to-24, met the 2008 guidelines for aerobic PA (Centers for Disease Control and Prevention, 2019). Additionally, Varma et al. (2017) analyzed National Health and Nutrition Examination Survey (NHANES) accelerometry data (n=12,529; 7-day wear time) to examine the changes in PA throughout the lifespan and found that PA sharply declines during adolescence. Yet, data also indicated that, between the ages of 20 and 30 years, total and light PA increases slowly and stabilizes after 30. These findings are not universal, as other studies have indicated major life transitions that are prevalent during emerging adulthood are associated with decreases in PA.

One major life transition that may play a role in PA among this age group is the transition from high school to post-high school work or education. A recent longitudinal study evaluated changes in PA levels among 163 high school seniors (at baseline) as they were transitioning into emerging adulthood (Kwan, King-Dowling, Veldhuizen, Ceccacci, & Cairney, 2021). Participants wore an accelerometer for 7 days at each point of data collection (baseline, 6-month follow-up, and 18-month follow-up). Although no differences in PA between baseline and 6-month data collection time points were significant, moderate-to-vigorous physical activity (MVPA) and total PA significantly declined between 6- and 18-month time points.

Another longitudinal study examined the transition out of high school across 4 years among participants (n=2,785) who were in 10th grade at baseline (K. Li et al., 2016). Researchers reported a decline in the number of individuals who met PA guidelines at each data collection timepoint, indicating a negative association between age and PA during the transition into emerging adulthood. Additionally, participants who were working engaged in more PA compared with participants who were unemployed. Participants who were not attending schooling post high-school were more likely to engage in moderate-to-vigorous PA when compared with participants attending a 4-year university.

Among emerging adult women in Australia, parenting children, being married, and lacking formal employment have been shown as negatively associated with PA (Bell & Lee, 2005), whereas cohabitation shows similar results among emerging adult men (V. Burke, Beilin, Dunbar, & Kevan, 2004). These findings were corroborated in the US using data from Project EAT (Eating and Activity Over Time), a longitudinal study aimed to evaluate health behaviors such as PA, nutrition intake, and weight-related behaviors among young people (Miller et al., 2019). Baseline data were collected among adolescents (n=4,746). Participants were contacted for follow-up data collection at 3 additional time points, each approximately 5 years apart. Findings indicated that major life transitions, including moving out of parent/caregivers' home, getting married, and entering parenthood, are associated with a decline in PA between adolescence (11 to 18 years) and young adulthood (19 to 31 years) (Miller et al., 2019). Overall, prior work indicates that factors such as school and/or work status and marriage or cohabitation

could play a role in PA among this age group and should be accounted for in the present study.

2.6.3. Understanding the Target Population and Utilizing Purposive Sampling

While research supports the notion of emerging adulthood as a distinct developmental period, a common practice is to recruit student volunteers (Jager, Putnick, & Bornstein, 2017) within this age range and refer to them as "young adults." Yet, it is necessary to provide rationale for investigating social media and PA participation among emerging adults and for the sampling methods used in the present study.

In the quantitative portion, we recruited a convenience sample of emerging adults, however reasons for choosing emerging adults as the target population are grounded in the theory of emerging adulthood (Arnett, 2000) and relevant social media and health behavior characteristics. In addition to using Instagram at the highest rates of any other adult age group (Pew Research Center, 2021b), emerging adults experience dramatic developmental changes that are unique to emerging adulthood, such as transitioning from high school to work or additional schooling, getting married or cohabitating, and/or bearing children. The combined contributions of these major life transitions and a high utilization of Instagram, coupled with developmental characteristics such as identity exploration and instability indicate the vast array of factors that could be influencing emerging adults' behavior, including their PA engagement. A better conceptualization of their fitness-related Instagram use and how it is related to their PA participation may provide some much-needed understanding regarding the development of an intentional

health promotion tool utilizing a platform this population already uses regularly – Instagram.

In the qualitative portion of the present study, we used purposive sampling to recruit emerging adults who regularly access fitness-related Instagram content. Purposive sampling is a type of nonprobability sampling that entails a researcher choosing a given participant deliberately due to the qualities that participant possesses (Etikan, Musa, & Alkassim, 2016). It is used to better match the sample with the aims of the study which, in turn, leads to improved trustworthiness of the findings (Campbell et al., 2020). Using purposive sampling to recruit emerging adults who engage in regular fitness-related Instagram use allows investigators to better understand the relationship between self-perceptions and motivation to participate in PA in an appropriate developmental context. That is, interpretations of findings are strengthened by an understanding of the unique qualities of emerging adults and how they relate to PA-related self-perceptions. Further, purposive sampling allows investigators to assess between and within-age differences in a sample (Weiss & Bredemeier, 1983), which is especially important among emerging adults, as it is a time characterized by dramatic change. We did not use purposive sampling in the quantitative portion of the present study. This was to assess the number of emerging adults who access fitness-related content compared to those who do not.

2.7 Summary and Conclusions

There is strong evidence that PA is beneficial to one's health (Fox et al., 2003; Warburton & Bredin, 2017), yet many individuals are not meeting PA guidelines (Centers for Disease Control and Prevention, 2019; Piercy et al., 2018). Social media is a

popular source of PA information online, especially among young people (Goodyear et al., 2019; Goodyear, Boardley, Chiou, Fenton, Makopoulou, et al., 2021; Goodyear & Quennerstedt, 2020). Recent work has shown that fitness-related social media use is associated with facilitators and barriers of PA. For example, social media offers an accessible way to learn new exercises or connect with supportive others (Goodyear, Boardley, Chiou, Fenton, Makopoulou, et al., 2021; Mitchell Vaterlaus et al., 2015), yet it is also a distraction and a sedentary activity (Mitchell Vaterlaus et al., 2015). Instagram is one of the most popular sites among young people, with 76% of emerging adults reporting use of the site (Pew Research Center, 2021b). Instagram allows for easy content sharing, saving, and creating, in addition to various filters and other tools to enhance photos and videos. Instagram also features an abundance of fitness content. Yet, an investigation of fitness-related Instagram use and its relationship with PA behavior among a diverse sample of emerging adults has not been identified.

It is important to investigate other factors that may play a role in the relationship between fitness-related social media use and PA participation. First, PA information seeking should be considered given that social media is a highly accessible and readily available source of PA information; young people may refer to social media to fulfil their PA information needs. Another important factor to consider is one's exercise self-schema. Self-schemas are cognitive generalizations informed from past experiences that guide the processing of information relevant to the self in a given domain and can predict future behavior (Markus, 1977). Self-schemas are developed if past experiences are viewed as important and descriptive of oneself. Thus, exercise self-schema refers to

mental shortcuts about exercise-related information relevant to oneself. It is important to consider whether one possesses an exercise self-schema, as individuals with an exercise self-schema may devote more attention to fitness-related Instagram content, in turn, influencing their PA behavior.

Emerging adults are the chosen population for the target study due to their high utilization of Instagram and distinct developmental characteristics such as identity exploration (Arnett, 2000) that indicate they may be more dramatically influenced by social media content. Additionally, they are likely to undergo many major life changes such as exiting high school, getting married or cohabitating, and having children. These major life transitions are also associated with a decrease in PA (Arnett, 2000; Bell & Lee, 2005; Miller et al., 2019; Werneck et al., 2020).

Overall, investigation into the relationship between fitness-related Instagram use and PA participation among a diverse sample of emerging adults is likely to improve our understanding of the complex nature of fitness-related social media consumption and PA participation. Exploring the roles played by related concepts, such as PA information seeking and exercise self-schema, may also further our understanding, as they may change or account for some of the relationship between fitness-related Instagram use and PA (refer to Figure 2), warranting further investigation in future work. Finally, the intentional recruitment of a diverse sample of emerging adults regarding gender and racialized identity will improve understanding of a behavior that may vary between individuals (Instagram use), in addition to providing meaningful interpretation of data that is mindful of gender and cultural differences.

Chapter 3. Methodology

3.1 Study Design and Recruitment

3.1.1. Study Overview

The present study utilized mixed methodology by administering a quantitative, cross-sectional survey and conducting focus groups. The quantitative survey addressed the first and second aims, whereas focus groups allowed for the collection of qualitative data that addressed the third and final aim. All qualitative and quantitative portions of the study were completely virtual to ease participant burden and geographical limitations.

3.1.2. Participant Recruitment

A power analysis determined the sample size needed to find reliable statistically significant results. Census data from 2019 shows that adults aged 18 to 29 comprise 17.5% of the total non-institutionalized US population (N=324 million) (United States Census Bureau, 2019). Additionally, an investigation of the relationship between social media use and PA participation is emerging. That is, no clinical trials were conducted at the start of the present study meaning no effect size was identified to represent this relationship in a sample size calculation. Therefore, a formula for calculating sample size requirements was used (Serdar, Cihan, Yücel, & Serdar, 2021). It is as follows:

$$\text{Sample size} = \frac{\frac{Z^2 * p(1-p)}{e^2}}{1 + \frac{Z^2 * p(1-p)}{e^2 * N}}$$

where Z is z-score (1.96), p is population proportion (.2 to be conservative), and e is margin of error (.04). A margin of error indicates how likely survey results will

accurately reflect the population and is not recommended to be above 10 percent (Serdar et al., 2021). The present study will use a 4 percent margin of error. Finally, a Z-score was determined using a 95% confidence level and an alpha of .05. The desired sample size was 385 participants, yet the research team determined that 250 participants would be an acceptable sample given doctoral program length and the limited funds available.

Participant recruitment took place in two waves. The first wave consisted of sharing information about the study via Instagram, in addition to sharing information through personal and community channels (refer to Figure 1). To target individuals who access fitness-related content both nano (<10,000 followers) and micro (more than 10,000 followers but less than 100,000 followers) content creators on Instagram were targeted via relevant hashtags (Alassani & Göretz, 2019; Wentzell, Walker, Hughes, & Vessey, 2021) such as #fitness, #fitspiration, and #workout. Messages were sent to content creators chosen as possible collaborators to inquire about their interest in sharing information about the study. To target individuals who may not participate in fitness-related Instagram use, content creators who produce content that is not fitness-related on Instagram were also contacted. Content creators who self-identified as BIPOC and/or lesbian, gay, bisexual, transgender, queer/questioning, and more (LGBTQ+) were prioritized over influencers who did not share information about their racialized or gender identities. Other personal and community channels were utilized electronically (through the posting of study information on colleagues' and friends' social media profiles) and in-person (through the distribution of physical fliers). Finally, Facebook groups were used to administer study information, as Facebook is also owned by Instagram's parent company,

Meta, and likely shares users. Similarly, groups self-identifying as inclusive of BIPOC and LGBTQ+ communities were prioritized. Snowball sampling was encouraged by asking current participants to share information about the study with others.

To increase the representation of a range of PA participation among potential participants, recruitment materials targeted Instagram use and not PA participation. Additionally, recruitment materials featured images of people who appeared to be aged 18 to 29 and differed in visual characteristics (e.g., gender and race presentation, etc.) to assist in the recruitment of a diverse sample. Recruitment goals corresponding to gender and racialized identities set a priori included an even distribution of male and female participants and 40% White, 25% Black/African American, 25% Hispanic, and 10% other racialized/ethnicized identities. These goals regarding participants' racialized identities were chosen as Black/African American individuals and Hispanic individuals are the largest minoritized groups of the US (Jensen et al., 2021) and participate in high levels of Instagram use (Pew Research Center, 2021b). Finally, participants from the first wave of recruitment were entered into a drawing to win 1 of 10 $50 gift cards upon completion of the survey to bolster participation. To support timely study completion, participants who were eligible for the focus groups were identified and invited to participate in concurrent focus groups after 100 participants filled out the quantitative survey.

After recruiting 97 participants, it was clear that a priori recruitment targets for gender and racialized/ethnicized identities would not be met; therefore, Prolific was used to recruit another 150 participants during the second wave. Prolific is an online

recruitment tool that allows researchers to post their study and pay individuals that are interested in participating. Prolific is a research platform that has been shown to connect researchers to participants who provide honest, reliable, and replicable data as determined by two studies conducted by Peer, Rothschild, Gordon, Evernden, and Damer (2022). The research team compared Prolific to other popular online recruitment platforms (MTurk and Cloud Research). Participants (n=500 from each platform) answered a survey with validated tests that measured their attention, comprehension, and honesty; Prolific participants were more attentive, showed better comprehension, and answered questions more honestly when given the opportunity to cheat to increase rewards. Additionally, data from Prolific had higher internal reliability compared to MTurk and Cloud Research. Prolific also allows researchers to select desired qualities of participants from an allotment of pre-set characteristics. Given that the present study aimed to recruit a sample diverse in gender and racialized/ethnicized identities, Prolific was used to screen out any individuals who identified as only White. Additionally, an even male and female distribution was requested. All participants were paid. The average reward was a rate of $41.54/hour; however the median response time was 4 minutes and 21 seconds.

3.1.3. Inclusion/Exclusion Criteria

To be eligible for this study, participants were required to be age 18 to 29, reside in the United States, speak English, have a computer or smart phone that has reliable internet access, and use Instagram for at least 30 minutes per day. Time spent on social media is generally underestimated by individuals (Andrews, Ellis, Shaw, & Piwek, 2015; Lin et al., 2015), therefore 30 minutes of daily Instagram use was chosen as an eligibility

requirement despite the 2-hour average of daily Instagram use reported by a recent study (Liu et al., 2021).

3.2 Quantitative Data Collection Measures

3.2.1. Procedure

Surveys were completed electronically using Qualtrics. The survey was expected to take approximately 10 minutes to complete but participants averaged 6 minutes and 40 seconds when accounting for both recruitment waves. Upon starting the survey, participants had one week to complete it. Due to the monetary incentive and the primarily electronic recruitment strategies, internet "bots" and other fake survey respondents were suspected, and strategies were used to avoid jeopardizing the integrity of the data collected. All features Qualtrics offers to combat these issues were enabled (e.g., bot detection). Additionally, a screener (also administered via Qualtrics) was used to test potential participants' eligibility prior to survey administration. Individuals who produced greater than 40% "missing" survey data were not included in the data analysis. Survey variables included in the present study will be discussed at length in subsequent sections, however, refer to Appendix A for specific assessment items and modifications used.

3.2.2. Demographic characteristics

Demographic characteristics surveyed included age, gender identity, racialized/ethnicized identity, education, job status, and marital/partnership status. To further describe the sample, self-reported height and weight were collected.

Participants recruited during wave 1 reported their date of birth, from which their age was calculated. Multiple response options were offered for the survey items

regarding gender identity to ensure inclusivity, including woman, man, transgender/trans woman, transgender/trans man, non-binary/non-conforming, and additional options to add their own response or not respond at all (Institutional Review Board).

Following guidance from Flanagin, Frey, Christiansen, and Bauchner (2021), a measure that offered more specific racialized identity categories was chosen to more accurately describe the study sample. The item used was specified by the US Department of Health and Human Services. The question read, "what is your race?" and response options included American Indian or Alaskan Native, Black or African American, and White (all of which are standard race categories); Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, and Other Asian (all of which roll-up to the Asian race category); Native Hawaiian, Guamanian or Chamorro, Samoan, and Other Pacific Islander (all of which roll-up to the Native Hawaiian or Other Pacific Islander category) (US Department of Health and Human Services, 2011). Participants were able to select more than one option. Participant ethnicized identity was also surveyed using a question that stated, "what is your ethnicity?" and response options included no, not of Hispanic, Latino/a, or Spanish origin; yes, Mexican, Mexican American, Chicano/a; yes, Puerto Rican; yes, Cuban; and yes, Another Hispanic, Latino/a or Spanish origin (US Department of Health and Human Services, 2011). Participants were able to select more than one option.

Other demographics such as education, job status, and relationship status were also collected. Education categories included no formal education, high school diploma, some college with no degree, postsecondary non-degree award, associate's degree,

bachelor's degree, master's degree, doctoral or professional degree. Job status options included employed full-time, employed part-time, full-time student, part-time student, and not employed. Participants were allowed to select multiple. Finally, relationship status items included single, committed dating relationship, cohabitating, married, divorced/separated, and prefer not to respond (Bell & Lee, 2005).

3.2.3. Fitness-Related Instagram Use

Frequency of Use. Assessing participants' fitness-related Instagram use is a difficult task, as researchers generally rely on self-report measures (Goodyear, Boardley, Chiou, Fenton, Makopoulou, et al., 2021; Raggatt et al., 2018) and no validated scales exist in the literature (DiBisceglie & Arigo, 2021). Nonetheless, data collection for the present study followed methodology used by Raggatt et al. (2018) and DiBisceglie and Arigo (2021). First, participants indicated the frequency in which they access fitness-related content on Instagram. Five response options were available including never, less than daily, 1 to 5 times daily, 5 to 9 times daily, and more than 10 times a day. Total daily Instagram use was also assessed with an item that read, "how much time do you spend on Instagram per day?" and 9 response options ranging from none to 4 hours or more (Fardouly, Pinkus, & Vartanian, 2017).

Type of Content Accessed, Engagement Activities, and Reasons for Engagement. Using scales published by Raggatt et al. (2018), participants reported the type of fitness content they access, their engagement activities, and the reasons they access fitness content using a checkbox list of options. Examples of the types of fitness content included personal trainers/athletes, posts tagged with fitspiration or fitspo, and

everyday people. Engagement activities could be passive observing or active contributing. Passive observing activities included options such as appears on newsfeed, like/follow, and scroll through posts or images. Active contributing activities included options such as tag friends in posts, comment on posts, and post content. Finally, the reasons participants accessed fitness-related content included options such as inspiration to exercise to improve health and wellbeing, and inspiration to eat healthy foods. Participants could select more than one type of content, engagement activity, and reasons for accessing fitness content.

3.2.4. Physical Activity Participation

The Godin-Shepard leisure time PA questionnaire (Godin & Shephard, 1985) has been used to reliably categorize active adults (Amireault & Godin, 2015) and youth (Zelener & Schneider, 2016) into sufficiently active and insufficiently active categories. A modified version of the Godin-Shepard Leisure Time Physical Activity Questionnaire was used to assess PA participation in the present study (Amireault & Godin, 2015; Godin, 2011; Shephard, 1997). The measure read “In a usual week, how many hours do you spend doing the following activities?” This statement was followed by examples of mild, moderate, and strenuous exercise and a description of how one feels, physically, when participating in each type of PA to aid the respondent in understanding the question. The item was open response, where the midpoint was used in any range provided. Total PA was calculated by adding time spent at each of the three intensities; MVPA was calculated by adding time spent in moderate and vigorous intensities.

3.2.5. Exercise Self-Schema

Exercise self-schema was assessed using a scale developed by Kendzierski (1988) which was adapted from a scale devised by Markus (1977) that assessed self-schemas generally. The measure consists of 3 phrases specific to exercise including someone who exercises regularly, someone who keeps in shape, and someone who is physically active among three other filler statements such as someone who is friendly, someone who sets goals, and someone who is spontaneous. Item responses about descriptiveness included an 11-point scale ranging from does not describe me (1) to describes me (11). Participants also responded to an 11-point scale ranging from not at all important (1) to important (11) when asked how important the descriptor is of their self-image, regardless of whether the trait describes them. Therefore, participants rated the descriptiveness and importance of each of the 6 phrases to their self-image. Descriptiveness and importance items have been shown as having high internal consistency among a sample of college students (Cronbach's α=.92 and .89, respectively) (Estabrooks & Courneya, 1997).

Based on the responses, participants were categorized as either exerciser schematic, non-schematic, aschematic, or not meeting inclusion criterion for any of the groups (non-classifiable). Using criteria from Kendzierski (1988), exerciser schematics rated at least 2 of the 3 exercise-specific descriptors as extremely descriptive (8 to 11) and at least 2 of the 3 exercise-specific descriptors as extremely important (8 to 11) to their self-image. Exerciser non-schematics rated at least 2 of the 3 exercise-specific descriptors as extremely non-descriptive (1 to 4) and at least 2 of the 3 exercise-specific descriptors as extremely important to their self-image (8 to 11). Exerciser aschematics

rated at least 2 of the 3 exercise-specific descriptors in the middle range of descriptiveness (defined as 5 to 7) and rated at least 2 of the 3 exercise-specific descriptors as not extremely important (1 to 7) to their self-image. Participants who did not meet the requirements to be classified as exerciser schematics, aschematics, or non-schematics are generally termed “non-classifiable”. For the present study, participants were further categorized as either having an exercise self-schema or not having an exercise self-schema (i.e., non-schematics, aschematics, and non-classifiable).

3.2.6. Physical Activity Information Seeking

Data were also collected on participants’ information seeking behavior related to PA and exercise using a scale created by Hirvonen et al. (2012) (Cronbach’s α=.874). The measure consists of an active seeking subscale (Cronbach’s α=.887) which was used in the present study. Items include ‘I look for information when I have a problem or a question about exercise or physical activity’ and ‘I look for information, for example, on the internet or ask questions about it from other people.’ Response options included a scale from 1 (never) to 5 (regularly). Responses were averaged between the two items to generate a scale value.

3.3 Qualitative Data Collection

3.3.1 Procedure

After nearly 100 out of 250 participants completed the survey, identification of participants eligible for the qualitative portion of the study began. Qualitative data collection consisted of semi-structured focus group discussions. The research team chose this approach because the present study was exploratory and aimed to contribute an

understanding of the perceptions of emerging adults' regarding fitness-related content and how such content is related to their PA participation. Talking with individuals who consume fitness-related Instagram content regularly may provide some insight into how emerging adults are using Instagram as a resource to support their PA participation. In addition, focus groups provide an opportunity for participants to interact with one another and build on one another's views (Edley & Litosseliti, 2010), which is important to boost knowledge generation among a group of people with a shared experience. The research team conducted all focus groups virtually on Zoom as a cost-effective solution to collecting data with participants who span a large geographical area (Dodds & Hess, 2021; Kite & Phongsavan, 2017). Sessions were audio and video recorded via Zoom.

We used purposive sampling to determine which participants from the quantitative portion of the study were invited to participate in focus groups. That is, individuals who reported daily fitness-related Instagram use and consented to audio and video recording were invited to participate. Participants were not invited to participate based on gender or racialized/ethnicized identities as a moderator should appear similar to the focus group participants (Krueger, 2002) and approximately 3 to 4 sessions are needed for each group of participants (e.g., white women, Black women, Hispanic men, etc.) (Krueger & Casey, 2014) – neither of which were feasible for the present study. Additionally, past work shows no discernable differences in heterogeneous groups compared with homogeneous groups when topics are not based on race/ethnicity and participants share another characteristic (Greenwood, Ellmers, & Holley, 2014).

Therefore, participants who reported engaging in daily fitness-related Instagram use were randomly selected and invited to participate.

Focus groups were approximately 60 minutes in duration to ensure adequate time to collect sufficient information from participants, but to also avoid loss of interest (Center for Disease Control and Prevention, 2018). Five to eight participants were scheduled per session, as this is considered "ideal" for noncommercial topics (Krueger & Casey, 2014, p. 67). This ensures that participants were able to share their perspective and avoided group dynamic changes that may occur when participants want to share their thoughts but are unable.

3.3.2. Focus Group Topics

Focus group topics probed users to share their interpretation of experiences with fitness-related Instagram content. Participants were shown examples of fitness-related content at the start of the focus group that represented categories described in Raggatt et al. (2018) (see Appendix A for categories and Appendix B for content shown in focus groups). These images/videos were chosen independently by the principal investigator (SMG) and a research assistant, then discussed together to choose the "exemplar" image that represented each category (Kane, LaVoi, & Fink, 2013). This content was intended to be used as a point of reference for focus group participants and to ensure understanding of what is meant by the term "fitness-related content."

Focus group questions inquired about participants' preferences or dislikes related to fitness-related content on Instagram, in addition to their engagement activities or use patterns on Instagram (e.g., saving posts to refer to later). Participants' perceptions

regarding content creators' credibility (i.e., source credibility, including whether they are trustworthy and have relevant expertise (Metzger, Flanagin, Eyal, Lemus, & McCann, 2003)) and authenticity (i.e., the act of appearing "real" (Reade, 2020)) were discussed. Finally, questions about the influence fitness-related Instagram use may have on their PA participation were included.

3.4 Data Analysis

3.4.1. Quantitative Aims

Survey data were exported from Qualtrics, cleaned in an excel file, and imported into SAS OnDemand.

Aim 1: a) To describe fitness-related Instagram use among a diverse sample of emerging adults. b) To explore whether fitness-related Instagram use differs by gender and racialized identity.

Descriptive analyses (i.e., means and frequencies) were completed for demographic characteristics of the study sample and elements of their fitness-related Instagram use (including frequency of use, types of content accessed, engagement activities, and reasons for engagement). To explore whether frequency of accessing fitness-related content on Instagram differed by gender and racialized/ethnicized identity, a t-test and an ANOVA were run, respectively. For gender, comparisons of frequency of fitness-related Instagram use were made by women and men. Participants who identified as non-binary or another identity that was not listed were excluded due to a small sample size of n=7. For racialized/ethnicized identities, frequency of fitness-related Instagram use was compared between AAPI, Black and/or African American, Hispanic, Multiracial,

and White groups. R^2 estimates were reported to show the variance in frequency of fitness-related Instagram use that is explained by gender and racialized/ethnicized identities, where R^2 estimates of 1 to 8%, 9 to 24%, and ≥25% indicated small, medium, and large effects, respectively.

Further, Fisher's exact tests were used to assess differences between gender and racialized/ethnicized identity groups among fitness-related Instagram use variables that were discrete rather than continuous (i.e., types of content, engagement activities, and reasons for access). Fisher's exact test was chosen due to its ability to account for small sample sizes in some cells (Kim, 2017). A 10x2 comparison was used to examine differences in type of content accessed by gender, whereas a 10x5 comparison was used to examine the same differences by racialized/ethnicized identities. For engagement activities, two 7x2 comparisons were ran for gender and two 7x5 comparisons were ran for racialized/ethnicized identity groups to examine differences in passive observing and active contributing activities. Differences regarding reasons for access were examined using a 9x2 comparison for gender and a 9x5 comparison for racialized/ethnicized identities. To protect against type I error, a Bonferroni adjustment was used, where the p-value indicating statistical significance ($p<.05$) was divided by the number of tests performed. Statistically significant p-values included $p<.005$, $p<.008$, and $p<.006$ for types of content, engagement activities, and reasons for access, respectively. Cramer's V was used to assess the magnitude of the relationships between the variables, with .1, .3, and .5 effect sizes interpreted as small, medium, and large estimates, respectively (J.

Cohen, 1988; Kim, 2017). Cramer's V is a measure of effect size for contingency tables that are larger than 2x2 (Kim, 2017).

Aim 2: a) To determine whether fitness-related Instagram use is associated with PA participation controlling for gender and racialized/ethnicized identities. b) To explore whether both fitness-related Instagram use and PA information seeking are associated with PA participation controlling for gender and racialized/ethnicized identities. c) To determine whether exercise self-schema moderates the relationship between fitness-related Instagram use and PA participation controlling for gender and racialized/ethnicized identities.

To test for multicollinearity, Pearson-Product correlations were calculated for all variables including fitness-related Instagram use, PA information seeking, PA participation (MVPA and total), gender identity, and racialized/ethnicized identity. Standardized multiple regression analysis was used to determine the relationships between fitness-related Instagram use, PA information seeking, and exercise self-schema with PA participation. Variables for gender and race/ethnicity were included in each model as covariates to control for gender and racialized/ethnicized identities.

Due to multicollinearity, five models each were ran using MVPA and total PA participation as separate dependent variables (see Figure 2 on subsequent pages). Model 1 examined the relationship between fitness-related Instagram use and PA participation controlling for gender and racialized/ethnicized identity. Model 2 examined the combined relationships and interaction between fitness-related Instagram use and PA information seeking with PA participation controlling for gender and racialized/ethnicized identities.

Model 3a examined the relationship between fitness-related Instagram use and PA participation among those who identified with an exercise self-schema Finally, model 3b examined the relationship between fitness-related Instagram use and PA participation among those who did not identify with an exercise self-schema.

Standardized regression coefficients (β) were used to determine the strength of association between variables. Statistical significance was determined by $p<.05$. R^2 were used as indicators of variance explained in PA participation by the independent variables, where R^2 estimates of 1 to 8%, 9 to 24%, and ≥25% indicated small, medium, and large effects, respectively. All models were run using SAS OnDemand.

3.4.2. Qualitative Aim

Aim 3: To conduct 3-4 qualitative focus groups with 15-20 emerging adults who engage in daily fitness-related Instagram use to gain deeper understanding of their perceptions of relevant content and its influence on PA behavior.

Transcripts were auto generated by Zoom and cleaned by the primary investigator (Stephanie M. Grace) and a research assistant (Amanda L. Folk). SMG and ALF also analyzed the data. We analyzed one transcript at a time and coded each transcript independently before meeting to discuss assigned codes. We used Microsoft Word to complete preliminary coding to ease the reconciliation process. SMG entered codes in NVivo after all five transcripts had been reconciled. We determined themes using a deductive approach that relied on existing literature and aligned with focus group topics. These themes included participants' use practices on Instagram (Raggatt et al., 2018), evaluations of fitness-related content (particularly authenticity (Reade, 2020) and

credibility (Goodyear et al., 2019)), and perceptions of the influence fitness-related content may have on PA participation (Vaterlaus et al., 2015). SMG and ALF determined codes using an inductive approach by identifying and grouping similar ideas within the data (Creswell, 1998). These codes were adapted by identifying patterns in ideas that arose in each transcript and were reevaluated once all data were coded.

To increase the trustworthiness of the results, both reflexivity and member checking were employed. To practice reflexivity, SMG and ALF considered factors that may play a role in their analysis and reporting of the data. SMG and ALF are both White, cisgender women who conduct research on using social media as a health promotion tool. Additionally, SMG is an emerging adult (aged 18-29). SMG and ALF aim to center health equity in their research regarding social media and believe utilizing accessible information sources (like social media) has the potential to reach populations that are often missed by traditional health promotion approaches. Additionally, both SMG and ALF engage in regular fitness-related social media use. During the coding process, SMG and ALF documented thoughts about codes they were unsure of while coding independently. These thoughts were discussed as a team and used to practice reflexivity. SMG and ALF have collaborated on qualitative projects in the past and do not hesitate to share conflicting thoughts.

Member checking is a practice where researchers take interpretations of data back to participants and provide an opportunity for them to share any thoughts or disagreements regarding the results (Creswell & Miller, 2000). SMG forwarded an infographic to the participants that detailed the aim of the study and resulting themes and

codes in plain language (see Appendix C). Participants were given one week to respond with any information they felt was inaccurate or missing from the graphic. No participants responded with conflicting or missing information, however 3 participants replied with confirmations of results.

Figure 1. Recruitment Strategy

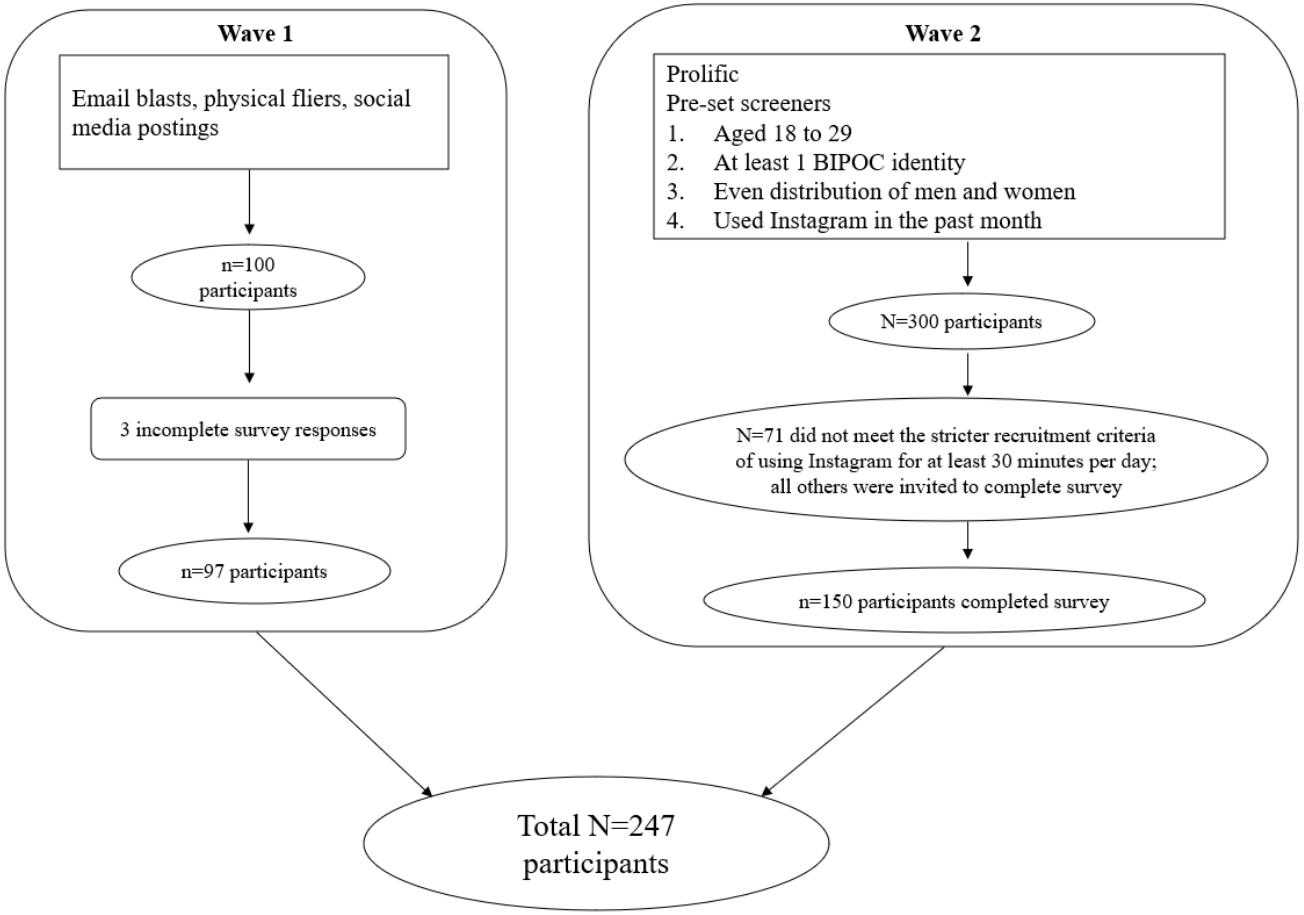
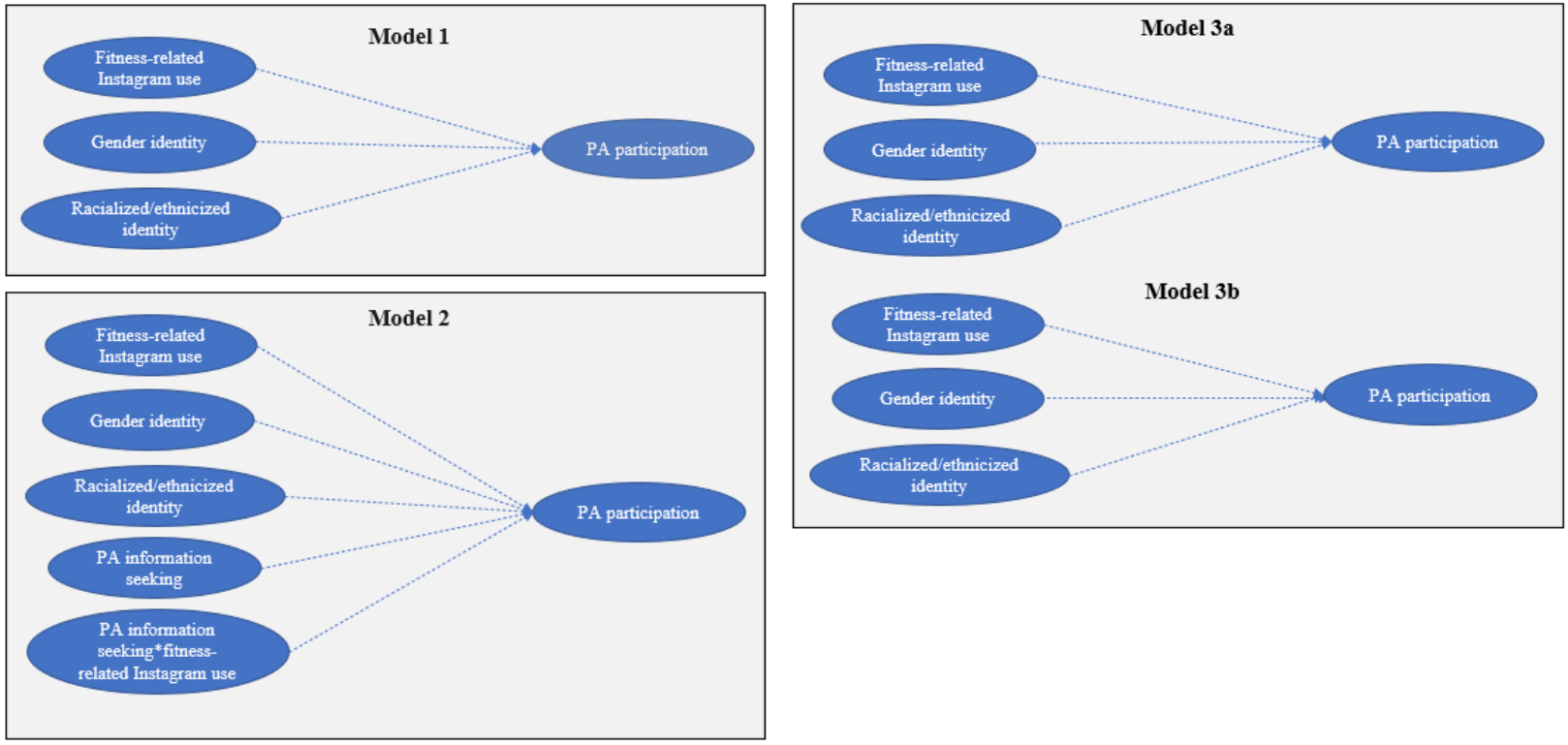


Figure 2. Hypothesized Specific Aim 2



Chapter 4. Study One

Fitness-Related Instagram Use by Gender and Racialized/Ethnicized Identities among a Diverse Sample of Emerging Adults: Implications for Physical Activity Promotion on Social Media

4.1 Introduction

Young people are using social media to gather information about their health (Goodyear et al., 2021; Raggat et al., 2018; Vaterlaus et al., 2015), including topics related to physical activity (PA) – an important health behavior that yields extensive physical and mental health benefits (Piercy & Troiano, 2018). Many researchers have looked to social media as a possible PA promotion tool given its popularity, low cost, and ease of access (Berg, Forest, & Stenseng, 2020; Curtis, Ryan, Edney, & Maher, 2020), however little is known about young people's behaviors when accessing content that is related to PA topics (hereafter: fitness-related content). Emerging adults (aged 18 to 29) in the US are among the most avid social media users (Arnett, 2000; Pew Research Center, 2021b), and are in need of innovative strategies to support their PA participation, given only 34% meet both aerobic (at least 150 minutes of moderate or 75 minutes of vigorous activity per week) and muscle strengthening (2 sessions of exercises targeting major muscle groups per week) guidelines (National Center for Health Statistics, 2019; US Department of Health and Human Services, 2018). To better understand how to use social media as a PA promotion tool among this age group, a comprehensive understanding of their behavior regarding fitness-related social media use is needed.

To employ social media for health education, one must understand how the priority population is using it, which includes identifying the social media platform(s) they already use (Bensley, Thackeray, & Stellefson, 2018). Instagram is the most popular social media site among emerging adults, apart from YouTube (Pew Research Center, 2021a). Fitness-related content on Instagram is abundant, given that a search for #fitness on Instagram revealed over 529 million results as of November 2023. Moreover, a qualitative study conducted a search for fitness content across Instagram, Tumblr, Twitter, and Facebook in 2017, and found that almost 87% of total fitness content analyzed was posted to Instagram, suggesting a higher prevalence of fitness-related content on Instagram compared to other sites surveyed (Carrotte, Prichard, & Lim, 2017). This demonstrates a need to investigate young people's behaviors on Instagram to improve programs using it for PA promotion.

It is necessary to gain a more comprehensive understanding of fitness-related social media use among young people to better inform PA promotion strategies that integrate social media. Goodyear, Boardley, Chiou, Fenton, Stathi, et al. (2021) published guidelines for using social media to inform behaviors related to wellbeing, including PA, and recommends tailoring social media content based on the target population's specific needs, ensuring the content is evidence-based, and varying the design and format of content to maximize participant engagement. Although scholars have investigated features of fitness-related social media by conducting content analyses (Carrotte et al., 2017; R. Cohen, Irwin, Newton-John, & Slater, 2019; Marika Tiggemann & Zaccardo,

2018), as well as use patterns and preferences among samples that post/follow fitness-related content (DiBisceglie & Arigo, 2021; Raggatt et al., 2018), a more comprehensive assessment of fitness-related social media use is needed. An exploration of how often emerging adults view fitness-related content (i.e., frequency of use), descriptive qualities of the content being accessed (i.e., types of content), how they engage with it (i.e., engagement activities), and motivations for viewing/following it (i.e., reasons for access) is likely to assist with following Goodyear's recommendations for maximizing social media use to promote PA.

Emerging adults are a commonly recruited age group in which researchers have assessed fitness-related social media use (Jong & Drummond, 2016; Prichard, Kavanagh, Mulgrew, Lim, & Tiggemann, 2020; Raggatt et al., 2018), most likely due to their high utilization of the sites (Pew Research Center, 2021b). Beyond use rates, emerging adulthood is a distinct developmental period characterized by extensive exploration of identities and worldviews (Arnett, 2007; D. Wood et al., 2018). Developmental characteristics of emerging adults are important to consider given that social media may contribute to identity development, especially through one's self-presentation (Yang, Holden, & Carter, 2017). Additionally, formative conceptualizations of health behaviors like PA could be influenced by trends online, given social media perpetuate norms related to appearance and exercise behavior (Deighton-Smith & Bell, 2018).

Norms regarding PA may also differ widely by gender, race, and ethnicity (hereafter: gender and racialized/ethnicized identities). Gender norms, such as the belief

that cardiovascular exercise is more feminine and weightlifting is more masculine, could either be reinforced or challenged by social media and play a role in women's weightlifting behavior (Brace-Govan, 2004; Coen, Rosenberg, & Davidson, 2018). Scholars have given lesser attention to PA norms among racialized/ethnicized groups, but examples include positive familial norms related to exercise leading to increased PA among Latino women (Abraido-Lanza, Shelton, Martins, & Crookes, 2017) and PA-related descriptive norms (i.e., the tendency for individuals to participate in PA because their significant others are engaged) being less prevalent among New York City immigrants and racialized/ethnicized minorities compared to White counterparts (Sano et al., 2021). Such norms are important to consider when designing PA promotion programs and examining the present fitness-related social media landscape may provide insight to the state of these norms among young people. Therefore, an exploration of fitness-related Instagram use among emerging adults that are diverse in both gender and racialized/ethnicized identities is an important contribution to the literature.

The purpose of the present study was to describe fitness-related Instagram use among a sample of emerging adults diverse in gender and racialized/ethnicized identities, and to explore whether fitness-related Instagram use differs by these identities. Such exploration could provide practical strategies to improve the implementation of social media when creating PA promotion content for emerging adults with a range of gender and racialized/ethnicized identities.

4.2 Method

Participants and Procedure

Data were collected between August and December of 2022, and the study was cross-sectional. A survey was administered online via Qualtrics. To be eligible, participants must be emerging adults (18 to 29 years old), reside in the United States, speak English, have access to a computer or smartphone with reliable internet access, have no conditions that inhibit them from participating in PA, and use Instagram for at least 30 minutes per day. A screener to determine eligibility was made available to interested parties, and survey links were distributed by the principal investigator (SMG) to those who met eligibility criteria. The study was approved by the University of Minnesota's Institutional Review Board, and participants provided consent before beginning the survey. After 97 participants were recruited from traditional, snowball sampling methods (e.g., social media posts, email blasts, paper flyers), preliminary analyses indicated a lack of diversity regarding gender and racialized/ethnicized identities in the sample (74% identifying as women, 78% identifying as white). Prolific, a self-service platform that allows researchers to administer their study and control sampling (prolific.co), was used to recruit the remaining 150 participants. Prolific has been reported as providing high quality data for behavioral research across several measures, including honesty (i.e., participants providing truthful responses), reliability, and replicability (Peer et al., 2022).

Prolific utilizes pre-set screeners to identify individuals who may be eligible for a given study. These screeners were used to identify those who met the aforementioned inclusion criteria except for daily Instagram use, which was not available during screening. A distribution of 50% male and 50% female was requested to improve the gender distribution of the sample; although gender was assessed across the spectrum in the quantitative survey (as described below). Additionally, the survey was only made available to those who indicated as having at least one Black, Indigenous, or person of color (BIPOC) identity. To maintain eligibility criteria integrity, 300 individuals who met the pre-set screeners were further screened and were retained if they used Instagram for at least 30 minutes per day. Those individuals were invited to provide consent and complete the survey. The first 150 respondents to complete the survey were included as participants. No data collected from the screener were used for the present study. Both waves of recruitment resulted in a total sample of 247 participants (Figure 1).

Measures

Demographic Variables. Data were collected on participants' age, gender and racialized/ethnicized identities, education, and job status. Participants from the first wave of recruitment indicated their date of birth, from which their age at the date of survey completion was calculated. Participants recruited from Prolific indicated their age in an open response format, due to Prolific policy that does not permit identifiable information being collected from participants. Response options for gender identity included: woman, man, transgender/trans woman, transgender/trans man, non-binary/non-conforming, not

listed (with option to specify), and prefer not to reply. Participants chose their highest level of education from the following options: no formal education, high school diploma, some college with no degree, postsecondary non-degree award, associate degree, bachelor's degree, master's degree, or doctoral or professional degree. Job status was determined by participants' selection of options including employed full-time, employed part-time, full-time student, part-time student, or not employed, where they could select multiple. Those who selected either full- or part-time student in addition to another job status were only categorized as the corresponding student status.

Racialized/Ethnicized Identities. Following guidance from Flanagin et al. (2021), many options were provided for racialized/ethnicized identities to allow for an accurate description of sample characteristics: Black/African American, American Indian or Alaskan Native, Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, Other Asian, Native Hawaiian, Guamanian or Chamorro, Samoan, Other Pacific Islander, or White, with the option to choose multiple selections (US Department of Health and Human Services, 2011). Participants were asked whether they are of Hispanic, Latino, or Spanish origin, with responses including no, not of Hispanic, Latino, or Spanish origin; yes, Mexican, Mexican American, Chicano; yes, Puerto Rican; yes, Cuban; and yes, Spanish. Participants who selected their race(s) as American Indian or Alaskan Native, Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, Other Asian, Native Hawaiian, Guamanian or Chamorro, Samoan, or Other Pacific Islander were reclassified as Asian American and Pacific Islander (AAPI). Those who identified as Hispanic were

coded as Hispanic, regardless of other race(s) selected, except for those who identified as American Indian or Alaskan Native. All of those who selected American Indian or Alaskan Native (regardless of other options selected) were designated as AAPI following guidance from a recent study that employed a Native Advisory Board (Johnston-Goodstar et al., 2022). The final categories included AAPI, Black/African American, Hispanic, Multiracial, and White.

Behavioral Variables. ***Physical Activity.*** Participants were asked how many hours they spend engaging in activities at light, moderate, and vigorous intensities with a description and examples for each intensity (Godin, 2011). An open response format was used; some respondents provided a single number while others provided a range. Participants who answered with a range of time were converted to a midpoint (e.g., 2-3 hours to 2.5 hours). Reported light, moderate, and total PA participation was 6.9±8.2, 3.9±5.3, and 2.4±3.1 hours per week, respectively, with large standard deviations indicating possible overestimation of participation. To mitigate the effects of extreme outliers, a 90% winsorization was completed on PA totals for light, moderate, and vigorous intensities before summing to calculate moderate-to-vigorous and total PA amounts. During this process, the lower and upper 5% of the data are matched to the 5^{th} and 95^{th} percentile estimates, respectively (Wicklin, 2017). After winsorization, moderate-to-vigorous PA was calculated by adding time spent in moderate and vigorous PA, whereas total PA was calculated by adding time spent in all intensities (i.e., light, moderate, and vigorous).

General Instagram Use. Participants indicated how much time they spent on Instagram per day with categories including none, less than 5 minutes, about 15 minutes, about 30 minutes, about 1 hour, 1 to 2 hours, 2 to 3 hours, 3 to 4 hours, and 4 hours or more (Fardouly et al., 2017; Fatt et al., 2019). These responses were converted to 0, 0.08, 0.25, 0.5, 1.0, 1.5, 2.5, 3.5, and 5 hours, respectively, to create a continuous variable for analysis.

Fitness-related Instagram Use. A series of published scales were utilized to characterize participants' fitness-related Instagram use: (1) frequency of use, (2) type of content accessed, (3) engagement activities, and (4) reasons for access.

For frequency of use, participants answered how often they access fitness-related content on Instagram. Response options included: never, less than daily, 1 to 5 times daily, 5 to 9 times daily, and more than 10 times a day (DiBisceglie & Arigo, 2021). An operational definition of fitness-related content – any photos or videos on Instagram that relate to exercising or being physically active – was added to ensure participants' understanding of the term. The two response categories, 5 to 9 times daily and more than 10 times a day, were collapsed due to low sample distributions.

For type of fitness-related content accessed, participants selected any type of content they access from a list of options: personal trainers/athletes, posts tagged with fitness, everyday people, fitness challenges, weight loss/body transformation, body building/strength training, celebrities, models, and thinspiration (Raggatt et al., 2018). Multiple selections were allowed, and each type of content was analyzed independently.

For engagement activities, participants selected from a list of passively observing and actively contributing activities they engage in online. Passively observing options included: posts appear on newsfeed; like/follow posts; scroll through posts or images; friends like, post, or share; visit related websites/pages/profiles; and search hashtags. Actively contributing options included: tag friends in posts, comment on posts, post content, share with friends, participate in discussions, and maintain or moderate a page (Raggatt et al., 2018). Multiple selections were allowed, and each engagement activity was analyzed independently.

For reasons for accessing fitness-related content, participants chose from the following reasons: to inspire me to exercise to improve my health or wellbeing; to inspire me to eat healthy food; to learn more about health and wellbeing; to inspire me to change my body shape, tone, or size; to inspire me to exercise to gain muscle or become stronger; to inspire me to exercise to diet or lose weight, to inspire me to change my appearance, and my friends view it or like it (Raggatt et al., 2018). Multiple selections were allowed, and each reason was analyzed independently.

Data Analyses

SAS OnDemand was used for all analyses. Frequencies were calculated for gender, racialized/ethnicized identity, education, and job status. Means of age, PA participation, and general Instagram use were generated. All four characteristics of fitness-related Instagram use (i.e., frequency of use, type of content accessed, engagement activity, and reasons for access) were explored by computing frequencies of

each variable. For types of content accessed, engagement activities, and reasons for access, responses were coded as 0 if not selected and 1 if selected, as multiple selections were allowed.

To explore whether frequency of accessing fitness-related content on Instagram differed by gender and racialized/ethnicized identity, a t-test and ANOVA were run, respectively. For gender, comparisons of frequency of fitness-related Instagram use were made by women and men. For racialized/ethnicized identities, comparisons of frequency of fitness-related Instagram use were made by AAPI, Black and/or African American, Hispanic, Multiracial, and White groups. R^2 estimates were reported to show the variance in frequency of fitness-related Instagram use that is explained by gender and racialized/ethnicized identities, with a higher R^2 value indicating better model fit.

Fisher's exact tests were used to assess differences between gender and racialized/ethnicized identity groups among other fitness-related Instagram use variables (i.e., type of content, engagement activities, and reasons for access). A 10x2 comparison was used to examine differences in type of content accessed by gender, whereas a 10x5 comparison was used to examine the same differences by racialized/ethnicized identities. For engagement activities, two 7x2 comparisons were ran for gender and two 7x5 comparisons were ran for racialized/ethnicized identity groups to examine differences in passive observing and active contributing activities. Differences regarding reasons for access were examined using a 9x2 comparison for gender and a 9x5 comparison for racialized/ethnicized identities. Fisher's exact test was chosen due to its ability to account

for small sample sizes in some cells (Kim, 2017). Cramer's V was used to assess the magnitude of the relationships between the variables, with .1, .3, and .5 effect sizes interpreted as small, medium, and large estimates, respectively (J. Cohen, 1988; Kim, 2017). Cramer's V is an acceptable measure of effect size for Fisher's exact tests with larger than 2x2 contingency tables. To protect against type I error, a Bonferroni adjustment was used, where the p-value indicating statistical significance was divided by the number of tests performed. Statistically significant p-values included $p<.005$, $p<.008$, and $p<.006$ for types of content, engagement activities, and reasons for access, respectively.

4.3 Results

Sample Demographics, General Instagram Use, and Physical Activity Participation.

Most participants (N=247; aged 23.7±3.5 years) identified as women (59%) and had at least one BIPOC identity (35.6% of total sample; n=88). Education levels ranged from no formal education (n=1) to those with a doctoral or professional degree (n=5), however most participants reported having some college with no degree (32%) or a bachelor's degree (35%). Most participants reported either full-time employment (39%) or going to school full-time (32%). Participants' general daily Instagram use was a mean of 1.3±1.0 hours. PA estimates were 5.6±4.4 and 11.8±9.3 hours per week for moderate-to-vigorous and total PA, respectively (Table 4-1).

Fitness-Related Instagram Use. ***Frequency of Use.*** Over half of the sample (54.7%) reported daily fitness-related Instagram use, with most accessing it 1 to 5 times a

day (42.5%). There were no statistically significant differences between men and women (Table 4-2) or between racial/ethnic groups regarding frequency of use (Table 4-3).

Types of Content Accessed. Among the total sample that reported viewing fitness-related content on Instagram (n=212), the most common types reported were everyday people (63.7%) and trainers or athletes (57.6%). Women also reported accessing weight loss and body transformation content (49.2%), whereas men commonly accessed body building and strength training content (57.1%). Although not statistically significant, women reported more posts labelled #fitness (p=.02; Cramer's V=.16) and content featuring celebrities (p=.03; Cramer's V=.15); whereas men reported more body building and strength training content (p=.01; Cramer's V=.15) (Table 4-2).

Fitness challenges were most popular among Black and/or African American participants (44.1%) and differed from all other racialized/ethnicized identity groups, apart from White participants (p=.001; Cramer's V=.3). AAPI and White participants reported accessing body building/strength training content most often (54.4% and 49.3%, respectively). Half of the Black and/or African American participants (50.0%) and nearly half of the Hispanic (47.6%) and Multiracial (46.7%) participants reported viewing weight loss and body transformation content. Hispanic (47.6%) and Multiracial (40.0%) identifying participants reported following celebrities/models at the highest rates, respectively (Table 4-3).

Engagement Activities. Both passive and active engagement activities were surveyed. The most popular passive engagement activities were the content appearing on

their feed (84.4%) and scrolling through posts or images (63.2%). Women and men similarly reported other passive observing activities, except for visiting related websites/pages/profiles (p=.04; Cramer's V=.15), which was more common among men (Table 4-4). For passive observing activities, Black or African American participants were more likely to visit related websites/pages/profiles (38.2%) than Hispanic participants (7.1%; p=.003; Cramer's V=.27; Table 4-5).

For active contributing activities, most participants shared content with friends (36.3%) and selected "other" (28.8%). Active contributing activities were not commonly reported among women, however, men reported commenting on posts (41.7%), in addition to sharing content with friends (42.9%). When compared to men, fewer women tagged friends in posts (7.0% vs 26.2%; p=.0001; Cramer's V=.27) and commented on posts (17.2% vs. 41.7%; p=.0002; Cramer's V=.27) (Table 4-4). No statistically significant differences were observed between racialized/ethnicized identity groups regarding active contributing activities (Table 4-5).

Reasons for Access. Commonly reported reasons for accessing fitness-related content among the total sample that reported fitness-related Instagram use included being inspired to exercise or improve health (69.8%) and learning more about health and wellbeing (60.9%). Reasons men and women accessed content were different (Table 4-6); although not statistically significant, 48.4% of women accessed content to inspire them to eat healthy food (p=.02; Cramer's V=.16) and 41.4% of women accessed content to inspire them to exercise or diet to lose weight (p=.02; Cramer's V=.17).

Between racialized/ethnicized identities, differences emerged in those reporting that they access content to inspire them to change their body shape, tone, or size (p=.04; Cramer's V=.21) and to change their appearance (p=.03; Cramer's V=.23; Table 4-7). AAPI participants reported both reasons most often with 54.4% accessing content to inspire them to change their body shape, tone, or size and 43.9% accessing content to inspire them to change their appearance. Post-hoc testing revealed that AAPI participants accessed content to inspire them to change their body shape, tone, or size more often than White participants. Additionally, AAPI and participants accessed content to inspire them to change their appearance more than Black/African American participants.

4.4 Discussion

The purpose of the present study was to describe fitness-related Instagram use among a diverse sample of emerging adults by assessing (1) frequency of use, (2) types of content accessed, (3) engagement activities, and (4) reasons for access. Differences in fitness-related Instagram use by gender and racialized/ethnicized identities were also explored. Most of the sample participated in fitness-related Instagram use, with everyday people and personal trainers/athletes most accessed. Actively contributing to content was less common than passively observing it. Viewing content to learn about and inspire improvements in personal health and wellbeing were most common reasons for access. Differences in fitness-related Instagram use by gender and racialized/ethnicized identities emerged regarding types of content accessed, engagement activities, and reasons for access. This study increases the understanding of fitness-related trends on social media

and motivations for accessing fitness-related content among emerging adults, which is necessary to effectively engage diverse groups and improve future PA promotion efforts (Stellefson, Paige, Chaney, & Chaney, 2020).

Recruitment criteria for the present study did not include regular fitness-related Instagram use, yet most of the sample reported accessing it daily, which indicates that Instagram may be a common site for viewing fitness-related content. Instagram may be a platform of interest for future PA promotion efforts among the 18-to-29 years age group, potentially easing the integration of PA promotion strategies into the participants' everyday lives.

The most accessed types of content included everyday people and personal trainers/athletes, which corroborates past work among this age group (Raggatt et al., 2018). It is not possible to discern how participants conceptualized the term "everyday people," however, Raggatt et al. (2018) found that everyday people were reported as more relatable and trustworthy compared to celebrities and models among their sample of mostly women aged 16 and up. A creator's authenticity may play a role in the perceived relatability of health-related content on social media. Past work has shown that perceptions of relatability and authenticity may result from viewing content creators' "raw" (i.e., unedited) images and witnessing "real" talk about less popularized topics like mental health or body image (Reade, 2020). However, young people acknowledge that even "authentic" content may still be highly curated due to photo editing and creating photographic moments (Toll & Norman, 2021). Sharing relatable health experiences and

expressing thoughts sincerely were important factors for adolescents aged 13-18 who followed health-related content creators on YouTube. Given these characteristics, PA programs should employ social media-based strategies that foster relatability and authenticity among their participants, perhaps by partnering with content creators that share body appearance characteristics or are willing to disclose similarities in health experiences. More investigation is needed on how content posted by everyday people is defined and perceived across gender and racialized/ethnicized identities, while considering conceptualizations of relatability and authenticity from the users' perspective.

Users' evaluation of content creators' credibility is another important factor to consider, as past work has shown that young people are critical consumers of health information on social media (Goodyear et al., 2019). This may provide reasoning for another commonly accessed type of fitness-related content in the present study, personal trainers/athletes, who may be more likely to be perceived as experts in PA. Researchers have investigated factors that facilitate perceptions of trustworthiness, credibility, and expertise regarding online health information (Gray, Klein, Noyce, Sesselberg, & Cantrill, 2005), including that on social media (Durau, Diehl, & Terlutter, 2022; Harris, Atkinson, Mink, & Porcellato, 2021). However, credibility of online health sources is sometimes difficult to determine, given expertise and trustworthiness are not always clear (Gray et al., 2005). Harris et al. (2021) suggest that program strategies employed in collaboration with health-related content creators, like personal trainers/athletes, may be

more effective if creator intentions and information accuracy are clearly indicated within messaging.

For engagement activities, passively observing content (e.g., liking or scrolling through posts) was more common among the sample than actively contributing to content, which corroborated Raggatt et al. (2018) findings. Men were more likely than women to comment on posts and tag friends in posts. News media literature suggests that men are more likely to comment on posts, whereas women are more likely to read comments and refrain from commenting themselves (Küchler, Stoll, Ziegele, & Naab, 2022). This finding remains true across various news topics (Peacock & Van Duyn, 2021), indicating a possibility that men actively contribute more often than women when consuming social media featuring fitness-related topics, as well. Although a user's active contributions to content may not accurately indicate whether they are interested by the content, different approaches to keep participants engaged and measure their interaction with content might be needed for health promotion programs that use social media. Posting/commenting might not be the preferred mode of engagement by participants, especially those who identify as women, therefore, other ways to foster connectedness and engagement on social media (e.g., Instagram polls, question and answer (Q&A) sessions) should be researched among this age group.

The two most common reasons for following fitness-related content were for inspiration to improve and learn more about health. These findings corroborate those from various studies showing social media as a common source of health information for

young people (Goodyear et al., 2019; Goodyear & Quennerstedt, 2020; Raggatt et al., 2018; Vaterlaus et al., 2015). This is especially important to consider within the context of the developmental period of emerging adulthood, notably their often changing social and physical environments (Arnett, 2007; D. Wood et al., 2018) and tendencies to establish health behaviors that they are likely to carry throughout adulthood (Langdon, Johnson, & Melton, 2017; Nelson, Story, Larson, Neumark-Sztainer, & Lytle, 2008). If emerging adults are referring to social media to gather information about improving their health, a need exists to supply this age group with reliable yet engaging content through social media that includes actionable information about improving personal health. Goodyear, Boardley, Chiou, Fenton, Stathi, et al. (2021)'s recommendations (e.g., tailoring content, providing evidence, and varying content design and delivery) combined with the current study's increased understanding of fitness-related Instagram use among emerging adults has the potential to greatly improve the effectiveness of social media-based PA promotion programming for young people.

An important consideration when using social media to promote PA among those with a minoritized racial/ethnic identity may include avoiding harmful messaging about body appearance, as these messages are likely to be rooted in systemic racism in the fitness industry. In the present study with 35% of the sample identifying as BIPOC women, participants with racialized/ethnicized identities reported accessing fitness-related content for inspiration to change their body shape, tone, or size more often than White participants. Purkiss (2017) details the history of fat stigma from 1900-1930s

among Americans and argues that Black women have been encouraged to shape their bodies to meet appearance ideals reinforced by popular imagery of White women portrayed as beautiful and healthy and Black women as lacking such qualities. In today's fitness culture, having a thin and toned body is still glorified and touted as a key component of happiness, ideas that are often promoted by content creators whose fitness is evaluated based on appearance rather than physical ability (Pilgrim & Bohnet-Joschko, 2019).

The idea of changing body physique to align with idealized appearance norms was also apparent among AAPI participants in the present study. Past work has investigated body image among Asian Americans and concluded that Asian American men have a higher drive for muscularity and body image concerns compared to Black and White men, and a higher internalization of the male ideal (Kelly, Cotter, Tanofsky-Kraff, & Mazzeo, 2015). Additionally, qualitative work has reported conflicting desires regarding meeting body appearance ideals of both American and Asian cultures among Asian American women (Wong et al., 2017) and men (Liao et al., 2020). PA promotion professionals cannot ignore the common desire to change one's body shape or appearance through PA, but efforts should be made to recognize the racism that likely underpins such normative beliefs around appearance and further emphasize relevant benefits of PA that do not involve changes in body shape, size, or tone.

Strengths and Limitations

The present study had several strengths. First, exploring fitness-related Instagram use among a sample that included a variety of gender and racialized/ethnicized identities extended the current literature by beginning to examine differences between populations. The decision to recruit based on general Instagram use, rather than fitness-related Instagram use, allowed for an assessment of fitness-related Instagram use prevalence. This assessment adds to our understanding of the reach that fitness content on Instagram may have among this age group, which is essential when considering it as a modality for health promotion.

Sampling distribution was a limitation of this study given the convenience sampling methods used (i.e., physical fliers, email blasts, Prolific). Random sampling of a target population may result in less sampling bias. The gender distribution regarding women and men was a strength of this study, yet the lack of transgender persons recruited is a limitation. Future work should prioritize intentional recruitment strategies to reach transgender and other gender minority populations, as it should be investigated whether fitness norms are perceived and perpetuated differently among these groups. Qualitative methodologies like focus groups are worth exploring to investigate fitness-related Instagram use among gender diverse individuals. Additionally, differences between races within larger racial designations (i.e., Japanese and Indian participants both coded as AAPI) might have been missed. Authors followed recent guidance for collecting and analyzing data by race and ethnicity (Flanagin et al., 2021), however, future projects may consider choosing a specific population of interest (e.g., East Asians) to adapt recruitment

and data collection accordingly. Small sample sizes in some cells indicate the possibility of under-powered comparisons between racialized/ethnicized groups, however, Fisher's exact test was chosen rather than chi-square to account for this. Lastly, the measures for general and fitness-related Instagram use have not been validated but were adapted from other published work. Thus, a need exists for a validated fitness-related social media use scale.

4.5 Conclusion

Fitness-related Instagram use is common among emerging adults and is likely to differ by gender and racialized/ethnicized identities, especially regarding their engagement activities and reasons for access. Future health promotion efforts that incorporate social media (like Instagram) should consider their target population and adapt strategies accordingly. There is potential for collaboration with existing content creators that may be recognizable to participants, such as personal trainers or athletes. Efforts should center transparency around content creator intentions and sources of information to bolster trustworthiness and perceptions of credibility. Further, an investigation into what users consider as content posted by "everyday people" with a focus on relatability and authenticity would add to our understanding of desirable content qualities.

Health promotion efforts should also offer a range of engagement activities that are tailored to their target population. Women seem to actively contribute to content less, indicating that less active engagement activities that are still measurable may need to be

encouraged, such as polls on Instagram stories. An exploration of women's and gender minorities' perceptions of online contributions in a fitness-related space may provide more context and illuminate other recommendations for bolstering engagement.

Finally, it is apparent that users are resorting to social media to learn about their health and wellbeing, therefore understanding the target population's motivations to view fitness-related content is essential to make the content relevant to their lives. The avoidance of body-centered content that can fuel desires to change body shape/size/tone may be especially important among racially/ethnically minoritized groups. Investigations into fitness-related social media use on platforms other than Instagram to discover differences between populations is needed to enhance the relevancy of PA promotion that utilizes social media.

Table 4-1

Descriptive Demographic and Behavioral Variables of Sample

Demographic Variables	Participants (N=247)
Age, mean ± SD (years)	23.7±3.5
Gender, n (%)	
Woman	145 (58.7)
Man	93 (37.7)
Trans woman	1 (0.4)
Trans man	1 (0.4)
Non-binary	6 (2.4)
Not listed	1 (0.4)
Race, n (%)	
Asian	57 (23.1)
Indian	11 (4.5)
Chinese	22 (8.9)
Filipino	7 (2.8)
Japanese	2 (0.8)
Korean	6 (2.4)
Vietnamese	8 (3.2)
Other Asian	1 (0.4)
American Indian or Alaskan Native	8 (3.2)
Black or African American	46 (18.6)
Multiracial	25 (10.1)
Native Hawaiian or Other Pacific Islander	1 (0.40)
White	110 (44.5)
Ethnicity, n (%)	
Not Hispanic	197 (79.8)
Hispanic	50 (20.2)
Mexican, Mexican American or Chicano	34 (13.8)
Puerto Rican	5 (2.0)
Cuban	3 (1.2)
Spanish	8 (3.2)
Education, n (%)	
No formal education	1 (0.4)
High school diploma	35 (14.2)
Some college with no degree	79 (32.0)
Postsecondary non-degree award	0 (0.0)

Associate degree	18 (7.3)
Bachelor's degree	86 (34.8)
Master's degree	23 (9.3)
Doctoral or professional degree	5 (2.0)
Job Status, n(%)	
Employed full-time	96 (38.9)
Employed part-time	33 (13.4)
Full-time student	78 (31.6)
Part-time student	11 (4.5)
Not employed	29 (11.7)
Behavioral Variables	
Instagram Behavior (hours/day), mean ± SD	
Instagram use	1.3±1.0
Physical Activity (hours/week), mean ± SD	
Moderate-to-vigorous	5.6±4.4
Total	11.8±9.3

Note. SD = standard deviation

Table 4-2

Frequency of Accessing Fitness-Related Instagram Content and Types Accessed by Gender Identity

Frequency and Types of Fitness-Related Content Accessed[a]	Participants, n(%)			p-value	
Frequency of Accessing Fitness-Related Content	Total (n=247)[b]	Women (n=146)[c]	Men (n=94)[d]		
Never	30 (12.2)	18 (12.3)	10 (10.6)	.21	
Less than daily	82 (33.2)	52 (35.6)	27 (28.7)		
1-5 times daily	105 (42.5)	60 (41.1)	43 (45.7)		
5+ times daily	30 (12.1)	16 (11.0)	14 (14.9)		
Type of Fitness-Related Content Accessed	Total (n=212)[b]	Women (n=128)[c]	Men (n=84)[d]	*p*[e]	Cramer's V[f]
Trainers or athletes	122 (57.6)	72 (56.3)	50 (59.5)	.67	.03
Posts labelled #fitness	51 (24.1)	38 (29.7)	13 (15.5)	.02	.16
Everyday people	135 (63.7)	84 (65.6)	51 (60.7)	.47	.05
Fitness challenges	44 (20.8)	29 (22.7)	15 (17.9)	.49	.06
Weight loss or body transformation	93 (43.9)	63 (49.2)	30 (35.7)	.07	.13
Body building/strength training	99 (46.7)	51 (39.8)	48 (57.1)	.01	.17
Celebrities	74 (34.9)	52 (40.6)	22 (26.2)	.03	.15
Models	54 (25.5)	39 (30.5)	15 (17.9)	.05	.14
Thinspiration	16 (7.6)	11 (8.6)	5 (6.0)	.60	.05
Other	11 (5.2)	9 (7.0)	2 (2.4)	.21	.10

Note.

[a]Fitness-related content was operationally defined as any photos or videos that relate to exercise or physical activity. This definition was shared with participants.

[b]Total sample sizes differ due to structuring of survey questions and analyses. Data regarding frequency of fitness-related content access were reported by 247 participants. Those who chose "never" (n=30) when asked how often they view this type of content were not prompted to answer questions about the types of content they access, how they engage with fitness-related content, or why they access it. Seven participants reported a non-binary (n=6) or not listed (n=1) gender identity and were excluded from analyses due to small sample size. Two non-binary or not-listed participants also selected "never" when asked how often they access fitness-related Instagram content, resulting in a sample size of 212 women and men.

[c]Trans-women were coded as women. Percentages reported are percent of women who selected corresponding viewing frequency or type of content.

[d]Trans-men were coded as men. Percentages reported are percent of men who selected corresponding viewing frequency or type of content.

[e]Statistical significance was determined if $p<.005$ after Bonferroni adjustment.

[f]Cramer's V indicate magnitude of differences between groups, where .1, .3, and .5 are weak, moderate, and strong effect sizes.

Table 4-3
Frequency of Accessing Fitness-Related Content and Types Accessed by Racialized/Ethnicized Identity

Frequency of Fitness-Related Content	Participants, n(%)						
	Total (n=247)[a]	AAPI (n=70)[b]	Black or African American (n=41)	Hispanic (n=46)	Multiracial (n=16)	White (n=74)	*p* (R^2)
Never	30 (12.2)	13 (18.6)	7 (17.1)	4 (8.7)	1 (6.3)	5 (6.8)	
Less than daily	82 (33.2)	25 (35.7)	13 (31.7)	16 (34.8)	8 (50.0)	20 (27.0)	.04 (.04)
1-5 times daily	105 (42.5)	25 (35.7)	19 (46.3)	19 (41.3)	6 (37.5)	36 (48.7)	
5+ times daily	17 (6.9)	7 (10.0)	2 (4.9)	7 (15.2)	1 (6.3)	13 (17.5)	

	Participants n(%)							
Type of Fitness-Related Content Accessed, n(%)	Total (n=217)	AAPI (n=57)	Black or African American (n=34)	Hispanic (n=42)	Multiracial (n=15)	White (n=69)	*p*[c]	Cramer's V[d]
Trainers or athletes	123 (56.7)	32 (56.1)	18 (52.9)	23 (54.8)	7 (46.7)	43 (62.3)	.78	.09
Posts labelled #fitness	51 (23.5)	12 (21.1)	10 (29.4)	10 (23.8)	4 (26.7)	15 (21.7)	.88	.07

Everyday people	133 (63.1)	33 (57.9)	22 (64.7)	25 (59.5)	10 (66.7)	47 (68.1)	.78	.09
Fitness challenges	44 (20.3)	9 (15.8)	15 (44.1)	3 (7.1)	1 (6.7)	16 (23.2)	.001	.30
Weight loss or body transformation	93 (42.9)	22 (38.6)	17 (50.0)	20 (47.6)	7 (46.7)	27 (39.1)	.74	.10
Body building/strength training	101 (46.5)	31 (54.4)	14 (41.2)	16 (38.1)	6 (40.0)	34 (49.3)	.49	.13
Celebrities	75 (34.6)	17 (29.8)	12 (35.3)	20 (47.6)	4 (26.7)	22 (31.9)	.38	.14
Models	56 (25.8)	19 (33.3)	5 (14.7)	10 (23.8)	6 (40.0)	16 (23.2)	.21	.16
Thinspiration	17 (7.8)	4 (23.5)	3 (17.7)	2 (11.8)	2 (11.8)	6 (35.3)	.81	.08

Note.

[a]Total sample sizes differ due to structuring of survey questions and analyses. Data regarding frequency of fitness-related content access were reported by 247 participants. Those who chose "never" (n=30) when asked how often they view this type of content were not prompted to answer questions about the types of content they access, how they engage with fitness-related content, or why they access it.

[b]AAPI=Asian American or Pacific Islander

[c]Statistical significance was determined if $p<.005$ after Bonferroni adjustment.

[d]Cramer's V indicates magnitude of differences between groups, where .1, .3, and .5 are weak, moderate, and strong effect sizes.

Table 4-4

Access Activities with Fitness-Related Content on Instagram by Gender Identity

Fitness-Related Access Activities	Total (n=212)[a]	Women (n=128)[b]	Men (n=84)[c]	*p*[d]	Cramer's V[e]
Passive Observing, n(%)[f]					
Appears on feed	179 (84.4)	109 (85.2)	70 (83.3)	.84	.02
Like/follow	96 (45.3)	56 (43.8)	40 (47.6)	.67	.04
Scroll through posts/images	134 (63.2)	84 (65.6)	50 (59.5)	.39	.06
Friends like/post/share	68 (32.1)	38 (29.7)	30 (35.7)	.37	.06
Visit related websites/pages/profiles	45 (21.2)	21 (16.4)	24 (28.6)	.03	.15

Search hashtags	14 (6.6)	8 (6.3)	6 (7.1)	.79	.02
Other	4 (1.9)	3 (2.3)	1 (1.2)	--	--
Active Contributing, n(%)[g]					
Tag friends in posts	31 (14.6)	9 (7.0)	22 (26.2)	.0002	.27
Comment on posts	57 (26.9)	22 (17.2)	35 (41.7)	.0001	.27
Post content	29 (13.7)	14 (10.9)	15 (17.9)	.16	.10
Share with friends	77 (36.3)	41 (32.0)	36 (42.9)	.14	.11
Participate in discussions	31 (14.6)	13 (10.2)	18 (21.4)	.03	.16
Maintain/moderate a page	11 (5.2)	6 (4.7)	5 (6.0)	.76	.03
Other	61 (28.8)	45 (35.2)	16 (19.1)	.01	.17

Note.

[a]Total sample size differs due to structuring of survey questions and analyses. Data regarding frequency of fitness-related content access were reported by 247 participants. Those who chose "never" (n=30) when asked how often they view this type of content were not prompted to answer questions about the types of content they access, how they engage with fitness-related content, or why they access it. Seven participants reported a non-binary (n=6) or not listed (n=1) gender identity and were excluded from analyses due to

small sample size. Two non-binary or not-listed participants also selected “never” when asked how often they access fitness-related Instagram content, resulting in a sample size of 212 women and men.
[b]Trans-women were coded as women. Percentages reported are percent of women who selected corresponding viewing frequency or type of content.
[c]Trans-men were coded as men. Percentages reported are percent of men who selected corresponding viewing frequency or type of content.
[d]Statistical significance was determined if $p<.005$ after Bonferroni adjustment.
[e]Cramer’s V indicates magnitude of differences between groups, where .1, .3, and .5 are weak, moderate, and strong effect sizes.
[f]Activities that involve observing content in a passive manner (Raggat et al., 2018).
[g]Activities that involve contributing to or sharing content (Raggat et al., 2018).

Table 4-5

Access Activities with Fitness-Related Content by Racialized/Ethnicized Identity

Fitness-Related Access Activities	Total (n=217)[a]	AAPI (n=57)[b]	Black or African American (n=34)	Hispanic (n=42)	Multiracial (n=15)	White (n=69)	*p*[c]	Cramer's V[d]
Passive Observing, n(%)[e]								
Appears on feed	183 (84.3)	48 (84.2)	26 (76.5)	35 (83.3)	12 (80.0)	62 (89.9)	.44	.13
Like/follow	97 (44.7)	22 (38.6)	17 (50.0)	19 (45.2)	6 (40.0)	33 (47.8)	.80	.09
Scroll through posts/images	136 (62.7)	39 (68.4)	25 (73.5)	25 (59.5)	9 (60.0)	38 (55.1)	.35	.14
Friends like/post/share	69 (31.8)	16 (28.1)	11 (32.4)	13 (31.0)	3 (20.0)	26 (37.7)	.67	.11
Visit related websites/pages/profiles	46 (21.2)	17 (29.8)	13 (38.2)	3 (7.1)	1 (6.7)	12 (17.4)	.003	.27

Search hashtags	14 (6.5)	1 (1.8)	5 (14.7)	3 (7.1)	2 (13.3)	3 (4.4)	.10	.19
Other	4 (1.8)	1 (1.8)	0 (0.0)	1 (2.4)	0 (0.0)	2 (2.9)	--	--
Active Contributing, n(%)[f]								
Tag friends in posts	31 (14.3)	8 (14.0)	7 (20.6)	8 (19.1)	0 (0.0)	8 (11.6)	.30	.15
Comment on posts	59 (27.2)	14 (24.6)	13 (38.2)	14 (33.3)	6 (40.0)	12 (17.4)	.09	.19
Post content	29 (13.4)	4 (7.0)	4 (11.8)	6 (14.3)	2 (13.3)	13 (18.8)	.41	.13
Share with friends	78 (35.9)	20 (35.1)	17 (50.0)	14 (33.3)	3 (20.0)	24 (34.8)	.34	.15
Participate in discussions	31 (14.3)	7 (12.3)	7 (20.6)	7 (16.7)	2 (13.3)	8 (11.6)	.73	.09
Maintain/moderate a page	11 (5.1)	5 (8.8)	3 (8.8)	0 (0.0)	0 (0.0)	3 (4.4)	.21	.16
Other	63 (29.0)	17 (29.8)	7 (20.6)	8 (19.1)	5 (33.3)	26 (37.7)	.21	.16

Note.

[a]Total sample sizes differ due to structuring of survey questions and analyses. Data regarding frequency of fitness-related content access were reported by 247 participants. Those who chose "never" (n=30) when asked how often they view this type of content were not prompted to answer questions about the types of content they access, how they engage with fitness-related content, or why they access it.

[b]AAPI=Asian American or Pacific Islander

[c]Statistical significance was determined if $p<.008$ after Bonferroni adjustment.
[d]Cramer's V indicate magnitude of differences between groups, where .1, .3, and .5 are weak, moderate, and strong effect sizes.
[e]Activities that involve observing content in a passive manner (Raggat et al., 2018).
[f]Activities that involve contributing to or sharing content (Raggat et al., 2018).

Table 4-6

Reasons for Accessing Fitness-Related Content on Instagram by Gender Identity

Reasons for Accessing Fitness-Related Content, n(%)	Total (n=212)[a]	Women (n=128)[b]	Men (n=84)[c]	*p*[d]	Cramer's V[e]
To inspire me to exercise or improve my health or wellbeing	148 (69.8)	95 (74.22)	53 (63.1)	.09	.12
To inspire me to eat healthy food	89 (42.0)	62 (48.4)	27 (32.1)	.02	.16
To learn more about health and wellbeing	129 (60.9)	74 (57.8)	55 (65.5)	.31	.08
To inspire me to change my body shape, tone, or size	94 (44.3)	57 (44.5)	37 (44.1)	1.0	.005
To inspire me to exercise to gain muscle/become stronger	99 (46.7)	60 (46.9)	39 (46.4)	1.0	.004
To inspire me to exercise or diet to lose weight	74 (34.9)	53 (41.4)	21 (25.0)	.02	.17
To inspire me to change my appearance	60 (28.3)	39 (30.5)	21 (25.0)	.44	.06
My friends like it/view it	29 (13.7)	18 (14.1)	11 (13.1)	1.0	.01
Other	20 (9.4)	13 (10.2)	7 (8.3)	.81	.03

Note.

[a]Total sample size differs due to structuring of survey questions and analyses. Data regarding frequency of fitness-related content access were reported by 247 participants. Those who chose "never" (n=30) when asked how often they view this type of content were

not prompted to answer questions about the types of content they access, how they engage with fitness-related content, or why they access it. Seven participants reported a non-binary (n=6) or not listed (n=1) gender identity and were excluded from analyses due to small sample size. Two non-binary or not-listed participants also selected "never" when asked how often they access fitness-related Instagram content, resulting in a sample size of 212 women and men.

[b]Trans-women were coded as women. Percentages reported are percent of women who selected corresponding viewing frequency or type of content.

[c]Trans-men were coded as men. Percentages reported are percent of men who selected corresponding viewing frequency or type of content.

[d]Statistical significance was determined if $p<.006$ after Bonferroni adjustment.

[e]Cramer's V indicate magnitude of differences between groups, where .1, .3, and .5 are weak, moderate, and strong effect sizes.

Table 4-7

Reasons for Accessing Fitness-Related Content by Racialized/Ethnicized Identity

Reasons for Accessing Fitness-Related Content, n(%)	Total (n=217)[a]	AAPI (n=57)[b]	Black or African American (n=34)	Hispanic (n=42)	Multiracial (n=15)	White (n=69)	*p*[c]	(Cramer's V)[d]
To inspire me to exercise or improve my health or wellbeing	150 (69.1)	43 (75.4)	23 (67.7)	31 (73.8)	10 (66.7)	43 (62.3)	.55	.12
To inspire me to eat healthy food	90 (41.5)	21 (36.8)	15 (44.1)	18 (42.9)	4 (26.7)	32 (46.4)	.63	.11
To learn more about health and wellbeing	130 (59.9)	38 (66.7)	20 (58.8)	23 (54.8)	8 (53.3)	41 (59.4)	.75	.09
To inspire me to change my body shape, tone, or size	94 (43.3)	31 (54.4)	18 (52.9)	18 (42.9)	7 (46.7)	20 (29.0)	.04	.21
To inspire me to exercise to gain muscle/become stronger	101 (46.5)	31 (54.4)	14 (41.2)	18 (42.9)	6 (40.0)	32 (46.4)	.69	.10
To inspire me to exercise or diet to lose weight	75 (34.6)	19 (33.3)	14 (41.2)	15 (35.7)	6 (40.0)	21 (30.4)	.83	.08

To inspire me to change my appearance	62 (28.6)	25 (43.9)	5 (14.7)	11 (26.2)	5 (33.3)	16 (23.2)	.03	.23
My friends like it/view it	31 (14.3)	8 (14.0)	2 (5.9)	6 (14.3)	3 (20.0)	12 (17.4)	.54	.12
Other	22 (10.1)	5 (8.8)	1 (2.9)	1 (2.4)	2 (13.3)	13 (18.8)	.03	.22

Note.
[a]Total sample sizes differ due to structuring of survey questions and analyses. Data regarding frequency of fitness-related content access were reported by 247 participants. Those who chose "never" (n=30) when asked how often they view this type of content were not prompted to answer questions about the types of content they access, how they engage with fitness-related content, or why they access it.
[b]AAPI=Asian American or Pacific Islander
[c]Statistical significance was determined if $p<.006$ after Bonferroni adjustment.
[d]Cramer's V indicates magnitude of differences between groups, where .1, .3, and .5 are weak, moderate, and strong effect sizes.

Chapter 5. Study Two

Fitness-Related Instagram Use and Physical Activity Participation: Examining the Roles of Physical Activity Information Seeking and Exercise Self-Schema

5.1 Introduction

Social media are widely used in the US (Pew Research Center, 2021b) and offer an extensive amount of user-generated content, including information regarding health behaviors like physical activity (PA) (Goodyear, Boardley, Chiou, Fenton, Makopoulou, et al., 2021; Vaterlaus et al., 2015). Content that is related to PA topics (hereafter: fitness-related content) exists widely on social media and accessing it has been related to increased PA participation (Duplaga, 2020; J. Lee et al., 2022; Tricas-Vidal et al., 2022). In addition, exercise intentions and motivation have been linked to fitness-related content viewing but seem to be driven by appearance ideals perpetuated on social media (Fatt et al., 2019; M. Wood & Pila, 2022). Emerging adults (aged 18 to 29 years) use social media the most of any other adult age group (Pew Research Center, 2021b) and are not participating in adequate amounts of PA for disease prevention (National Center for Health Statistics, 2019; US Department of Health and Human Services, 2018), which indicates a need for innovative and appropriate PA promotion strategies among this age group. The ease of information dissemination to large and heterogenous audiences is amplified on social media, making it a popular strategy for PA promotion programs (Gunther, Schleberger, & Pischke, 2021). However, investigations of fitness-related social media use and PA participation that take place outside of organized PA promotion

programming are still limited, leaving many behavioral and psychological factors that are potentially important for understanding this relationship left unexplored.

Physical Activity Information Seeking

Social media are cited as convenient sources of PA information among young people (Jong & Drummond, 2016; Raggatt et al., 2018; Vaterlaus et al., 2015) and are preferred over other sources of information like parents and health professionals (Ori & Berry, 2020). Active information seeking (hereafter: information seeking) is when individuals refer to a known source to obtain information, conduct an organized search, or ask premeditated questions (McKenzie, 2003). Information seeking is regarded as a crucial step in the facilitation of preventative health behaviors, like PA participation; that is, individuals may be motivated to make positive health changes by acquiring relevant information about the desired behavior change (Lambert & Loiselle, 2007). On social media, health information seekers have reported adapting their own self-management strategies based on others' strategies to produce desired behavior change (Fergie, Hilton, & Hunt, 2016). Therefore, PA information seeking is when individuals refer to a known source to find information that is regarding PA or exercise (Hirvonen et al., 2012) and may be an important strategy for facilitating regular PA participation.

Reasons for PA information seeking among emerging adults include general health enhancements and weight loss and muscle gain for appearance (Ori & Berry, 2020). On social media, PA information may be relayed via text or photos that represent health or fitness (Jong & Drummond, 2016), and users may seek information by

following pages relevant to specific health topics, joining virtual communities (Lim, Molenaar, Brennan, Reid, & McCaffrey, 2022), or searching for topics via hashtags (e.g., #fitness, #fitspo) (Carrotte et al., 2017). Activities such as these on social media may provide cue to action to participate in PA (J. Lee et al., 2022). Yet, those who do not seek PA information may still be presented with fitness-related content on social media due to its abundance and may engage differently with the content. For example, an individual who has considered beginning resistance training on a regular basis might search for #lifting on social media and watch users' videos that showcase a variety of exercises, form tips, and muscular physiques. This individual may be more inclined to begin resistance training compared to someone who did not seek out content relating to resistance training but was presented with the same videos. Investigating differences in the relationship between fitness-related social media use and PA participation among those who seek PA information compared to those who do not is necessary to determine whether PA information needs is a topic warranting further investigation to improve PA promotion efforts taking place on social media.

Exercise Self-Schema

Users may alter their content streams on social media by seeking out PA information, but content that is not actively sought may go unnoticed. Schemas, or knowledge structures that help individuals process information efficiently (Matthes, 2008), allow social media users to selectively process information when presented with copious amounts of content online. In other words, schemas help individuals select

information that they will remember and learn from. Generalizations about one's own behavior are termed self-schemas and guide the processing of self-relevant information (Markus, 1977). Self-schemas are formed when both behavioral and social meanings are fulfilled – one views the behavior as important and descriptive of themselves, and significant others show value of the given behavior (Markus, 1990; Stets & Burke, 2000). Therefore, an individual with an exercise self-schema views themselves as an "exerciser" and sees this as an important aspect of themselves (Kendzierski, 1988; Rhodes et al., 2016; Strachan & Whaley, 2013). Compared to those without an exercise self-schema, individuals with an exercise self-schema process PA-related information more quickly (Park & Kim, 2022), report greater exercise intentions and behavior (Banting et al., 2009; Estabrooks & Courneya, 1997; Kendzierski, 1988), and exercise at higher levels of subjective intensity (Beacham et al., 2011). Social media may provide ample opportunity for young people to develop, reinforce, or alter their exercise self-schema through presenting themselves as an "exerciser," evaluating others' exercise behavior, and experiencing the peers' affirmation of their exercise qualities through likes/comments. Further, individuals who have an exercise self-schema may be more likely to select and remember fitness-related content compared to other types of content that are less relevant to their existing self-schemas which may enhance the relationship between fitness-related content and their PA participation.

Emerging Adulthood

The role social media play in the development, reinforcement, or alteration of one's self-schema may be particularly relevant during emerging adulthood. During this developmentally distinct period, young people have a lack of supervision (relative to adolescence) and a lack of familial responsibility due to the absence of spouses and/or children. Therefore, emerging adults are able to explore aspects of their identity (Arnett, 2000) and establish health behaviors that are likely to continue across the lifespan (Nelson et al., 2008). Additionally, emerging adults are avid social media users, with Instagram cited as one of the most frequently used site among this age group (Pew Research Center, 2021b). Emerging adults use social media to present versions of themselves to their peers (Michikyan, Subrahmanyam, & Dennis, 2015) and likely acquire influential information regarding norms related to PA from individuals they follow on the sites. During this developmental period, there may be opportunity to use relevant social media – like Instagram – to influence PA participation among emerging adults by satisfying the needs of those who are seeking PA information and by aiding in the development or reinforcement of an exercise self-schema.

Future PA promotion programs that utilize social media would benefit from a better understanding of the relationship between fitness-related social media use and PA participation. To achieve this, behavioral and psychological concepts that are closely related to social media use must be further investigated. Evaluating whether PA information seeking plays a role in the relationship between fitness-related social media use and PA participation will begin to determine whether a need exists for social media-based PA promotion work that aims to satisfy emerging adults' PA information needs.

Further, determining whether the relationship between fitness-related social media use and PA participation differs between those with and without an exercise self-schema will indicate whether developing an exercise self-schema may be a promising strategy for PA promotion efforts that utilize fitness-related content to increase PA participation.

Therefore, the aims of the present study were to (1) determine whether fitness-related Instagram use is associated with PA participation controlling for gender and racialized/ethnicized identities, (2) explore whether both fitness-related Instagram use and PA information seeking are associated with PA participation controlling for gender and racialized/ethnicized identities, and (3) determine whether exercise self-schema moderates the relationship between fitness-related Instagram use and PA participation controlling for gender and racialized/ethnicized identities. First, it is expected that greater fitness-related Instagram use will be associated with greater PA participation. Second, individuals higher in fitness-related Instagram use and higher in PA information seeking are expected to participate in higher levels of PA. Finally, those who are exercise schematic will exhibit a strong relationship between fitness-related Instagram use and PA participation, whereas those who are not exercise schematic will show a weak relationship between fitness-related Instagram use and PA participation.

5.2 Method

Study Design and Participants

The present study was a cross-sectional, survey-based quantitative study administered through Qualtrics. Participants were required to be 18 to 29 years old, live

in the United States, speak English, have access to a computer or smartphone with reliable internet access, have no health conditions that prevent them from completing PA, and use Instagram for at least 30 minutes per day. Information about the study was distributed through email blasts (e.g., to local university students), social media (e.g., on personal account of first author and sent to content creators in direct messages), and physical fliers (e.g., at local university. The study was approved by the University of Minnesota's Institutional Review Board and informed consent was collected prior to survey administration. Targets for gender and racialized/ethnicized identities were set prior to recruitment (gender: 50% male; racialized/ethnicized identity: 40% White, 25% Black/African American, 25% Hispanic, and 10% other). There was difficulty meeting these targets, so recruitment procedures were shifted to better align. First, 97 participants were enrolled over the course of 4 months using the study information distribution techniques described previously and snowball sampling. Most participants from the first wave identified as women (74%) and White (78%). Prolific (prolific.co) – an online research platform with an established reputation of collecting honest, reliable, and replicable data (Peer et al., 2022) – was used in wave two of recruitment to enhance the diversity of this convenience sample. On Prolific, users (i.e., potential participants) are verified by submitting proof of identification and able to take online surveys for fair pay. Some information about users – including their date of birth, gender and racialized identity, and some social media use behaviors – was collected upon their enrollment in the site to ease the process of matching users to studies for which they are eligible.

As part of recruitment through Prolific, an initial online screening survey was made available to users that met the study eligibility requirements (aged 18 to 29, lived in US, spoke English), except for the use of Instagram for at least 30 minutes per day. To improve diversity in gender and racialized/ethnicized identities among the sample, an even distribution of men and women was requested and any Prolific users that identified only as White were not included. Prolific users who met the eligibility requirements (n=300) were prompted to complete the official study screener that included one item about Instagram for 30 minutes per day. The first 150 eligible participants were invited to take the full quantitative survey resulting in a final sample size of 247 (first wave: n=97, second wave: n=150) (Figure 1).

Measures

Demographic Variables. Participant age was calculated based on subtracting date of birth by date of survey completion for those recruited during wave one. Participants recruited from Prolific were asked to provide their age in a text box due to site restrictions regarding the collection of identifiable data.

Gender identity was assessed by asking participants to choose the response that best described them from a list of options: woman, man, transgender/trans woman, transgender/trans man, non-binary/non-conforming, not listed (with option to specify), and prefer not to reply (Institutional Review Board). Due to small sample sizes, those who identified as non-binary/non-conforming or not listed were collapsed into a single category. Further, trans women (n=1) were coded as women and trans men (n=1) were

coded as men. Final categories included women (coded as 1), men (coded as 2), and non-binary/not listed (coded as 3).

To describe the sample most accurately, racialized/ethnicized identity was assessed using many possible response options and the opportunity to choose more than one. Response options for race included Black/African American, American Indian or Alaska Native, Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, Other Asian, Native Hawaiian, Guamanian or Chamorro, Samoan, Other Pacific Islander, and White (US Department of Health and Human Services, 2011). Those who identified as American Indian or Alaska Native, Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, Other Asian, Native Hawaiian, Guamanian or Chamorro, Samoan, or Other Pacific Islander were coded as Asian American and Pacific Islander (AAPI). If a participant selected response options that were not collapsed into the same race category, they were coded as multiracial. For ethnicity, options included not Hispanic, Latino, or Spanish origin; Mexican, Mexican American, and Chicano; Puerto Rican; Cuban; and Spanish (US Department of Health and Human Services, 2011). If participants selected a Hispanic ethnicity, they were coded as Hispanic, regardless of other racial identities chosen. The only exception was those who selected American Indian or Alaskan Native, as these participants were reclassified as AAPI regardless of other race options selected following guidance from Johnston-Goodstar et al. (2022). Responses for race and ethnicity were combined to produce final categories that included AAPI (coded as 1), Black and/or African American (coded as 2), Hispanic (coded as 3), Multiracial (coded as 4), and White (coded as 5).

In addition to the screener question that inquired whether participants spent at least 30 minutes per day using Instagram, an item was included on the main survey that asked participants how much time they spent on Instagram per day. Response options included none, less than 5 minutes, about 15 minutes, about 30 minutes, about 1 hour, 1 to 2 hours, 3 to 4 hours, and 4+ hours (Fardouly et al., 2017). Responses were coded as 0, 0.8, 0.25, 0.5, 1.0, 1.5, 3.5, and 5 hours, respectively, to create a continuous variable for use in analysis.

Behavioral Variables. ***Fitness-Related Instagram Use.*** Participants were asked how often they access fitness-related content on Instagram per day. Response options included never, less than daily, 1 to 5 times daily, 5 to 9 times daily, and more than 10 times (DiBisceglie & Arigo, 2021). Due to sample distribution, all who accessed fitness-related content more than 5 times per day were collapsed into one category resulting in a 4-category variable for analysis where never, less than daily, 1 to 5 times daily, and 5+ times daily were coded as 0, 1, 2, and 3.

Physical Activity Participation. The Godin-Shepard leisure time PA questionnaire (Godin & Shephard, 1985) has been used to reliably categorize active adults (Amireault & Godin, 2015) and youth (Zelener & Schneider, 2016) into sufficiently active and insufficiently active categories. For the present study, a modified version of the Godin-Shepard leisure time PA questionnaire was used to assess PA engagement at varying intensities. Participants indicated how many hours per week they typically spent in light, moderate, and vigorous PA in an open response format. A

description of each intensity level and example activities were provided; for example, for moderate exercise, information included “not exhausting, e.g., walking briskly, biking without hills.” Any open responses that included a range were coded as the midpoint (e.g., 1-2 hours was coded as 1.5 hours). Moderate and vigorous activity were summed to indicate hours per week of moderate-to-vigorous PA (MVPA), whereas all three reported intensity amounts were summed to indicate hours per week of total PA.

Physical Activity Information Seeking. Two items were used to assess PA information seeking: “I look for information when I have a problem or a question about exercise or PA” and “I look for information, for example, on the Internet or ask questions about it from other people.” Participants indicated whether those statements described them on a scale from never to regularly and were coded as follows: never=1, rarely=2, sometimes=3, often=4, and regularly=5 (Cronbach’s α=.89) (Hirvonen et al., 2012). Item responses were summed and divided by two to create a scale variable for PA information seeking.

Exercise Self-Schema. A measure developed by Kendzierski (1988) was used to assess exercise self-schema. Participants were presented with a series of 6 statements (3 filler and 3 related to PA) and asked to rate the statements according to how descriptive and important they are to the participant’s self-image. Exercise-related statements included someone who exercises regularly, someone who keeps in shape, and someone who is physically active. For each statement, participants indicated whether it described them on a scale from 1 (does not describe them) to 11 (describes them). Response options

1 to 4, 5 to 7, and 8 to 11 were labelled as does not describe me, somewhat describes me, and describes me, respectively (Kendzierski, 1988). The statements were shown again, and using the same scale, participants indicated how important each phrase is to their self-image, regardless of whether it describes them. Therefore, response options 1 to 4, 5 to 7, and 8 to 11 were labelled as not important, somewhat important, and important, respectively (Kendzierski, 1988). Descriptiveness and importance items have been shown as having high internal consistency among a sample of college students (Cronbach's α=.92 and .89, respectively) (Estabrooks & Courneya, 1997).

Participants were coded as exerciser schematic, exerciser non-schematic, exerciser aschematic, or non-classifiable by following methods outlined by Kendzierski (1988). To be exerciser schematic, participants must rate 2 of the 3 descriptors as extremely self-descriptive ($\geq$8) and important ($\geq$8). To be exerciser non-schematic, participants must rate 2 of the 3 descriptors as extremely non-descriptive ($\leq$4) and extremely important (8 to 11). Exerciser aschematics rate 2 of the 3 descriptors in the middle range (5 to 7) and not extremely important ($\leq$7). Anyone who is remaining (i.e., does not meet the criteria for being an exerciser schematic, non-schematic, or aschematic) is coded as non-classifiable. Given the positive outcomes related to having an exercise self-schema, all models in the present study utilized a dichotomous variable for exercise self-schema that identified participants as either not having or having an exercise self-schema, coded as 0 and 1, respectively. Those who did not have an exercise self-schema included non-schematics, aschematics, and those who were non-classifiable.

Data Analysis

Descriptive statistics (means, standard deviations, frequencies) were assessed for age, gender, racialized/ethnicized identities, Instagram use, exercise self-schema, and PA information seeking. Pearson-Product correlations were calculated among fitness-related Instagram use, PA information seeking, and PA participation (MVPA and total). MVPA and total PA were multicollinear (r = .83; Table 5-10) and examined in separate regression analyses to test Aim 2. For Aim 3, separate multiple regression analyses were used (one for those who have an exercise self-schema and one for those who do not) to determine the relationship between fitness-related Instagram use and PA information seeking with PA participation. Gender and racialized/ethnicized identities were used as covariates in all regression analyses.

Four regression analyses each were conducted using MVPA and total PA participation as separate dependent variables (see Figure 2 on subsequent pages). Models 1 and 2 examined the relationship between fitness-related Instagram use and PA participation. Models 3a and 3b examined the concurrent relationships and interaction between fitness-related Instagram use and PA information seeking with PA participation. Model 3a examined these relationships for those who identified with an exercise self-schema, whereas model 3b examined these relationships for those who did not identify with an exercise self-schema.

Regression analyses were tested for statistical significance ($p < .05$) and standardized regression coefficients (β) signified the strength of association between the

independent variables and PA participation. Variance explained in PA participation (R^2) represents the effect size, with estimates of 1 to 8%, 9 to 24%, and ≥25% indicating small, medium, and large effects, respectively (J. Cohen, 1988). All models were run using SAS OnDemand.

5.3 Results

Sample Description

Participants were 23.7±3.5 years old, on average, and most identified as women (59%). Racialized/ethnicized identities of the sample included AAPI (28%), Black and/or African American (17%), Hispanic (19%), Multiracial (7%), and White (30%); 35.6% of the total sample were BIPOC women. Participants spent 1.3±1.0 hours per day on Instagram, with only 12% reporting that they never access fitness-related content. Most accessed fitness-related content 1 to 5 times per day (43%). PA information seeking was common, with a sample mean of 3.67±0.92 on a scale from 1 to 5, where a higher value indicated more regular PA information seeking. Most participants did not have an exercise self-schema (68%); however, 32% of the sample was classified as exerciser schematic (see Table 5-8). Most exercise schematics were women (59%), identified as White (35%), and access fitness-related Instagram content 1 to 5 times daily (55%). Out of those who were not exercise schematic, most were women (59%), identified as AAPI (31%), and access fitness-related Instagram content less than daily (41%) (see Table 5-9).

Regression Analyses for Aims 2 and 3

Model 1 tested whether fitness-related Instagram use was associated with PA participation while including gender and racialized/ethnicized identities as covariates. Fitness-related Instagram use was significantly associated with both MVPA (β=.31; $p<.0001$) and total PA (β=.20; $p=.002$) with medium ($R^2=.10$) and small ($R^2=.04$) effect sizes, respectively (see Table 5-11). Gender and racialized/ethnicized identity were also significantly associated with MVPA, but with small effect sizes (gender: $R^2=.02$; racialized/ethnicized identity $R^2=.03$). Racialized/ethnicized identity was significantly associated with total PA with a small effect size ($R^2=.05$).

Model 2 tested whether fitness-related Instagram use and PA information seeking were concurrently associated with PA participation while controlling for gender and racialized/ethnicized identities, as well as testing for the interaction between fitness-related Instagram use and PA information seeking regarding PA participation. Fitness-related Instagram use was statistically associated with MVPA (β=.28; $p=.0001$) with a small effect size ($R^2=.08$) but was not associated with total PA ($p>.05$) (see Table 5-11). PA information seeking was not significantly associated with either MVPA or total PA ($p>.05$) with small effect sizes (MVPA: $R^2=.03$; total PA: $R^2=.02$). The interaction effect was not statistically significant. Gender and racialized/ethnicized identities were significantly associated with MVPA (gender: $p=.03$; race/ethnicity: $p=.006$) with small effect sizes ($R^2=.02$ and $R^2=.03$, respectively).

Model 3 tested whether exercise self-schema moderated the relationship between fitness-related Instagram use and PA participation while controlling for gender and

racialized/ethnicized identities. Model 3a tested this relationship among exercise schematics, whereas model 3b tested this relationship among those who were not exercise schematic. For exerciser schematics, fitness-related Instagram use was not statistically associated with their PA participation ($p>.05$), whereas for those who were not exercise schematic, fitness-related Instagram use was significantly associated with both their MVPA ($\beta=.31$; $p<.0001$) and total PA ($\beta=.20$; $p=.007$) with medium ($R^2=.10$) and small ($R^2=.04$) effect sizes respectively (see Table 5-12). Gender and racialized/ethnicized identities were not statistically related to MVPA and total PA for exercise schematics, whereas they were significantly associated with MVPA and total PA for exercise non-schematics. Those who identified as women and as White demonstrated a stronger relationship between fitness-related Instagram use and PA participation; these effect sizes were small ($R^2<.09$).

5.4 Discussion

The aims of the present study were to (1) determine whether fitness-related Instagram use is associated with PA participation, (2) explore whether both fitness-related Instagram use and PA information seeking are associated with PA participation, and (3) determine whether exercise self-schema moderates the relationship between fitness-related Instagram use and PA participation – all while controlling for gender and racialized/ethnicized identities. Higher fitness-related Instagram use was associated with higher MVPA and total PA participation in some models, yet PA information seeking was not associated with either MVPA or total PA. Additionally, for those who had an exercise self-schema, higher fitness-related Instagram use was not associated with greater

PA participation. Conversely, among those without an exercise self-schema, greater fitness-related Instagram use was associated with participating in more MVPA and total PA.

Accessing fitness-related content on Instagram was associated with greater PA participation in the present study. This finding corroborates other studies that reported that accessing/following more fitness-related content on social media is associated with being more active (Duplaga, 2020; J. Lee et al., 2022; Liu et al., 2021). Young people report many potentially helpful aspects of fitness-related social media use including opportunities to engage with other exercisers (Jong & Drummond, 2016), learn about PA and health (Raggatt et al., 2018), and increase their intentions to exercise (Durau et al., 2022). Additionally, fitness-related Instagram use was more strongly associated with MVPA than total PA participation, which may indicate that portrayals of PA participation on Instagram might be at more vigorous intensities possibly inspiring users to participate in structured activities that are at heightened intensities rather than unstructured PA of varied intensities. The present study extended much of the current literature by focusing on a specific platform (Instagram) and recruiting a diverse sample – two important steps to continue learning about the relationship between fitness-related social media use and PA participation (Bekalu, Sato, & Viswanath, 2023; DiBisceglie & Arigo, 2021).

PA information seeking was explored as a potential factor that could be associated with PA participation and/or interact with the relationship between fitness-related Instagram use and PA participation. There was no evidence of a statistically meaningful

relationship between PA information seeking and PA participation in the present study, nor was there an interaction between fitness-related Instagram use and PA information seeking regarding PA participation. This could be because most of the sample in the present study were seeking PA information at least sometimes (80%), indicating that PA information seeking may be a common activity among emerging adults, even those who do not participate in regular PA. It could also be that emerging adults are seeking PA information while attempting a change in their exercise behavior (Hirvonen et al., 2012), but not finding appropriate or adequate information that they may apply to their own lives to successfully increase their participation in PA. More investigation into different types of PA information seekers, including characterizing their specific information needs related to PA and common strategies they use to access information on social media, is likely to benefit health communicators who aim to reach emerging adults through social media.

Developmental theory was used in the decision to target emerging adults while investigating exercise self-schema (defined as a person's PA-related information and belief system about the self that guides future exercise behavior). During emerging adulthood, individuals are likely to explore identities, focus on themselves due to lack of children and spouses, and feel optimistic about the opportunity to change their life course (Arnett, 2000). Exercise self-schemas may be particularly important to investigate among this age group, as social media play a role in young people's identity formation (Yang et al., 2017) and norm development relating to PA-related topics (Jong & Drummond, 2016). Additionally, individuals with an exercise self-schema are more physically active

(Banting et al., 2009) and exercise at a higher intensity (Beacham et al., 2011). In the present study, exercise self-schema was found to moderate the relationship between fitness-related Instagram use and PA participation. Namely, for those with an exercise self-schema, higher fitness-related Instagram use was not associated with higher PA participation. Yet, for those without an exercise self-schema, greater fitness-related Instagram use was associated with greater PA participation (both MVPA and total). This might be because individuals with an exercise self-schema may rely less on fitness-related content to motivate their participation in PA. Regular exercise may be valued and/or enjoyed by those with an exercise self-schema, regardless of their fitness-related Instagram use. Conversely, those without an exercise self-schema may source inspiration or motivation to be active from fitness-related Instagram content. Previous qualitative work has reported young people's views of fitness-related content serving as a source of motivation to be active (Raggatt et al., 2018). This finding suggests that fitness-related Instagram content could serve as a mechanism to promote PA among those without an exercise self-schema. However, PA promotion professionals must be cautious of possible negative effects of fitness-related content consumption like body ideal internalization (Fardouly, Willburger, & Vartanian, 2018) and body dissatisfaction (Robinson et al., 2017). More investigation is needed regarding effective PA promotion strategies on social media that lessen the risk of such negative effects. If an exercise self-schema is developed (possibly through regular PA participation) a lower reliance on fitness-related social media content for motivation to be active may result.

Among those who were not exercise schematic, participants who identified as women and/or as White demonstrated a stronger relationship between fitness-related Instagram use and PA participation compared to men and racially diverse participants. This might be because thin, White women are commonly portrayed as exercisers on social media according to past work (Hinz, Mulgrew, De Regt, & Lovell, 2021; Marika Tiggemann & Zaccardo, 2018). Therefore, individuals who identify as women and/or as White may relate with fitness-related content more compared with men and/or BIPOC individuals, regardless of not being schematic for exercise. This could, in turn, impact one's motivation and/or inspiration to be active that is sourced from fitness-related content. Further, if young people are viewing such portrayals regularly and find that they do not reflect those characteristics, their perception of who participates in PA may shift. Reconstructing the narrative around the qualities of a "typical" exerciser might be helpful for future PA promotion efforts. In addition, future work should prioritize the recruitment of diverse samples as much of the existing work examining the relationship between social media use and PA behavior recruits White samples (or does not report racialized/ethnicized identities). Differences in fitness-related social media use between gender and racialized/ethnicized groups likely exist and would be helpful to future PA promotion efforts that use social media.

Strengths and Limitations

The results and implications of the present study should be considered in the context of its strengths and limitations. The recruitment of a sample that is diverse in

gender and racialized/ethnicized identities is a primary strength of this study, as fitness-related Instagram use may differ by such characteristics (DiBisceglie & Arigo, 2021). Additionally, investigating the role that PA information seeking and exercise self-schema may play in the relationship between fitness-related Instagram use and PA participation allows us to begin understanding the underlying mechanisms through which social media may influence young people's health behavior. A primary limitation of this study is its cross-sectional nature, as causal relationships between Instagram use, PA information seeking, self-schema, and PA participation could not be explored. Additionally, all behavioral variables were self-reported which provides opportunities for response bias. This was likely the case with the data collected regarding PA participation, as individuals tend to overestimate their PA levels (Schaller, Rudolf, Dejonghe, Grieben, & Froboese, 2016). However, this was mitigated using a modified, validated response measure and winsorizing the data to eliminate extreme outliers. Finally, the present study did not assess commonly researched risks of accessing fitness-related content (e.g., body dissatisfaction), however, study findings were conceptualized with this evidence in mind.

5.5 Conclusion

Fitness-related Instagram use had a weak to moderate association with PA participation among emerging adults, indicating that Instagram may be a social media platform worth exploring for future PA promotion strategies. Findings, particularly in conjunction with previous research, show that the relationship between fitness-related Instagram use and PA participation is complex, and future work should consider exploring several questions to expand on the present study. First, what other behavioral,

psychological, or sociocultural factors may need to be considered when examining fitness-related social media use and PA behavior? Second, what mechanisms underlie the development, reinforcement, or alteration of one's self-concept that relate to social media behavior? Finally, how might PA promotion practitioners design interventions that utilize Instagram to deliver information to young people and facilitate the development of exercise-related self-concepts while being cognizant of risks associated with fitness-related social media use? The exploration of these questions will further our ability to utilize social media to promote PA participation among young people.

Table 5-8

Sample Characteristics

Demographic Variables	Participants (N=247)
Age, mean ± SD (years)	23.7±3.5
Gender identity, n (%)[a]	
Woman	146 (59.1)
Man	94 (38.1)
Non-Binary/Not Listed	7 (2.83)
Racialized/ethnicized identity, n (%)	
AAPI	70 (28.3)
Black and/or African American	41 (16.6)
Hispanic	46 (18.6)
Multiracial	16 (6.5)
White	74 (30.0)
Behavioral Variables	
PA participation (hours/week)	
MVPA	5.6±4.4
Total	11.8±9.3
Instagram behavior (hours/day), mean ± SD	
Instagram use	1.3±1.0
Frequency of fitness-related IG use, n (%)	
Never	30 (12.2)
Less than daily	82 (33.2)
1-5 times daily	105 (42.5)
5+ times daily	30 (12.2)
PA information seeking, mean ± SD[b]	3.67±0.92
Exercise self-schema, n (%)	
Exerciser schematic	78 (31.8)
Not exerciser schematic	167 (68.2)
Non-classifiable	110 (44.9)
Exerciser aschematic	45 (18.4)
Exerciser non-schematic	12 (4.9)

Note. PA = Physical activity; AAPI = Asian American or Pacific Islander; IG = Instagram
[a]Trans women were coded as women (n=1) and trans men were coded as men (n=1).
[b]Two items were used to survey participants about how often they search for information about PA (Hirvonen et al., 2012). Answer choices were coded as never=1, rarely=2, sometimes=3, often=4, and regularly=5. Responses were summed and divided by two to create a scale variable for PA information seeking.

Table 5-9

Sample Characteristics by Exercise Self-Schema

Variables	Exercise Schematic (n=78)	Not Exercise Schematic (n=167)
Gender identity, n (%)		
Woman	46 (58.9)	99 (59.3)
Man	32 (41.0)	61 (36.5)
Non-binary/Not listed	0 (0.0)	7 (4.2)
Racialized/ethnicized identity, n (%)		
AAPI	18 (23.1)	51 (30.5)
Black/African American	12 (15.4)	29 (17.4)
Hispanic	15 (19. 2)	31 (18.6)
Multiracial	6 (7.7)	10 (6.0)
White	27 (34.6)	46 (27.5)
Fitness-related IG use, n (%)		
Never	4 (5.1)	26 (15.6)
Less than daily	13 (16.7)	69 (41.3)
1-5 times daily	43 (55.1)	60 (35.9)
5+ times daily	18 (23.1)	12 (7.2)
PA participation, mean ± SD		
MVPA	8.2±4.1	4.4±4.0
Total PA	14.3±9.4	10.7±9.0

Note. AAPI = Asian American or Pacific Islander; PA = physical activity participation; MVPA = moderate-to-vigorous physical activity participation; IG = Instagram; SD = standard deviation. The “not exercise schematic” group includes participants who were exercise non-schematics, exercise aschematics, and non-classifiable.

Table 5-10

Correlations and Descriptive Statistics for Study Variables (N=247)

Variable	1	2	3	4
1. Fitness-related Instagram use				
2. PA information seeking	.39			
3. MVPA (hours/week)	.33	.26		
4. Total PA (hours/week)	.24	.18	.83	
N	247	246	247	246
M	2.54	3.67	5.58	11.81
SD	0.86	0.92	4.39	9.28

Note. MVPA = moderate-to-vigorous physical activity; PA = physical activity; *M* = mean; *SD* = standard deviation. Correlations are presented in the lower diagonal. All correlations ≥ |0.20| are significant at $p<.05$.

Table 5-11

Multiple Regression Analysis for Fitness-Related Instagram Use and Physical Activity Information Seeking

Variables	MVPA		Total PA	
	Model 1 (n=246) β (SE)	Model 2 (n=246) β (SE)	Model 1 (n=246) β (SE)	Model 2 (n=245) β (SE)
Fitness-related IG use	.31 (.31)*	.28 (1.1)	.20 (.68)*	.19 (2.41)
Gender identity	.14 (.48)*	.13 (.48)*	.10 (1.05)	.09 (1.05)
Racialized/ethnicized identity	.17 (.17)*	.17 (.17)*	.23 (.36)*	.23 (.37)*
PA information seeking	--	.16 (.73)	--	.14 (1.59)
Fitness-related IG use*PA information seeking	--	-.02 (.29)	--	-.05 (.64)
R^2	.16	.18	.11	.12

Note. MVPA = moderate-to-vigorous physical activity; PA = physical activity; IG = Instagram; SE = standard error of unstandardized estimates. All β are standardized estimates. Model 1 includes only fitness-related Instagram use and control variables (gender and racialized/ethnicized identity) as independent variables. Model 2 includes fitness-related Instagram use, control variables, PA information seeking, and interaction term (fitness-related Instagram use*PA information seeking) as independent variables. *p<.05

Table 5-12

Multiple Regression Analysis for Fitness-Related Instagram Use and Exercise Self-Schema

Variables	MVPA		Total PA	
	Model 3a (n=78)	Model 3b (n=167)	Model 3a (n=77)	Model 3b (n=167)
	β (SE)	β (SE)	β (SE)	β (SE)
Fitness-related IG use	.05 (.63)	.31 (.34)*	.09 (1.45)	.20 (.80)*
Gender identity	.03 (1.03)	.23 (.49)*	-.04 (2.33)	.16 (1.15)*
Racialized/ethnicized identity	.04 (.32)	.22 (.18)*	.08 (.72)	.29 (.42)*
R^2	.01	.20	.02	.15

Note. MVPA = moderate-to-vigorous physical activity; PA = physical activity; IG = Instagram; SE = standard error of unstandardized estimates. All β are standardized estimates. Model 3a includes only participants who were classified as exercise schematic and examines fitness-related Instagram use, gender identity, and racialized/ethnicized identity as independent variables. Model 3b includes only participants who were classified as not exercise schematic (aschematic, non-schematic, and unclassified) and examines fitness-related Instagram use, gender identity, and racialized/ethnicized identity as independent variables. *p<.05

Chapter 6. Study Three

Emerging Adults' Experiences Accessing Fitness-Related Instagram Content: Exploring Use Practices, Evaluations, and Perceived Influences on Physical Activity

6.1 Introduction

Social media have been reported as a primary source of health information for young people (Jong & Drummond, 2016; Vaterlaus et al., 2015) which has resulted in more investigation regarding social media use and health behaviors, like physical activity (PA). Researchers have conceptualized social media use as both a problematic behavior and as a normal behavior, where studies that define social media use as problematic often do not assess positive health and well-being outcomes and instead focus on the detrimental factors associated with social media use (Bekalu et al., 2023). Much of the work that examines social media use regarding PA- or fitness-related topics has measured detrimental outcomes associated with social media use and reported risks including greater body dissatisfaction (Prichard et al., 2020; M. Tiggemann & Anderberg, 2020), physical appearance comparisons (Fatt et al., 2019; Robinson et al., 2017), and decreased mood (Raggatt et al., 2018; M. Tiggemann & Zaccardo, 2015). Others have reported that young people access and use health-related social media content critically and may apply it to their lives to improve their own PA behavior (Goodyear et al., 2019; Vaterlaus et al., 2015). A better understanding of young people's experiences accessing fitness-related social media content, including factors that may contribute to positive health and well-being, is needed. Characterizing young people's access patterns and critical

considerations while interacting with fitness-related content will provide some insight into young people's experiences online.

Fitness-related content (often referred to as "fitspiration") is abundant on image-based social media sites, like Instagram, where search terms #fitness and #exercise yield 527 million and 68 million posts, respectively, as of October 2023. Regular participation in PA is important, given its extensive benefits leading to improvements in one's physical and mental health (Piercy et al., 2018), and accessing fitness-related social media content has been found to be associated with meeting PA guidelines in past work (Duplaga, 2020; J. Lee et al., 2022; Tricas-Vidal et al., 2022). Reasons for this may include the convenient access to workouts and PA-related information young people report social media provide (Raggatt et al., 2018; Vaterlaus et al., 2015). However, as social media allow virtually unregulated content creation, concerns regarding information quality exist and more investigation regarding young people's thoughts and strategies for coping with misinformation on social media is needed.

Key players in the distribution of fitness-related information on social media are influencers, which are individuals who accrue large followings on social media sites, engage with their followers in a digital space, and create monetized content through partnering with brands and selling products using ads (Abidin, 2015). Given this, the present study refers to all producers of content as content creators under the assumption that all influencers are content creators, but not all content creators are influencers. Fitness-related content creators that are commonly accessed by young people include

personal trainers, athletes, and everyday (i.e., ‘ordinary’) people (Raggatt et al., 2018). Past work shows that young people who access fitness-related content are critical consumers who consider qualities like relatability, authenticity, and credibility when using social media. Namely, users are aware of the wide claims made by content creators to capture users' attention (e.g., ‘get ripped fast!’) (Goodyear & Quennerstedt, 2020), inaccurate information provided about exercise (Vaterlaus et al., 2015), unrealistic physiques and fitness goals often portrayed, and the potential for underqualified individuals to give advice about exercise/health (Raggatt et al., 2018). The source of the content is also considered by users; that is, content created by celebrities is not viewed as credible, whereas content created by relatable individuals, qualified experts, and athletes is considered more credible (Goodyear et al., 2019; Raggatt et al., 2018).

Although research investigating young people’s critical thinking about social media content is emerging and relatively limited, some have suggested a possibility of its protective nature against the harms of social media use like having a damaging effect on body image (Paxton, McLean, & Rodgers, 2022). Such critical thinking about social media content is an indicator of one’s social media literacy, which is theorized to include critically analyzing motivations behind content on social media and identifying unrealistic qualities of appearance-based images (Paxton et al., 2022). Other scholars suggest the necessity of young peoples’ understanding that the utility of sites like Instagram is self-expression rather than using other individuals’ posts as a prescriptive criteria for living life (Newman, 2015). Social media literacy programs have been piloted

among adolescents with some success (Gordon et al., 2020; Paxton et al., 2022; Rodgers, McLean, & Paxton, 2019), indicating a possibility for improving social media literacy among young people and mitigating the harmful effects of engaging with fitness-related social media content.

Social media have been reported as having potential to shape the perspectives of users, especially regarding ideas related to health, such as the idea that "looking" healthy (i.e., mirroring idealized body shapes) is the same as being healthy (Jong & Drummond, 2016; Raggatt et al., 2018). Individuals may be particularly susceptible to such influence during emerging adulthood (18 to 29 years) due to the dramatic changes that may occur regarding one's identity and worldviews. Emerging adults use social media at the highest rate of any other adult age group – with Instagram as the most commonly used site apart from YouTube (Pew Research Center, 2021b) – and desire opportunities to connect with others and express themselves, which Instagram provides (Newman, 2015). Emerging adulthood has also been recognized as a critical time for behavioral intervention as a myriad of health behaviors become established during this time (Nelson et al., 2008). Given the tendencies of emerging adults to practice identity exploration, use social media for self-expression and connection, and establish important health behaviors, little is known regarding strategies emerging adults use to engage with and critically evaluate fitness-related content online and, given the proposed risks of engaging with such content, more research is warranted among this age group.

Shortcomings of Existing Research

Although researchers have begun investigating elements of fitness-related social media use and health behaviors, many gaps in knowledge exist. Many researchers have focused primarily on the negative health outcomes associated with fitness-related social media use (Cataldo et al., 2021; Dignard & Jarry, 2021; Rounds & Stutts, 2021), possibly missing positive outcomes that could be associated with this behavior. Others have recruited convenience samples of college students (Vaterlaus et al., 2015) and explored relationships from a largely quantitative perspective (J. Lee et al., 2022; Raggatt et al., 2018), which is a difficult task given the lack of validated tools for measuring social media use. It is important to investigate outcomes associated with fitness-related social media use that extend ill well-being, recruit samples that offer some diversity regarding relevant personal characteristics like education, and conduct meaningful qualitative inquiry to establish context quantitative data could not provide.

Assessing emerging adults' experiences engaging with fitness-related Instagram content will allow us to better understand how Instagram is being used as a medium for health education, namely, how emerging adults access and evaluate fitness-related content. This understanding will help us to not only create impactful PA promotion content that is engaging to emerging adult audiences but may also further our knowledge of social media literacy which could play a role in improving programs that exist to maximize the benefits and minimize the risks of social media. Therefore, the present study sought to conduct 3-4 qualitative focus groups with 15-20 emerging adults who engage in daily fitness-related Instagram use to gain deeper understanding of their

perceptions of relevant content and its influence on PA behavior. The following research questions were explored.

RQ#1: What use practices (e.g., liking, commenting, and sharing) do emerging adults engage in regarding fitness-related Instagram content?

RQ#2: What are their perceptions of content relatability, credibility, and authenticity?

RQ#3: What influence, if any, do they believe fitness-related Instagram content has on their exercise behavior?

6.2 Method

Research Design

The present study is the qualitative portion of a mixed-method study that explored fitness-related Instagram use among a diverse group of emerging adults (N=247). An in-depth analysis of participants' fitness-related Instagram use (e.g., use frequency, types of content accessed, engagement activities, and reasons for accessing fitness-related content) is reported elsewhere (Chapter 4). Additionally, the exploration of associations between participants' fitness-related Instagram use and PA participation is reported elsewhere (Chapter 5). To be eligible for the parent study, participants had to speak English, live in the US, have no conditions that kept them from participating in PA, use Instagram for at least 30 minutes per day, and be aged 18 to 29 years. Participants were recruited in two waves. The first wave of participants was recruited using email blasts

and physical fliers (n=97); however, due to the homogenous nature of the sample regarding gender and racialized/ethnicized identities, the second wave of participants (n=150) were recruited using Prolific (an online research platform; Prolific.co). Prolific has been established as a trustworthy and valid recruitment platform relative to other similar tools (Peer et al., 2022).

Purposive Sampling

Participants in the present study are a subset of the parent study who met an additional set of inclusion criteria based on their frequency of accessing fitness-related Instagram content (viewing content at least once daily) and their willingness to be audio and video recorded. Daily fitness-related Instagram use was required to be eligible to attend a focus group to ensure that participants were engaging with this type of content regularly. Regular fitness-related Instagram use was important for establishing a common behavior between participants in focus groups and to ensure participants were able to answer questions about their use practices, evaluations, and perceptions of fitness-related content.

Participants

Four focus groups and one interview were conducted, resulting in 17 total participants in the present study. The smallest focus group was conducted with three participants, while the largest focus group included six participants. The individual interview was originally scheduled as a focus group but revised due to low attendance.

After 100 participants had completed the quantitative survey for the parent study, the process of determining focus group eligibility began. Any participants who consented to audio and video recording and accessed fitness-related Instagram use at least daily were invited to share their availability to participate in a virtual focus group. Participants varied in gender and racialized/ethnicized identity with 14 identifying as women (82.4%) and five as having at least one Black, Indigenous, or Person of Color (BIPOC) identity (29.4%). Most participants had at least some college education. Participants spent 1.3±0.7 hours per day on Instagram, on average and most accessed fitness-related Instagram content 1 to 5 times per day (n=11; 64.7%). Table 6-12 presents demographic information of the sample and other selected health and social media participation data for added context.

Focus Group Guide

A semi-structured focus group guide was employed and consisted of five sections, including questions and follow up probes: (1) an introductory section that included the moderator (SMG) operationally defining fitness-related Instagram use, showing a series of examples of fitness-related content (described below), and posing a warm up question (‘what type of fitness-related content do you like to follow?’), (2) a section dedicated to assessing participants’ use practices on Instagram (‘how do you engage with fitness-related content? and ‘other than on your main feed, how do you find this content?’), (3) a section dedicated to assessing participants’ evaluation of fitness-related content (‘what do you consider when you are viewing fitness-related content?’), (4) a section that assessed

participants' perceived behavioral influence of fitness-related content ('how does viewing this type of content change your behavior?'), and (5) a concluding statement that restated the purpose of the focus group and requested any final thoughts before ending. The focus group guide can be viewed in more detail by reviewing Table 6-13.

Selecting examples of fitness-related content. Examples of fitness-related Instagram content that were shown in section one of the focus groups were chosen by SMG and a research assistant and were intended to ensure understanding of the term "fitness-related content" and to serve as a point of reference for participants. Different types of fitness-related content were chosen guided by categories described in Raggatt et al. (2018) and included everyday (i.e., 'normal') people, personal trainers, professional athletes, and fitness challenges. SMG and the research assistant intentionally chose portrayals of individuals doing various activities with different physical characteristics (e.g., body size, gender and race presentation) and both photo and video examples. Following procedures outlined by (Kane et al., 2013), SMG and the research assistant independently chose content that aligned with each category of fitness-related content and came together to discuss each selection and choose "exemplar" content to represent each category (Appendix B).

Data Collection

Approval of all processes and procedures was obtained from the University of Minnesota's Institutional Review Board prior to recruitment. All participants consented to be a part of the study; additionally, all participants who were invited to focus groups

consented to audio and video recording. Focus groups were conducted online as virtual focus groups have been shown as more cost-effective and less burdensome for participants (Irani, 2019). This method also allowed for fewer geographical sampling restrictions which aided in participant recruitment.

Participants shared the times they were willing to participate in a focus group using an online scheduling tool, Doodle (doodle.com). SMG selected the best time and sent participants a confirmation email with details about how to access the focus group. SMG moderated all focus groups; only SMG and the participants were in attendance. Each focus group was 60 minutes long, and all attendees received a $35 electronic gift card.

Data Analysis

Transcripts were auto generated by Zoom and cleaned by the primary investigator (Stephanie M. Grace) and a research assistant (Amanda L. Folk). SMG and ALF also analyzed the data. We analyzed one transcript at a time and coded each transcript independently before meeting to discuss assigned codes. We used Microsoft Word to complete preliminary coding to ease the reconciliation process. SMG entered codes in NVivo after all five transcripts had been reconciled. We determined themes using a deductive approach that relied on existing literature and aligned with focus group topics. These themes included participants' use practices on Instagram (Raggatt et al., 2018), evaluations of fitness-related content (particularly authenticity (Reade, 2020) and credibility (Goodyear et al., 2019)), and perceptions of the influence fitness-related

content may have on PA participation (Vaterlaus et al., 2015). SMG and ALF determined codes using an inductive approach by identifying and grouping similar ideas within the data (Creswell, 1998). These codes were adapted by identifying patterns in ideas that arose in each transcript and were reevaluated once all data were coded.

To increase the trustworthiness of the results, both reflexivity and member checking were employed. To practice reflexivity, SMG and ALF considered factors that may play a role in their analysis and reporting of the data. SMG and ALF are both White, cisgender women who conduct research on using social media as a health promotion tool. Additionally, SMG is an emerging adult (aged 18-29). SMG and ALF aim to center health equity in their research regarding social media and believe utilizing accessible information sources (like social media) has the potential to reach populations that are often missed by traditional health promotion approaches. Additionally, both SMG and ALF engage in regular fitness-related social media use. During the coding process, SMG and ALF documented thoughts about codes they were unsure of while coding independently. These thoughts were discussed as a team and used to practice reflexivity. SMG and ALF have collaborated on qualitative projects in the past and do not hesitate to share conflicting thoughts.

Member checking is a practice where researchers take interpretations of data back to participants and provide them an opportunity to share any thoughts or disagreements regarding the results (Creswell & Miller, 2000). An infographic was forwarded to the participants that detailed the aim of the study and resulting themes and codes in plain

language (see Appendix A). Participants were given one week to respond with any information they felt was inaccurate or missing from the graphic. No participants responded with conflicting or missing information, however 3 participants replied with confirmations of results.

6.3 Results

Data from focus groups were coded into three overarching topics based on research aims (use practices on Instagram, evaluations of fitness-related content, and perceived influence on PA behavior) and many codes and subcodes relating to those topics (Figure 3).

Use Practices on Instagram

Participants were asked to discuss how they engage with fitness-related content on Instagram. Emerging ideas included (1) by sharing, saving, and searching for content and (2) by curating their content stream.

Sharing, Saving, and Searching. Participants discussed their engagement with fitness-related content, specifically through sharing, saving, and searching for content. When sharing fitness-related content, participants either shared existing content (created by other Instagram users) or posted their own content. Sharing content with friends in the messaging feature of the app was reported as a way of providing support for PA both by offering “helpful posts that could help them along their way” if their friend is “wanting to get into working out,” and by encouraging their participation in challenges they have

viewed on Instagram. Participants posting their own fitness-related content to personal pages was less common.

Instagram allows users to privately save posts to their account and assign them to folders, enabling easy access to posts at a later timepoint. Many participants discussed using this save feature to keep workouts they intended to try later. While many mentioned this process, a few participants noted that they often do not revisit posts they have saved.

> Participant #1 (female, aged 22, American Indian or Alaskan Native, bachelor's degree): I feel like, if I find like exercises, I'll save the Instagram posts and then, if I really like a lot of their content, then I'll follow them […] I usually just save it for whenever I need it.
>
> Participant #2 (male, aged 23, White, bachelor's degree): Yeah, I also do that a lot, and I don't, [chuckles] I don't know how much I actually go back and view those saved post. But I definitely make that initial step of hitting the save button, and you know, planning on going back and engaging with it.
>
> Participant #3 (female, aged 20, White, some college with no degree): Yeah, I definitely do the same, like I very rarely will like posts on Instagram. I usually just like, save them with the plan of going back later, but I usually don't. [chuckles]

Participants view some content as useful and want to apply it to their own routines. However, some participants found returning to the content was difficult and perhaps unrealistic.

Instagram also enables participants to search for content by account name or hashtag. Participants mentioned searching for fitness-related content using this feature to find applicable workout information and/or content to which they relate. One participant provided examples of terms they would use to find specific workouts, including “ab workout, 20 minutes, gym.” In a session with only 1 attendee, the participant shared their desire to find “others who have had weight loss surgery” by utilizing the search feature on Instagram. Searching for content on Instagram may be an important use practice when emerging adults are seeking content that meets a particular need. In these cases, participants attempted to meet their needs relating to information and social support by searching Instagram for content relating to a workout that fit the users’ time allotment and goals and for finding potentially relatable content regarding a specific physical characteristic (having had weight loss surgery). Perceived relatability is discussed in more detail in a later section.

Curating Content Stream. Participants discussed actions they take to try to shift their Instagram feeds to avoid content they feel may negatively affect them. These actions included being selective about who they follow/unfollow and being mindful of how much time they spend viewing content.

Participants commonly mentioned that they are “picky” and “very, very particular” about what they follow on Instagram. One participant who disclosed their history of having an eating disorder cited nutrition- and appearance-focused content as particularly harmful and shared that they are “pretty quick to unfollow people for that stuff.” Another participant shared that fitness-related content “started to skew what [they] felt was healthy in terms of diet and body and activity level,” leading them to “steer away” from harmful content. Participants are aware that fitness-related content can be harmful to one’s body image and/or perceptions of health and they cope by unfollowing or avoiding content. Yet, every participant reported viewing fitness-related content daily indicating that they are regular fitness-related content consumers regardless of the possibility to be negatively impacted by it.

The algorithm – or a process Instagram follows when determining what content to share to users and in what order – was discussed as a factor to consider when avoiding or filtering content. A participant who mentioned “actively trying to not follow more fitness influencers and unfollow [them] more regularly” to “get it off [their] feed” was prompted by SMG to discuss how the algorithm played a role in this. The participant noted that they try to “swipe really fast past [the content]” since the algorithm “takes into account how long it’s on your screen.” They also noted that they limit engagement with the unwanted content by not “liking” it and by unfollowing some accounts to decrease the number of fitness-related content creators they follow. “Working against the system” in

this way led this participant to believe that they were able to make a difference in the content they were offered on Instagram.

Evaluation of Fitness-Related Content

Most time was spent in focus groups discussing how participants evaluated fitness-related content, including their perceptions of content qualities like relatability, credibility, and authenticity. We discussed characteristics of content that participants used as signals to evaluate these qualities, and how important these qualities were to the participants.

Is it Relatable? Participants were asked to discuss what they consider when viewing fitness-related content. In some focus groups, relatability with the content creator emerged as a theme; in others, participants were probed to discuss how relatability matters when viewing fitness-related content. Subthemes included (1) identifying with content creators, and (2) aspirational relatability.

Identifying with Content Creators. Participants discussed that having shared characteristics with content creators leads to enhanced feelings of relatability; these characteristics included education, age, and physical appearance. One participant mentioned that that they "like to be around people that are similar to [them]," which was a sentiment that was repeated by others. Content preferences seemed to shift as participants gained education and aged; their preferences reflected seeing others of their own educational background and age.

Participants spoke about similarities regarding their age and education with the content creators they liked to follow. One participant shared that they "tend to follow" people with similar educational backgrounds because "[they] understand [the content] better," seeming to refer to a shift in the content they follow to a "more research space" on Instagram after earning their degree. Regarding content creators' ages, many participants noted that their preferences have changed as they have aged. This may be because they no longer relate to the "18- to 19-year-old fitness people," and that "as [they've] gotten older, the people [they] follow have gotten older, too."

Many participants mentioned physical appearance when discussing relatability with content creators. One participant stated that they "follow mid-size to plus size women within the weightlifting […] community, because their bodies look like [the participant's body]." Appearance also served as an indicator to participants about content creators' physical ability and usefulness of their content. Stark differences in their own physique compared to the content creators' (e.g., petite frame vs. bodybuilder) led to participants' assuming they could not "keep up with them." Conversely, participants assumed that content creators with similar physiques would share content that would be applicable to them.

Some participants expressed a sense of affirmation from content produced by creators with physical similarities. One participant mentioned that they felt validated from fitness-related content that featured individuals with similar body types; they stated "because I've never been thin […] like even at my like most fit self […] so, I think I look

for that kind of validation in the content, is like someone who has my body type and […] kind of shows me like, 'hey, it's still healthy to have this body type.'" This quote demonstrates how participants equate appearance with health and provides some evidence that the idea of being thin is the same as being healthy might be shifting for some young people.

Physical appearance relating to racialized identity and enhanced relatability emerged in two sessions: one focus group and the interview. A participant who identified as Indian shared that they "realized nobody that [they] follow is brown." However, another participant who identified as Black mentioned that they seek content created by "other Black women" due to a lack of "representation within the fitness community." Other participants who identified as persons of color did not mention how racialized identities impacted their perceptions of fitness-related content.

Aspirational Relatability. Some participants mentioned following content creators because they wanted to be more like them, particularly regarding their body shape. One participant stated that they follow "people who just kind of have the traits that [they are] looking for in fitness." They continued to provide an example: "I've always wanted like a big round ass, that's like my thing. [laughs] So, I look for girls who have like what I would emulate, and then I kind of like, look at their workouts." A participant in a different focus group shared a similar sentiment more reluctantly, "… as much as I wanna say it doesn't influence me, […] if I see like an influencer post, […] and their physique is really good, like it does draw you in for a second like 'oh, like what are they

doing?"" However, this participant was aware that changes in appearance resulting from lifestyle behaviors differ widely between individuals; they added, "…which is unfortunate, because I think it's unrealistic […] even if you copied what they did, you might not look the same." Both participants saw content creators' physiques as more ideal than their own and turned to the content published by them to try to achieve that physique. The second participant was aware of the likelihood that following the content creator's advice would not result in a similar physique, yet they did not state that it would prevent them from applying the advice to their own life.

Is it Credible? Participants were asked about the credibility of the fitness-related Instagram content they access, and how they determine its credibility. Major signals of credibility (or lack thereof) were (1) content creators' expertise, education, and credentials, (2) content creators' intentions perceived by the viewer, and (3) the promotion of inaccurate or false information.

Expertise, Education, and Credentials. Participants discussed content creators' education or certifications as indicators of more credible sources. Some participants noted that they dislike it when content creators provide advice about health topics that fall outside of their area of expertise, particularly when they are "promoting specific workouts or supplements or dietary advice when they maybe have no nutrition background." Many participants found that it was important that content creators showed some sort of evidence of education in a particular area; some participants discussed the

importance of content creators staying within their area of expertise when providing advice to their followers.

In one focus group, some participants warned that credentials do not always mean the information shared is credible:

> Moderator: […] how do you determine whether the content or the account is credible?
>
> Participant #1 (male, age 28, White, bachelor's degree): That's a tough one to answer, because there's also a lot of people that have good credentials, but they're still full of it and are putting out bad information that can get people, you know, to be unhealthy or get them injured. So that's kind of a hard thing to do […] But I've also been like in "fitness" [air quotes] industry for well over a decade, and kind of know how to weed out information, now.
>
> Participant #2 (female, age 26, White, master's degree): I was gonna say the exact same thing [laughs]. I think it helps just because, like I have education on the topic. So, like I can, yeah, like, <Participant #1> said, like weed things out a little more. But, at first glance, I do look at like a bio, and then usually they'll put some sort of credentials there and then give them maybe a chance."

The idea that even credentialed content creators may share less credible information on Instagram did not emerge in other focus groups. This demonstrates that some exceptionally critical users may go beyond content creators' bios (i.e., short for

biography, a brief self-description on users' profile pages) and evaluate their individual posts for credibility.

Promotion of Inaccurate or False Information. Participants were skeptical of information they accessed on Instagram about fitness topics and seemed to rely on their social media literacy and knowledge about health topics to identify misinformation. Participants mentioned several characteristics of content they were wary of when viewing fitness-related Instagram content, including monetized content, fitness fads, wide claims, and the use of personal experiences. Participants tolerated monetized content in limited quantities, but if paid partnerships became most of the content produced on a given account, it caused them to "lose some trust in [the content creator]."

Promoting fitness fads, like the "saran wrap method" and "detox[es]" was another sign content creators may be sharing misinformation, in addition to making wide claims and using anecdotal evidence. One participant, who "avoids accounts" that make wide claims such as "get shredded fast," demonstrated health literacy by stating "that's just not how it works […] that's not how you build muscle or get fit." This participant understands that building muscle and improving physical fitness is a time intensive process. Another participant spoke about content creators' use of anecdotal evidence to market fitness strategies to their followers: "I've had to unfollow accounts before, because I feel like they'll put their personal experience in and share it as if they're trying to share like, say it'll work for everybody, and I feel like sometimes that can be a little misleading for what would actually work for you." In each of these examples,

participants used signals to determine that accounts are sharing misinformation about fitness and decided to limit (or discontinue) engagement with it.

Is it Authentic? Participants spoke about their perceptions of content creators' authenticity (i.e., how "real" or genuine content creators seemed to participants). Participants felt content creators were most authentic when they shared less polished images of them working hard during/after bouts of exercise and when they share common difficulties while remining committed to exercise. Participants were wary of edited and "very posed photos" that do not reflect how content creators "would look if you saw them in real life." Some participants spoke about enjoying content that displayed individuals working hard and their appearance reflecting that: "[…] it's like videos of them mid-set […] these work outs are like intense, and you got 3 people around you, and everybody looks terrible – like I love that! [enthusiastically]." Participants also spoke about the need for transparency regarding the "ups and downs" of exercising regularly to avoid an unrealistic perception of how a commitment to exercise looks. One participant stated, "And if you never talk about ups and downs, and all you're sharing is the positive, like [people are] going to go into it like expecting like, 'oh, like this is going to be a smooth up like we're going to be super successful. It's going to be all progress all the time.'"

Perceived Influence on Exercise Behavior. ***Trying New Activities.*** Many participants spoke about how engaging with fitness-related content gives them ideas for new ways to be active. Participants provided examples like hiking and cross training during the COVID-19 pandemic. One participant shared that they follow many content

creators who are active “outside of the gym,” and noted that these accounts have helped them “[get] really into hiking over the past couple of years.” A participant in another focus group shared that fitness-related content was useful to help them diversify their training during the COVID-19 pandemic to avoid the boredom of doing the same activities repeatedly.

> Participant #1 (female, aged 29, White, doctoral degree): “…especially during Covid […] I was just trying to keep up with running, […] so I got so bored of just like going out on my daily normal runs that I found some accounts that actually would post like some running workouts, and so I would just like do those instead. So, it wasn’t making me work out more, but it was helping me just like change things up so that I wasn't so bored of what I was doing.”

Accessing fitness-related Instagram content seemed to help participants either take up new activities or diversify activities in which they already participated. However, participants also expressed difficulty executing new activities due to lack of access to equipment or getting overwhelmed by options offered on social media.

Motivation or Inspiration. Perceptions regarding whether fitness-related Instagram content motivated PA participation were mixed. Some participants perceived that fitness-related Instagram content motivated them to be active, whether to ‘finish out [their] goals for the day’ or ‘try harder to be a better version of [themselves].’ Other participants discussed how comparisons with others on Instagram could motivate their PA behavior for better or for worse.

> Participant #1 (male, age 28, White, bachelor's degree): …Used to, it would give me like inspiration or motivation […] it'd be like "oh, man, it it'd be nice to look like that." But you know, as you get older, […] I'm happy with myself. But then also there's still like that old flame in me that you know sees a friend that's competing, and does well, and I'm like, "maybe I should, you know, step back on the platform or something…"
>
> Participant #2 (female, age 26, White, master's degree): Yeah, I, just that also made me think of like the content may motivate me to do something, but the motivation may not always be good. Like, maybe it's motivation to go out and run, cause I know I'll feel good, or it's really nice day out, that's one thing, or it might motivate me to go out and run because I feel shitty about myself, like "oh, I don't look like them," or "I'm not as successful or productive as them. So I need to go do this so I can try and feel better about myself," which usually doesn't happen. But yeah, even if it does motivate me to change my behavior, the motivation is not always good.

When the topic of social comparison arose in another focus group, a participant noted that the "toxic mentality can sometimes be used as a good thing." They noted that it can get to an "unhealthy level" but "everyone uses it in a different way." Participants are aware that they make comparisons with others at times but seem to be affected by it in different ways.

Others noted that they already were motivated to participate in PA and that fitness-related content was not needed to motivate them. Rather, they shared that their interest in PA and sport changed what they viewed on social media.

> Moderator: How does viewing this type of content change your behavior?
>
> Participant #1: I think, for me it's kind of hard to determine, because I think so much of my life outside of like social media, even growing up, was geared towards like sports or physical activity. […] I know that it will bring me joy. […] I know it definitely influences my behavior, but I think […] my behavior influences what I like to look at for entertainment purposes.
>
> Moderator: […] So, you're saying that physical activity kind of already has a place in your life and what you like to do kind of shapes your experience […] on Instagram?
>
> Participant #1 (female, age 20, White, some college with no degree): Yeah, I would say so. And like, I will follow people who just post about fitness in their life. But don't really usually hop on fitness trends, or I'll sometimes save a workout, but it's not typically what I would do if I would go to a gym or something I would do something else if that makes sense.
>
> Moderator: […] Other thoughts?
>
> Participant #2 (female, age 22, White, bachelor's degree): I agree with what [Participant #1] was saying, obviously before, Instagram, sports and physical

> activity were a part of my life. So, I feel like I have the motivation to go to the gym. […] I typically don't need Instagram […] to motivate me to go there.

Participants may engage with fitness-related content regularly because of an existing interest in PA-related topics. Fitness-related content may serve as a supplemental source of information or entertainment for these individuals, but their motivation to participate in PA may come from more intrinsic sources like valuing PA.

6.4 Discussion

Social media are becoming increasingly popular sources of PA-related information for young people despite common risks associated with regular social media use regarding fitness-related topics (Cataldo et al., 2021). Instagram is a widely used social media site among emerging adults (Pew Research Center, 2021b) and has been a platform of interest for scholars investigating risks of fitness-related social media use (Fatt et al., 2019; Prichard et al., 2020; M. Tiggemann & Anderberg, 2020). However, an investigation into young people's experiences online that is not exclusively considering negative well-being outcomes is needed to fully consider the potential for positive health outcomes associated with fitness-related Instagram use and the strategies young people use to mitigate potential harm. The findings have implications regarding social media and health literacy that apply to the emerging adults in the US who access fitness-related Instagram content.

Participants in the present study were aware of the risks of engaging with fitness-related Instagram content, yet still regularly accessed such content while incorporating

strategies to avoid continued exposure to harmful content. Participants discussed warning signs for potentially harmful content which included heavy editing/posing, the discussion of unrealistic appearance or dietary ideals, a lack of credibility, and promotion of false information. Some of these warning signs recognized by participants align with past work that has investigated characteristics of harmful fitness-related Instagram content, including photo editing, posing in a way that emphasizes body features (e.g., arching back), and the promotion of disordered dietary ideals (Curtis, Prichard, Gosse, Stankevicius, & Maher, 2023). Participants relied on their existing media literacy to identify unrealistic imagery and signs of poor credibility (like a lack of credentials and evidence to back claims); yet they relied on their health literacy to identify unrealistic behaviors related to fitness, false information relating to broad health claims (e.g., "Get ripped fast!"), and fitness fads. To avoid continued exposure to potentially harmful content, participants unfollowed some content creators and attempted to minimize their time spent viewing content they deem harmful to offset the algorithm's influence, as they perceive time spent on a post is a factor Instagram's algorithm uses to predict future engagement (although little is known about whether this is effective). Unfollowing has been a strategy shared by others to protect themselves from experiencing negative affect and detrimental thoughts about their bodies (Langnes & Walseth, 2023) and to avoid content creators with whom users no longer relate due to skepticism of their authenticity (Reade, 2020). Bolstering young people's social media and health literacy, in addition to

teaching strategies to limit exposure of harmful fitness-related content that do not restrict social media use, may be areas of research warranting exploration.

Participants reported being mindful of the credibility of information shared with them by fitness-related content creators on Instagram. They relied on strategies like searching for evidence of education or training in a health-related field. When content creators had relevant credentials, were transparent about them, and avoided giving advice that fell outside of their area of expertise, they were viewed as more credible among participants. Researchers recently developed an audit tool for finding fitness-related accounts that do not share potentially harmful content and found that over half of the credible accounts were created by someone with a health-related qualification (Curtis et al., 2023). This finding indicates that participants' strategy of looking for content creators' credentials to find credible content is a promising one. However, other strategies that extend identifying credentials should be investigated, as 2 participants in the present study shared that having relevant credentials does not ensure the sharing of accurate information.

Participants enjoyed viewing content produced by creators they perceived as authentic and they expressed feelings of validation from seeing realistic images of individuals exercising and remaining committed to daily physical activity. Content creators were viewed as more authentic if they shared realistic portrayals of them being active, having off-days, and/or discussed the difficulty of remaining consistent with exercise behavior. Such portrayals lead to feelings of validation for participants who felt

less-than-perfect in their relationship with exercise. This finding may relate to previous work that showed young people often followed “everyday” or “ordinary” people when accessing fitness-related content (Raggatt et al., 2018). Raggatt et al. (2018) found that participants related with “everyday” people and expected to face similar challenges, which led to participants feeling they could achieve similar results as the “ordinary” individuals they follow online. The showcasing of more realistic, less idealized imagery may reduce the risk of appearance and lifestyle comparison that often faces young people who view fitness-related Instagram content. Additionally, content that portrays the difficulties of remaining consistent with PA participation may normalize the experience and potentially lessen feelings of guilt and/or discouragement that could accompany it.

Outside of credibility and authenticity, focus group discussions explored participants’ perceptions of relatability with fitness-related Instagram content creators. Participants clearly expressed their desire to follow content creators with whom they share characteristics (e.g., age, education, physique), yet they also followed creators with whom they hoped to be more similar. Participant perceptions of relatability were largely based on assumptions resulting from content creators’ physical characteristics. Characteristics like age, body size, and physique were used by participants to infer content creators’ physical ability and exercise goals. Participants also seemed to use this information to decide whether content may be useful and accessible for them to apply to their own lives. These assumptions are likely driven by the common misconception that looking healthy is the same as being healthy, where looking healthy is having a physique

that mirrors idealized bodies (Raggatt et al., 2018). Some participants seemed to admire qualities of content creators and hoped following along with their content might lead to the development of similar qualities. Notably, content that challenged fitness norms (e.g., women weightlifting, body weight/shape inclusive imagery), seemed to validate participants' self-perceptions as active and healthy people and inspired them to continue exercising. This was especially prevalent among participants who reported following content featuring mid- to plus-sized content creators, which supports past experimental work that reported exposure to weight-inclusive imagery leads to greater exercise intentions (M. Wood & Pila, 2022).

Some emerging adults in the present study reported being inspired by fitness-related Instagram content to increase their PA, while others reported that the content did not motivate them to be more active but rather helped them try new activities and/or diversify the activities they already do. Some participants felt that they already valued PA regardless of their engagement with fitness-related content. These individuals did not feel the content motivated their behavior, but rather reflected their interest in fitness and helped them learn ways to diversify their activity. This finding differs from past work that investigated fitness-related YouTube videos; viewing relevant content on YouTube only motivated individuals who were already physically active (Sokolova & Perez, 2021). Other participants found that fitness-related Instagram content motivated them to be active, but it may not be "positive" sources of motivation, which typically referred to feeling guilty for not being active or comparing oneself to others on Instagram. Others

have reported increases in appearance-based exercise motivation after viewing fitness-related social media content (Fatt et al., 2019). More investigation is needed regarding young people's resulting motivation (of lack thereof) when viewing fitness-related content, however special attention should be paid to content quality, especially regarding the relatability, credibility, and authenticity of content creators.

Study findings show the importance of further investigating how researchers and practitioners may empower emerging adults to continue using Instagram to conveniently access relevant and credible PA information, feel validated by realistic portrayals of individuals who prioritize PA, and be inspired to take up new activities or diversify current ones. Yet, there are clear inconsistencies regarding credibility on Instagram (Curtis et al., 2023) and serious risks associated with fitness-related social media use (Cataldo et al., 2021). Therefore, it is imperative that young people's social media literacy is bolstered to decipher credible versus non-credible information and identify potentially harmful content. Further, improving young people's health literacy is likely to provide a basis for detecting false PA information like making wide health claims ("get ripped fast"). Future research should continue to identify qualities of potentially harmful fitness-related content, identify strategies for limiting interaction with harmful content and for coping with it when one is exposed, and consider how media literacy may be intertwined with health literacy throughout emerging adulthood.

Strengths and Limitations

The findings of the present study should be considered within the context of its strengths and limitations. First, the inclusion of emerging adults who regularly accessed fitness-related Instagram content (defined as at least once per day) is a strength, as participants would have recent experiences of engaging with such content to draw on for discussions. Additionally, recruiting emerging adults of differing educational backgrounds rather than including only college students was a study strength as education may relate to social media and health literacy. For limitations, the study sample was lacking some diversity regarding gender and racialized/ethnicized identities, as most participants identified as women or as White. A larger number of men and/or people of color might have allowed for focus group recruitment by identity group and more resulting discussion about how fitness-related Instagram use relates to social identities.

6.5 Conclusion

Emerging adults who regularly access fitness-related content on Instagram are aware of the potential harms of content that portrays unrealistic physiques and unhealthy behaviors, yet they still cite using the content to diversify their physical activities and (for some) to motivate more consistent PA participation. Emerging adults seek content to which they can relate, particularly regarding content creators' body types and activities. Credibility and authenticity were perceived to be greater if content creators had proof of credentials, shared realistic portrayals of exercise, and avoided spreading misinformation and photo editing. Both social media literacy and health literacy allowed participants to determine credible and authentic content that was relevant to their lives. Future research should continue to investigate health outcomes related to fitness-related Instagram use that extend negative health and wellbeing. Additionally, the exploration of strategies for mitigating potential harm that do not include reducing social media sites is needed. Finally, opportunities to bolster young peoples' social media literacy and health literacy simultaneously should be explored. Future health promotion practitioners may consider partnering with health literacy organizations to develop materials on how to identify and avoid misinformation about health behaviors on social media, debunking of unhealthy PA trends popularized among young people through targeted media campaigns, and confronting inaccurate assumptions about "fit" vs "unfit" bodies in health and physical education classes.

Table 6-13

Sample Characteristics

Demographic Variables	Participants (n=17)
Age, mean ± SD (years)	23.3±3.4
Gender identity, n (%)	
Woman	14 (82.4)
Man	3 (17.7)
Racialized/ethnicized identity, n (%)	
AAPI	2 (11.8)
Black and/or African American	1 (5.9)
Hispanic	1 (5.9)
Multiracial	1 (5.9)
White	12 (70.6)
Education, n (%)	
High school diploma	1 (5.9)
Some college with no degree	6 (35.3)
Bachelor's degree	6 (35.3)
Master's degree	3 (17.7)
Doctoral or professional degree	1 (5.9)
Behavioral Variables	
PA participation (hours/week), mean±SD	
MVPA	7.7±4.3
Total	15.4±8.2
Instagram Behavior (hours/day), mean±SD	
Instagram use	1.3±0.7
Frequency of fitness-related Instagram use, n (%)	
1-5 times daily	11 (64.7)
5+ times daily	6 (35.3)

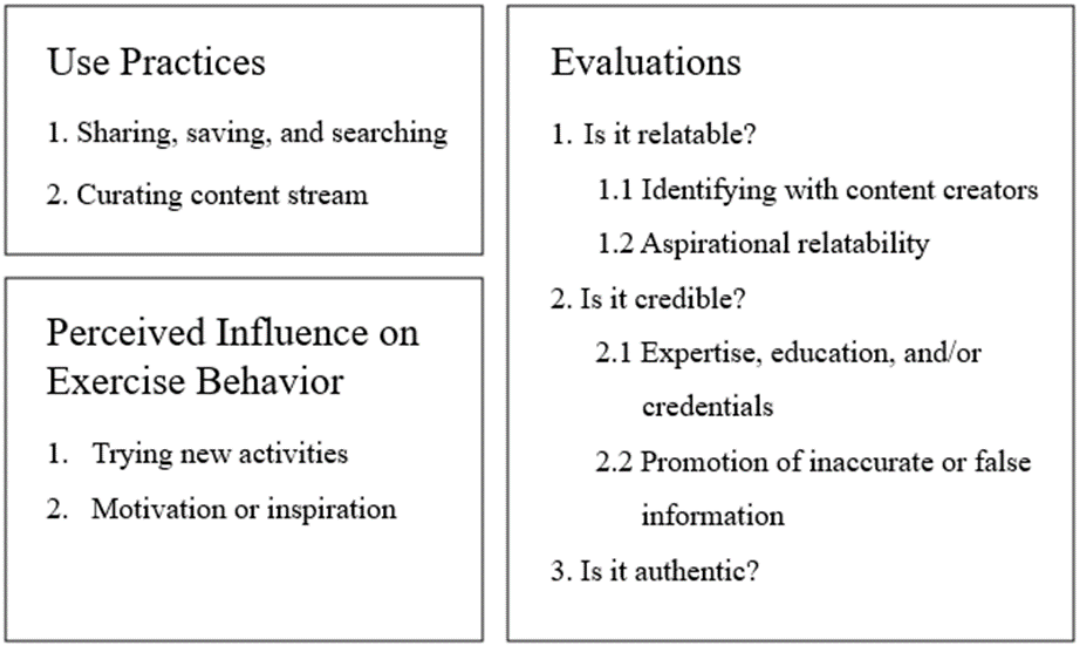
Note. MVPA = moderate-to-vigorous physical activity; PA = physical activity.

Table 6-14

Focus Group Guide

Questions by Section	Probes
Section 1 – Introduction and Definition	
Fitness-related content definition and examples	Would you consider these examples as fitness-related content?
What types of fitness-related content do you like to follow?	Personal trainers? Athletes? Ordinary people?
What are some things you like about the accounts you follow?	What is something that might make you want to unfollow an account?
Section 2 – Use Practices	
How do you engage with fitness-related content?	How often do you share fitness-related content with your peers on Instagram?
Other than viewing it on your main feed, how do you find fitness-related content?	How do you seek it out?
Section 3 – Evaluation of Content	
What do you consider while you are viewing fitness-related content?	How do you consider… • Authenticity (or how "real" the content is)? • How credible the information is? How do your own identities play a role in the content you view?
Section 4 – Perceived Behavioral Influence	
How does viewing this type of content change your behavior?	How does it change your motivation to be active? How does it change your purchasing behavior?
Section 5 – Restate Aim and Conclude Discussion	
We want to know what young people (like you) think about fitness-related content on Instagram and how it might relate to their behavior. Do you have anything else to add that I left out? Is there anything you wanted to say during this discussion that you didn't get a chance to say?	

Figure 3. Themes and Subthemes



Chapter 7. Conclusion

Driven by three specific aims (see section 1.3) this dissertation aimed to add a more comprehensive understanding of fitness-related Instagram use among young people to improve PA promotion programming that utilizes social media. First, quantitative data were collected regarding participants' fitness-related Instagram use, PA participation, PA information seeking, and exercise self-schema. Second, focus groups were conducted among a purposive sample of participants who engaged in daily fitness-related Instagram use to learn more about their use patterns and perceptions of content. This chapter outlines three adjustments made during the research process; summarizes results of specific aims 1, 2, and 3; and provides an overarching conclusion for this dissertation.

7.1 Minor Changes to Dissertation

Minor adjustments from the original research proposal were made during the process of conducting this dissertation study, either due to difficulties with recruitment or lessons learned during statistical analysis. All changes are reflected in Chapters 2 and 3 of this dissertation.

First, the original proposal stated that various recruitment methods would be relied on, including sharing information about the study using social media (Instagram and Facebook) and personal and community channels, while prioritizing content creators that self-identify as LGBTQ+ and/or BIPOC. These strategies were intended to reach the target sample size (N=200) and to bolster the recruitment of participants diverse in gender (a priori target of 50% male) and racialized/ethnicized identities (a priori targets

of 25% Black/African American, 25% Hispanic, 40% White, and 10% other). Ninety-seven participants were recruited using the proposed methods; however, it was apparent after 5 months of recruitment that demographic targets would not be met. Therefore, Prolific – an online research platform – was used to recruit an additional 150 participants who identified as BIPOC and were more evenly distributed regarding gender (50% men, 50% women). The resulting sample was 247 participants with approximately 38% men, 17% Black/African American, 19% Hispanic, 30% White, and 34% other (which includes both Asian American and Pacific Islander and Multiracial individuals). Although some recruitment targets were not met, the sample is more varied than many other existing works that examine fitness-related social media use among mostly White women (Vaterlaus et al., 2015) and possibly some works that do not report racialized/ethnicized identities (DiBisceglie & Arigo, 2021; Goodyear et al., 2019; Raggatt et al., 2018). Additionally, recruitment numbers allowed us to explore some relationships by identity domain, which would not have been possible if the recruitment strategy had not been adapted to include the use of Prolific.

Second, the original proposal stated chi-square tests would be used to investigate whether fitness-related Instagram use differed between gender and racialized/ethnicized groups (Specific Aim 1b). However, a series of Fisher's exact tests were run instead of chi-square tests, as the Fisher's exact test better accounts for cells with small sample sizes (Kim, 2017), which was the result from the slightly less than diverse sample that was initially proposed.

Third, the original analysis plan for Specific Aim 2 stated that a mediation analysis would be conducted to test whether exercise self-schema mediated the relationship between fitness-related Instagram use and PA participation. However, during data analysis it became clear that the model was just identified (i.e., it lacked measurement parameters), so a mediation analysis was not possible. Instead, a multiple regression analysis was conducted to determine whether having (or not having) an exercise self-schema was associated with the relationship between fitness-related Instagram use and PA participation.

7.2 Summary of Specific Aims

Studies aligning with specific aims 1, 2, and 3 were discussed in Chapters 4, 5, and 6, respectively. Results from each specific aim will be discussed briefly.

Specific Aim 1: a) Describe fitness-related Instagram use and PA levels among a diverse sample of emerging adults. b) Explore whether fitness-related Instagram use differs by gender and racialized identity. Hypotheses for specific aim 1 were tested through the assessment of four components of fitness-related Instagram use (frequency of use, types of content accessed, engagement activities, and reasons for access). A series of Fisher's exact tests allowed the exploration of differences in fitness-related Instagram use between gender and racialized/ethnicized identities. Results are discussed in detail in Chapter 4. Study findings highlight the possibility of using Instagram to promote PA due to the popularity of fitness-related Instagram use across gender and racialized/ethnicized identity groups.

Across identity groups, following "everyday" (i.e., ordinary) people and passively engaging with content (e.g., liking or scrolling through posts) was common. Additionally, accessing content for inspiration to be active and learn more about health were frequently reported reasons for following fitness-related content. Study findings indicated the need for tailored approaches when using Instagram to promote PA, as women reported less active engagement with content compared to men, Black/African American participants accessed fitness challenges more than other minoritized racial/ethnic groups, and both Black/African American and AAPI participants reported accessing fitness-related content to inspire changes in their appearance. Future work should attempt to measure passive engagement, match content interests, and avoid appearance-centered content, especially when promoting PA among individuals with minoritized racial/ethnic identities.

Specific Aim 2: a) To determine whether fitness-related Instagram use is associated with PA participation controlling for gender and racialized/ethnicized identities. **b)** To explore whether fitness-related Instagram use and PA information seeking are associated with PA participation controlling for gender and racialized/ethnicized identities. **c)** To determine whether exercise self-schema moderates the relationship between fitness-related Instagram use and PA participation controlling for gender and racialized/ethnicized identities. Hypotheses for specific aim 2 were tested by conducting standardized multiple regression analyses.

Results are discussed in detail in Chapter 5. Study findings highlight the complex relationship between fitness-related Instagram use and PA participation, particularly when considering the role of exercise self-schema.

Greater fitness-related Instagram use was associated with more PA participation in nearly all models tested, although effect sizes were small. PA information seeking was not associated with either MVPA or total PA, nor was there an interaction between PA information seeking and fitness-related Instagram use. For exerciser schematics, fitness-related Instagram use was not related to their PA participation, whereas for those without an exercise self-schema, higher fitness-related Instagram use was associated with greater PA participation (both MVPA and total). Findings indicate fitness-related Instagram use may facilitate PA participation among those without an exercise self-schema.

Specific Aim 3: To conduct 3-4 qualitative focus groups with 15-20 emerging adults who engage in daily fitness-related Instagram use to gain deeper understanding of their perceptions of relevant content and its influence on PA behavior. Topics that were explored during focus groups included participants' use practices and evaluations of fitness-related Instagram content, in addition to their perceptions of how this content may change their PA behavior. A sub-sample of participants who reported daily fitness-related Instagram use were invited to focus groups. Results are described in detail in Chapter 6. Study findings highlight emerging adults' regular engagement with fitness-related Instagram content despite their acknowledgement of possible harms associated with content consumption. Participants relied on their social media and health literacy to

identify signals of potentially harmful content and utilize strategies they thought would lessen exposure without decreasing social media use overall. Fitness-related content did not seem to motivate PA participation among those who already valued/enjoyed PA but did serve as a motivator to diversify their physical activities.

7.3 Strengths and Limitations

These dissertation findings should be considered in the context of the study's strengths and limitations. A primary study strength was the prioritization of recruiting a sample diverse in gender and racialized/ethnicized identities. Although recruitment methods were adjusted during the study process, sample size and diversity greatly improved after utilizing Prolific to recruit additional participants which allowed for the exploration of differences between identity domains in aim 1. Another strength of this dissertation was its mixed-method and interdisciplinary approach. The combination of quantitative and qualitative data collection allowed for a more comprehensive look at fitness-related Instagram use. Additionally, incorporating findings from kinesiology, public health, and media studies lead to a more well-rounded approach to investigating fitness-related Instagram use and may allow this dissertations' findings to be applicable to a wider audience of researchers and practitioners.

A primary limitation includes the convenience sample of emerging adults; first by using SMG's social networks and second by using Prolific when primary recruitment methods were not as successful as expected. However, steps were taken to mitigate the effects of this limitation including the exclusion of Prolific participants who identified as

only White and the request of a 50% male and female gender distribution. Additionally, the decision to recruit emerging adults was driven by developmental theory regarding the distinct qualities of emerging adulthood. The cross-sectional nature is another primary limitation, given that only associations between fitness-related Instagram use and PA participation could be determined rather than causation. Finally, self-report measures were used for all Instagram use measures, which are not validated but have been used in past research. No validated measures were identified to examine this behavior.

7.4 Conclusion

This dissertation adds to current literature that investigates health-related social media use in two major ways: first, by offering practical recommendations to improve PA promotion practices that involve social media and, second, by identifying relevant factors that are important to consider when investigating how social media may be used to support PA participation among young people.

Practical recommendations for improving social media-based PA promotion strategies include tailoring content to match the target populations' interests and information needs, partnering with existing content creators that produce credible and authentic content, and offering opportunities for passive engagement. These recommendations reflect health promotion principles for using social media (Stellefson et al., 2020) and common use practices reported by participants who access fitness-related content. To improve these recommendations, future work must investigate motivations for accessing fitness-related content among purposeful samples in need of PA support

such as gender minorities, people with disabilities, and individuals with racialized/ethnicized identities. In addition, validated scales for general and health-related social media use must be developed to better assess use practices among target populations.

In addition to providing practical recommendations for bettering the use of social media as a PA promotion tool, this dissertation identified factors that should be considered when investigating how fitness-related social media use may support the PA participation of young people. By examining outcomes associated with fitness-related Instagram use that extend negative well-being, this dissertation aimed to broaden perspectives about fitness-related social media use and its implications (Bekalu et al., 2023; Goodyear et al., 2019). Findings indicated that accessing fitness-related content on Instagram was common across identity groups and facilitated some aspects of PA behavior, like trying new activities and validating PA experiences for those who are less often represented (e.g., women who weightlift, active people of various body shapes/sizes). Factors such as the type of content one is accessing (e.g., "everyday" people, models, personal trainers), one's self-concept relating to PA, and one's social media and health literacy are likely to be major contributors to their perception of fitness-related content and its usefulness in their lives. Future work should build on the findings of this dissertation by investigating signals of potentially harmful content and high-quality content, mechanisms by which exercise self-schema are altered by fitness-related content, and effective strategies to alter one's stream of content on social media.

The findings of this dissertation are expected to assist health promotion professionals in their utilization of Instagram to create content that matches their target populations' interests, in addition to fitness-related content creators who aim to produce content that is relevant to young people's PA needs. This dissertation also provides evidence that fitness-related social media should be reconsidered as a tool for supporting young people's PA, especially in the context of diversifying activities and validating the PA-related experiences of diverse groups. While potential consequences of engaging with fitness-related social media are apparent in the literature, it is expected that young people will continue to engage in social media use in the foreseeable future. Therefore, researchers must consider mechanisms through which social media may be used to promote wellbeing among young people. In closing, attention is owed to the investigation of opportunities offered by social media to support young people's PA participation; however, this is unlikely to occur if fitness-related social media use is considered a harmful behavior or if only negative implications of use are measured.

References

Abidin, C. (2015). Communicative intimacies: Influencers and percieved interconnectedness. *Ada: A Journal of Gender, New Media & Technology*. doi:10.7264/N3MW2FFG

Abraido-Lanza, A. F., Shelton, R. C., Martins, M. C., & Crookes, D. M. (2017). Social norms, acculturation, and physical activity among Latina women. *Journal of Immigrant and Minority Health, 19*(2), 285-293. doi:10.1007/s10903-016-0519-7

Alassani, R., & Göretz, J. (2019). *Product placements by micro and macro influencers on Instagram.* Paper presented at the International Conference on Human-Computer Interaction, Switzerland.

Amireault, S., & Godin, G. (2015). The Godin-Shephard leisure-time physical activity questionnaire: validity evidence supporting its use for classifying healthy adults into active and insufficiently active categories. *Perceptual and Motor Skills, 120*(2), 604-622. doi:10.14288/hfjc.v4i1.82

Andrews, S., Ellis, D. A., Shaw, H., & Piwek, L. (2015). Beyond self-report: Tools to compare estimated and real-world smartphone use. *PLoS One, 10*(10), e0139004-e0139004. doi:10.1371/journal.pone.0139004

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *The American Psychologist, 55*(5), 469-480. doi:10.1037/0003-066X.55.5.469

Arnett, J. J. (2003). Conceptions of the transition to adulthood among emerging adults in american ethnic groups. *New Directions for Child and Adolescent Development, 2003*(100), 63-76. doi:10.1002/cd.75

Arnett, J. J. (2007). Emerging adulthood: What is it, and what is it good for? *Child Development Perspectives, 1*(2), 68-73. doi:10.1111/j.1750-8606.2007.00016.x

Arnett, J. J., & Mitra, D. (2018). Are the features of emerging adulthood developmentally distinctive? A comparison of ages 18–60 in the United States. *Emerging Adulthood, 8*(5), 412-419. doi:10.1177/2167696818810073

Azzarito, L., Simon, M., & Marttinen, R. (2017). 'Up against Whiteness': Rethinking race and the body in a global era. *Sport, Education and Society, 22*(5), 635-657. doi:10.1080/13573322.2015.1136612

Banting, L. K., Dimmock, J. A., & Lay, B. S. (2009). The role of implicit and explicit components of exerciser self-schema in the prediction of exercise behaviour. *Psychology of Sport and Exercise, 10*(1), 80-86. doi:10.1016/j.psychsport.2008.07.007

Basch, C. H., MacLean, S. A., Romero, R.-A., & Ethan, D. (2018). Health information seeking behavior among college students. *Journal of Community Health, 43*(6), 1094-1099. doi:10.1007/s10900-018-0526-9

Bauman, A. E., Reis, R. S., Sallis, J. F., Wells, J. C., Loos, R. J., Martin, B. W., & Group, L. P. A. S. W. (2012). Correlates of physical activity: Why are some people

physically active and others not? *The Lancet, 380*(9838), 258-271. doi:10.1016/S0140-6736(12)60735-1

Beacham, A. O., Stetson, B. A., Braekkan, K. C., Rothschild, C. L., Herbst, A. G., & Linfield, K. (2011). Causal attributions regarding personal exercise goal attainment in exerciser schematics and aschematics. *International Journal of Sport and Exercise Psychology, 9*(1), 48-63. doi:10.1080/1612197X.2011.563126

Bekalu, M. A., Sato, T., & Viswanath, K. (2023). Conceptualizing and measuring social media use in health and well-being studies: Systematic review. *Journal of Medical Internet Research, 25*, e43191. doi:10.2196/43191

Bell, S., & Lee, C. (2005). Emerging adulthood and patterns of physical activity among young Australian women. *International Journal of Behavioral Medicine, 12*(4), 227-235. Retrieved from https://link-springer-com.ezp1.lib.umn.edu/content/pdf/10.1207/s15327558ijbm1204_3.pdf

Bensley, R. J., Thackeray, R., & Stellefson, M. (2018). Using Social Media. In 4 (Ed.), *Community and public health education methods: A practical guide* (pp. 367-423). Burlington, MA: Jones & Bartlett Learning, LLC.

Berg, S., Forest, J., & Stenseng, F. (2020). When passion does not change, but emotions do: Testing a social media intervention related to exercise activity engagement. *Frontiers in Psychology, 11*(71). doi:10.3389/fpsyg.2020.00071

Berry, T. R., Strachan, S. M., & Verkooijen, K. T. (2014). The relationship between exercise schema and identity. *International Journal of Sport and Exercise Psychology, 12*(1), 49-63. doi:10.1080/1612197X.2013.775742

Brace-Govan, J. (2004). Weighty matters: control of women's access to physical strength. *The Sociological Review, 52*(4), 503-531. doi:10.1111/j.1467-954X.2004.00493.x

Brown, W. J., & Trost, S. G. (2003). Life transitions and changing physical activity patterns in young women. *American Journal of Preventive Medicine, 25*(2), 140-143. doi:10.1016/S0749-3797(03)00119-3

Burke, T. J., & Rains, S. A. (2019). The paradoxical outcomes of observing others' exercise behavior on social network sites: Friends' exercise posts, exercise attitudes, and weight concern. *Health Communication, 34*(4), 475-483. doi:10.1080/10410236.2018.1428404

Burke, V., Beilin, L. J., Dunbar, D., & Kevan, M. (2004). Changes in health-related behaviours and cardiovascular risk factors in young adults: associations with living with a partner. *Preventive Medicine, 39*(4), 722-730. doi:10.1016/j.ypmed.2004.02.038

Campbell, S., Greenwood, M., Prior, S., Shearer, T., Walkem, K., Young, S., . . . Walker, K. (2020). Purposive sampling: Complex or simple? Research case examples. *Journal of Research in Nursing, 25*(8), 652-661. doi:10.1177/1744987120927206

Carrotte, E. R., Prichard, I., & Lim, M. S. C. (2017). “Fitspiration” on social media: A content analysis of gendered images. *Journal of Medical Internet Research, 19*(3), e95. doi:10.2196/jmir.6368

Caspersen, C. J., Powell, K. E., & Christenson, G. M. (1985). Physical activity, exercise, and physical fitness: definitions and distinctions for health-related research. *Public Health Reports, 100*(2), 126. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1424733/

Cataldo, I., De Luca, I., Giorgetti, V., Cicconcelli, D., Bersani, F. S., Imperatori, C., . . . Corazza, O. (2021). Fitspiration on social media: Body-image and other psychopathological risks among young adults. A narrative review. *Emerging Trends in Drugs, Addictions, and Health, 1*, 100010. doi:10.1016/j.etdah.2021.100010

Center for Disease Control and Prevention. (2018). *Data Collection Methods for Program Evaluation: Focus Groups*. Retrieved from https://www.cdc.gov/healthyyouth/evaluation/pdf/brief13.pdf

Centers for Disease Control and Prevention. (2019). Percentage of adults aged 18 and over who met the 2009 federal physical activity guidelines for aerobic activity through leisure-time aerobic activity, by age group and sex: United States, 2006-2018. *From Early Release of Selected Estimates Based on Data From the 2018 National Health Interview Survey*. Retrieved from

https://public.tableau.com/views/FIGURE7_2/Dashboard7_2?:embed=y&:display_count=yes&publish=yes

Centers for Disease Control and Prevention. (2022). Overcoming barriers to physical activity. *Adding Physical Activity to Your Life.* Retrieved from https://www.cdc.gov/physicalactivity/basics/adding-pa/barriers.html

Coen, S. E., Rosenberg, M. W., & Davidson, J. (2018). "It's gym, like g-y-m not J-i-m": Exploring the role of place in the gendering of physical activity. *Social Science & Medicine, 196,* 29-36. doi:10.1016/j.socscimed.2017.10.036

Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2nd ed.). Hillsdale, NJ: Routledge.

Cohen, R., Irwin, L., Newton-John, T., & Slater, A. (2019). #bodypositivity: A content analysis of body positive accounts on Instagram. *Body Image, 29,* 47-57. doi:https://dx.doi.org/10.1016/j.bodyim.2019.02.007

Creswell, J. W., & Miller, D. L. (2000). Determining validity in qualitative inquiry. *Theory Into Practice, 39*(3), 124-130. doi:10.1207/s15430421tip3903_2

Curtis, R. G., Prichard, I., Gosse, G., Stankevicius, A., & Maher, C. A. (2023). Hashtag fitspiration: Credibility screening and content analysis of Instagram fitness accounts. *BMC Public Health, 23*(1), 421-421. doi:10.1186/s12889-023-15232-7

Curtis, R. G., Ryan, J. C., Edney, S. M., & Maher, C. A. (2020). Can Instagram be used to deliver an evidence-based exercise program for young women? A process evaluation. *BMC Public Health, 20*(1), 1506. doi:10.1186/s12889-020-09563-y

Deighton-Smith, N., & Bell, B. T. (2018). Objectifying fitness: A content and thematic analysis of #fitspiration images on social media. *Psychology of Popular Media Culture,* 467-483. doi:10.1037/ppm0000143

DiBisceglie, S., & Arigo, D. (2021). Perceptions of #fitspiration activity on Instagram: Patterns of use, response, and preferences among fitstagrammers and followers. *Journal of Health Psychology, 26*(8), 1233-1242. doi:10.1177/1359105319871656

Dignard, N. A., & Jarry, J. L. (2021). The "Little Red Riding Hood effect:" Fitspiration is just as bad as thinspiration for women's body satisfaction. *Body Image, 36,* 201-213. doi:10.1016/j.bodyim.2020.11.012

Ding, D., Sallis, J. F., Kerr, J., Lee, S., & Rosenberg, D. E. (2011). Neighborhood environment and physical activity among youth: a review. *American Journal of Preventive Medicine, 41*(4), 442-455. doi:10.1016/j.amepre.2011.06.036

Dodds, S., & Hess, A. C. (2021). Adapting research methodology during COVID-19: lessons for transformative service research. *Journal of Service Management, 32*(2), 203-217. doi:10.1108/JOSM-05-2020-0153

Duplaga, M. (2020). The use of fitness influencers' websites by young adult women: A cross-sectional study. *International Journal of Environmental Research & Public Health, 17*(17), 6360. doi:10.3390/ijerph17176360

Durau, J., Diehl, S., & Terlutter, R. (2022). Motivate me to exercise with you: The effects of social media fitness influencers on users' intentions to engage in physical

activity and the role of user gender. *Digital health, 8*. doi:10.1177/20552076221102769

Edley, N., & Litosseliti, L. (2010). Contemplating interviews and focus groups. In L. Litosseliti (Ed.), *Research Methods in Linguistics* (pp. 155-179). London: Bloomsbury Academic.

Escoffery, C., Miner, K. R., Adame, D. D., Butler, S., McCormick, L., & Mendell, E. (2005). Internet use for health information among college students. *Journal of American College Health, 53*(4), 183-188. doi:10.3200/JACH.53.4.183-188

Estabrooks, P., & Courneya, K. S. (1997). Relationships among self-schema, intention, and exercise behavior. *Journal of Sport and Exercise Psychology, 19*(2), 156-168. Retrieved from https://psycnet.apa.org/record/1997-04763-004

Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics, 5*(1), 1-4. doi:10.11648/j.ajtas.20160501.11

Farah, B. Q., do Prado, W. L., Malik, N., Lofrano-Prado, M. C., de Melo, P. H., Botero, J. P., . . . Ritti-Dias, R. M. (2021). Barriers to physical activity during the COVID-19 pandemic in adults: A cross-sectional study. *Sport Sciences for Health, 17*(2), 441-447. doi:10.1007/s11332-020-00724-5

Fardouly, J., Pinkus, R. T., & Vartanian, L. R. (2017). The impact of appearance comparisons made through social media, traditional media, and in person in

women's everyday lives. *Body Image, 20,* 31-39. doi:10.1016/j.bodyim.2016.11.002

Fardouly, J., Willburger, B. K., & Vartanian, L. R. (2018). Instagram use and young women's body image concerns and self-objectification: Testing mediational pathways. *New Media & Society, 20*(4), 1380-1395. doi:10.1177/1461444817694499

Fatt, S. J., Fardouly, J., & Rapee, R. M. (2019). #malefitspo: Links between viewing fitspiration posts, muscular-ideal internalisation, appearance comparisons, body satisfaction, and exercise motivation in men. *New Media & Society, 21*(6), 1311-1325. doi:10.1177/1461444818821064

Feng, Y., & Xie, W. (2015). Digital divide 2.0: The role of social networking sites in seeking health information online from a longitudinal perspective. *Journal of Health Communication, 20*(1), 60-68. doi:10.1080/10810730.2014.906522

Fergie, G., Hilton, S., & Hunt, K. (2016). Young adults' experiences of seeking online information about diabetes and mental health in the age of social media. *Health Expectations: An International Journal of Public Participation in Health Care and Health Policy, 19*(6), 1324-1335. doi:10.1111/hex.12430

Flanagin, A., Frey, T., Christiansen, S. L., & Bauchner, H. (2021). The reporting of race and ethnicity in medical and science journals: Comments invited. *JAMA, 325*(11), 1049-1052. doi:10.1001/jama.2021.2104

Fox, K. R., Boutcher, S. H., Faulkner, G. E., & Biddle, S. J. H. (2003). The Case of Exercise in the Promotion of Mental Health and Psychological Well-Being. In S. J. H. Biddle, K. R. Fox, & S. H. Boutcher (Eds.), *Physical Activity and Psychological Well-being* (pp. 1-9). London, NY: Routledge.

Geyser, W. (2021). What is an influencer? Social media influencers defined. Retrieved from https://influencermarketinghub.com/what-is-an-influencer/#toc-0

Giles-Corti, B., & Donovan, R. J. (2003). Relative influences of individual, social environmental, and physical environmental correlates of walking. *American Journal of Public Health, 93*(9), 1583-1589. doi:10.2105/AJPH.93.9.1583

Godin, G. (2011). The Godin-Shephard leisure-time physical activity questionnaire. *The Health & Fitness Journal of Canada, 4*(1), 18-22. doi:10.14288/hfjc.v4i1.82

Godin, G., & Shephard, R. (1985). A simple method to assess exercise behavior in the community. *Canadian Journal of Applied Sport Sciences, 10*(3), 141-146. doi:10.14288/hfjc.v4i1.82

Goodyear, V. A., Armour, K. M., & Wood, H. (2019). Young people and their engagement with health-related social media: New perspectives. *Sport, Education, and Society, 24*(7), 673-688. doi:10.1080/13573322.2017.1423464

Goodyear, V. A., Boardley, I., Chiou, S.-Y., Fenton, S. A. M., Makopoulou, K., Stathi, A., . . . Thompson, J. L. (2021). Social media use informing behaviours related to physical activity, diet and quality of life during COVID-19: a mixed methods study. *BMC Public Health, 21*(1), 1333-1333. doi:10.1186/s12889-021-11398-0

Goodyear, V. A., Boardley, I., Chiou, S., Fenton, S., Stathi, A., Wallis, G., . . . Thompson, J. (2021). *Guidelines for using social media to inform behaviours related to physical activity, diet and quality of life*. Retrieved from http://epapers.bham.ac.uk/3431/

Goodyear, V. A., & Quennerstedt, M. (2020). #Gymlad - young boys learning processes and health-related social media. *Qualitative Research in Sport, Exercise, and Health, 12*(1), 18-33. doi:10.1080/2159676X.2019.1673470

Gordon, C. S., Rodgers, R. F., Slater, A. E., McLean, S. A., Jarman, H. K., & Paxton, S. J. (2020). A cluster randomized controlled trial of the SoMe social media literacy body image and wellbeing program for adolescent boys and girls: Study protocol. *Body Image, 33*, 27-37. doi:10.1016/j.bodyim.2020.02.003

Gray, N. J., Klein, J. D., Noyce, P. R., Sesselberg, T. S., & Cantrill, J. A. (2005). Health information-seeking behaviour in adolescence: The place of the internet. *Social Science & Medicine, 60*(7), 1467-1478. doi:10.1016/j.socscimed.2004.08.010

Greenwood, N., Ellmers, T., & Holley, J. (2014). The influence of ethnic group composition on focus group discussions. *BMC Medical Research Methodology, 14*(1), 107. doi:10.1186/1471-2288-14-107

Gunther, L., Schleberger, S., & Pischke, C. R. (2021). Effectiveness of social media-based interventions for the promotion of physical activity: Scoping review. *International Journal of Environmental Research & Public Health, 18*(24), 10. doi:10.3390/ijerph182413018

Hamari, J., & Koivisto, J. (2015). “Working out for likes”: An empirical study on social influence in exercise gamification. *Computers in Human Behavior, 50*, 333-347. doi:10.1016/j.chb.2015.04.018

Harris, J., Atkinson, A., Mink, M., & Porcellato, L. (2021). Young People's Experiences and Perceptions of YouTuber-Produced Health Content: Implications for Health Promotion. *Health Education & Behavior, 48*(2), 199-207. doi:10.1177/1090198120974964

Hinz, A., Mulgrew, K., De Regt, T., & Lovell, G. (2021). Is this what a female yogi looks like? A content analysis of yoga images on Instagram. *Body image, 36*, 117-126. doi:10.1016/j.bodyim.2020.11.003

Hirvonen, N., Huotari, M.-L., Niemelä, R., & Korpelainen, R. (2012). Information behavior in stages of exercise behavior change. *Journal of the American Society for Information Science and Technology, 63*(9), 1804-1819. doi:10.1002/asi.22704

Humpel, N., Owen, N., & Leslie, E. (2002). Environmental factors associated with adults' participation in physical activity: a review. *American Journal of Preventive Medicine, 22*(3), 188-199. doi:10.1016/s0749-3797(01)00426-3

Institutional Review Board. *Gender inclusive language in research*. Retrieved from https://irb.utah.edu/_resources/documents/pdf/IGS%20-%20Gender%20Inclusive%20Language%20in%20Research%20081519.pdf

Irani, E. (2019). The use of videoconferencing for qualitative interviewing: Opportunities, challenges, and considerations. *Clinical Nursing Research, 28*(1), 3-8. doi:10.1177/1054773818803170

Jacobs, W., Amuta, A. O., & Jeon, K. C. (2017). Health information seeking in the digital age: An analysis of health information seeking behavior among US adults. *Cogent Social Sciences, 3*(1), 1302785. doi:10.1080/23311886.2017.1302785

Jager, J., Putnick, D. L., & Bornstein, M. H. (2017). More than just convenient: The scientific merits of homogeneous convenience samples. *Monographs of the Society for Research in Child Development, 82*(2), 13-30. doi:10.1111/mono.12296

Jensen, E., Jones, N., Rabe, M., Pratt, B., Medina, L., Orozco, K., & Spell, L. (2021). *The chance that two people chosen at random are of diferent race of ethnicity group has increased since 2010*. Retrieved from https://www.census.gov/library/stories/2021/08/2020-united-states-population-more-racially-ethnically-diverse-than-2010.html

Johnston-Goodstar, K., Martin, L., Rider, G., McMorris, B., Filoteo, M., Brown, C., . . . Perrote, N. (2022). *Native+ students involved in trading sex: Data from the 2019 Minnesota student survey*. Retrieved from University of Minnesota: Minneapolis, MN.: https://hdl.handle.net/11299/227180

Jong, S. T., & Drummond, M. J. N. (2016). Exploring online fitness culture and young females. *Leisure Studies, 35*(6), 758-770. doi:10.1080/02614367.2016.1182202

Kane, M. J., LaVoi, N. M., & Fink, J. S. (2013). Exploring elite female athletes interpretations of sport media images: A window into the construction of social identity and selling sex in women's sports. *Communication and Sport, 1*(3), 269-298. doi:10.1177/2167479512473585

Kelly, N. R., Cotter, E. W., Tanofsky-Kraff, M., & Mazzeo, S. E. (2015). Racial variations in binge eating, body image concerns, and compulsive exercise among men. *Psychology of Men & Masculinity, 16*, 326-336. doi:10.1037/a0037585

Kendzierski, D. (1988). Self-schemata and exercise. *Basic and Applied Social Psychology, 9*(1), 45-59. doi:10.1207/s15324834basp0901_4

Kendzierski, D. (1990). Exercise self-schemata: cognitive and behavioral correlates. *Health psychology, 9*(1), 69-82. doi:10.1037/0278-6133.9.1.69

Kim, H. Y. (2017). Statistical notes for clinical researchers: Chi-squared test and Fisher's exact test. *Restorative Dentistry and Endodontics, 42*(2), 152-155. doi:10.5395/rde.2017.42.2.152

Kite, J., & Phongsavan, P. (2017). Insights for conducting real-time focus groups online using a web conferencing service. *F1000Res, 6*, 122. doi:10.12688/f1000research.10427.1

Krueger, R. A. (2002). *Designing and Conducting Focus Group Interviews*. Retrieved from https://www.eiu.edu/ihec/Krueger-FocusGroupInterviews.pdf

Krueger, R. A., & Casey, M. A. (2014). *Focus groups: A practical guide for applied research* (5 ed.): Sage publications.

Küchler, C., Stoll, A., Ziegele, M., & Naab, T. K. (2022). Gender-related differences in online comment sections: Findings from a large-scale content analysis of commenting behaviors. *Social Science Computer Review*, 08944393211052042. doi:10.1177/08944393211052042

Kwan, M., King-Dowling, S., Veldhuizen, S., Ceccacci, A., & Cairney, J. (2021). Examining device-assessed physical activity during the transition into emerging adulthood: Results from the MovingU study. *Journal of Adolescent Health, 69*(3), 477-481. doi:10.1016/j.jadohealth.2021.01.005

Lambert, S. D., & Loiselle, C. G. (2007). Health information-seeking behavior. *Qualitative Health Research, 17*(8), 1006-1019. doi:10.1177/1049732307305199

Langdon, J., Johnson, C., & Melton, B. (2017). Factors contributing to the uptake and maintenance of regular exercise behaviour in emerging adults. *Health Education Journal, 76*(2), 182-193. doi:10.1177/0017896916654934

Langnes, T. F., & Walseth, K. (2023). This is what I learned about the body on social media: PETE students' experiences with body pressure and body positivity. *Sport, Education, and Society, 28*(3), 253-271. doi:10.1080/13573322.2021.2022642

Lee, J., Turner, K., Xie, Z., Kadhim, B., & Hong, Y.-R. (2022). Association between health information seeking behavior on youtube and physical activity among US adults: Results from health information trends survey 2020. *The American Journal of Preventive Medicine, 1*(2), 100035. doi:10.1016/j.focus.2022.100035

Lee, Y. J., Boden-Albala, B., Jia, H., Wilcox, A., & Bakken, S. (2015). The association between online health information-seeking behaviors and health behaviors among hispanics in new york city: A community-based cross-sectional study. *Journal of Medical Internet Research, 17*(11), e261-e261. doi:10.2196/jmir.4368

Lenkert, E. (2020). What is a content creator and how to become one. *Social Media.* Retrieved from https://www.adobe.com/express/learn/blog/content-creator

Li, K., Liu, D., Haynie, D., Gee, B., Chaurasia, A., Seo, D. C., . . . Simons-Morton, B. G. (2016). Individual, social, and environmental influences on the transitions in physical activity among emerging adults. *BMC Public Health, 16*, 682. doi:10.1186/s12889-016-3368-3

Li, Y., Wang, X., Lin, X., & Hajli, M. (2018). Seeking and sharing health information on social media: A net valence model and cross-cultural comparison. *Technological Forecasting and Social Change, 126*, 28-40. doi:10.1016/j.techfore.2016.07.021

Liao, K. Y. H., Shen, F. C., Cox, A. R., Miller, A. R., Sievers, B., & Werner, B. (2020). Asian American men's body image concerns: A focus group study. *Psychology of Men & Masculinities, 21*, 333-344. doi:10.1037/men0000234

Lin, Y. H., Lin, Y. C., Lee, Y. H., Lin, P. H., Lin, S. H., Chang, L. R., . . . Kuo, T. B. J. (2015). Time distortion associated with smartphone addiction: Identifying smartphone addiction via a mobile application (App). *Journal of Psychiatric Research, 65*, 139-145. doi:10.1016/j.jpsychires.2015.04.003

Liu, S., Perdew, M., Lithopoulos, A., & Rhodes, R. E. (2021). The feasibility of using instagram data to predict exercise identity and physical activity levels: Cross-sectional observational study. *Journal of Medical Internet Research, 23*(4), e20954. doi:10.2196/20954

Lombard, C., Brennan, L., Reid, M., Klassen, K. M., Palermo, C., Walker, T., . . . Truby, H. (2018). Communicating health - Optimising young adults' engagement with health messages using social media: Study protocol. *Nutrition & Dietetics, 75*(5), 509-519. doi:10.1111/1747-0080.12448

Lundgren, R. E., & McMakin, A. H. (2009). *Risk communication: a handbook for communicating environmental, safety, and health risks* (4th ed.). Hoboken, N.J.: John Wiley & Sons.

Markus, H. (1977). Self-schemata and processing information about the self. *Journal of Personality and Social Psychology, 35*(2), 63-78. doi:10.1037/0022-3514.35.2.63

Markus, H. (1990). Unresolved issues of self-representation. *Cognitive Therapy and Research, 14*(2), 241-253. doi:10.1007/BF01176212

Markus, H., & Wurf, E. (1987). The dynamic self-concept: A social psychological perspective. *Annual Review of Psychology*, 299-337. doi:10.1146/annurev.ps.38.020187.001503

Matthes, J. (2008). Schemas and media effects. In *The International Encyclopedia of Communication.*

McBride, C., Costello, N., Ambwani, S., Wilhite, B., & Austin, S. B. (2019). Digital manipulation of images of models' appearance in advertising: Strategies for action through law and corporate social responsibility incentives to protect public health. *American Journal of Law & Medicine, 45*(1), 7-31. doi:10.1177/0098858819849990

McComb, S. E., Gobin, K. C., & Mills, J. S. (2021). The effects of self-disclaimer Instagram captions on young women's mood and body image: The moderating effect of participants' own photo manipulation practices. *Body Image, 38*, 251-261. doi:10.1016/j.bodyim.2021.04.011

McKenzie, P. J. (2003). A model of information practices in accounts of everyday-life information seeking. *Journal of Documentation, 59*(1), 19-40. doi:10.1108/00220410310457993

Metzger, M. J., Flanagin, A. J., Eyal, K., Lemus, D. R., & McCann, R. M. (2003). Credibility for the 21st century: Integrating perspectives on source, message, and media credibility in the contemporary media environment. In P. J. Kalbfleisch (Ed.), *Communication Yearbook* (Vol. 27, pp. 293-335). Mahwah, NJ: Routledge.

Michikyan, M., Subrahmanyam, K., & Dennis, J. (2015). A picture is worth a thousand words: A mixed methods study of online self-presentation in a multiethnic sample of emerging adults. *Identity: An International Journal of Theory and Research, 15*(4), 287-308. doi:10.1080/15283488.2015.1089506

Miller, J., Nelson, T., Barr-Anderson, D. J., Christoph, M. J., Winkler, M., & Neumark-Sztainer, D. (2019). Life events and longitudinal effects on physical activity: Adolescence to adulthood. *Medicine and science in sports and exercise, 51*(4), 663-670. doi:10.1249/MSS.0000000000001839

Mills, J. S., Musto, S., Williams, L., & Tiggemann, M. (2018). "Selfie" harm: Effects on mood and body image in young women. *Body Image, 27*, 86-92. doi:10.1016/j.bodyim.2018.08.007

Mitchell Vaterlaus, J., Patten, E. V., Roche, C., & Young, J. A. (2015). # Gettinghealthy: The perceived influence of social media on young adult health behaviors. *Computers in Human Behavior, 45*, 151-157.

Mosseri, A. (2021). Shedding more light on how Instagram works. Retrieved from https://about.instagram.com/blog/announcements/shedding-more-light-on-how-instagram-works

Mujller, A. M., Alley, S., Schoeppe, S., & Vandelanotte, C. (2016). The effectiveness of e-& mHealth interventions to promote physical activity and healthy diets in developing countries: A systematic review. *The International Journal of Behavioral Nutrition and Physical Activity, 13*(1), 109-109. doi:10.1186/s12966-016-0434-2

National Center for Health Statistics. (2019). *Participation in leisure-time aerobic and muscle-strengthening activities that meet the federal 2008 Physical*

Activity Guidelines for Americans among adults aged 18 and over, by selected characteristics: United States, selected years 1998–2018. Retrieved from Hyattsville, MD: https://www.cdc.gov/nchs/data/hus/2019/025-508.pdf

Nelson, M. C., Story, M., Larson, N. I., Neumark-Sztainer, D., & Lytle, L. A. (2008). Emerging adulthood and college-aged youth: an overlooked age for weight-related behavior change. *Obesity, 16*(10), 2205-2211. doi:10.1038/oby.2008.365

Newman, M. J. (2015). Image and identity: Media literacy for young adult Instagram users. *Visual Inquiry, 4*(3), 221-227. doi::10.1386/vi.4.3.221_1

Oh, H. J., Lauckner, C., Boehmer, J., Fewins-Bliss, R., & Li, K. (2013). Facebooking for health: An examination into the solicitation and effects of health-related social support on social networking sites. *Computers in Human Behavior, 29*(5), 2072-2080. doi:10.1016/j.chb.2013.04.017

Ori, E. M., & Berry, T. R. (2020). Physical activity information seeking among emerging adults attending university. *Journal of American College Health*, 1-9. doi:10.1080/07448481.2020.1740230

Park, I. K., & Kim, Y. (2022). Relationships between university students' gender and physical activity (PA) and their exercise self-schemas, processing of PA-related information, and PA decision-making. *Perceptual and motor skills, 129*(1), 195-209. doi:10.1177/00315125211060187

Paxton, S. J., McLean, S. A., & Rodgers, R. F. (2022). “My critical filter buffers your app filter”: Social media literacy as a protective factor for body image. *Body Image, 40*, 158-164. doi:10.1016/j.bodyim.2021.12.009

Peacock, C., & Van Duyn, E. (2021). Monitoring and correcting: why women read and men comment online. *Information, Communication & Society*, 1-16. doi:10.1080/1369118X.2021.1993957

Peer, E., Rothschild, D., Gordon, A., Evernden, Z., & Damer, E. (2022). Data quality of platforms and panels for online behavioral research. *Behavior Research Methods, 54*(4), 1643-1662. doi:10.3758/s13428-021-01694-3

Petkovic, J., Petkovic, J., Duench, S., Trawin, J., Dewidar, O., Pardo Pardo, J., . . . Welch, V. (2021). Behavioural interventions delivered through interactive social media for health behaviour change, health outcomes, and health equity in the adult population. *Cochrane Library, 2021*(6), CD012932-CD012932. doi:10.1002/14651858.CD012932.pub2

Pew Research Center. (2021a). Social Media Fact Sheet. Retrieved from https://www.pewresearch.org/internet/fact-sheet/social-media/

Pew Research Center. (2021b). *Social Media Use in 2021*. Retrieved from https://www.pewresearch.org/internet/2021/04/07/social-media-use-in-2021/

Piercy, K. L., & Troiano, R. P. (2018). Physical activity guidelines for americans from the US Department of Health and Human Services. *Circulation: Cardiovascular*

Quality and Outcomes, 11(11), e005263. doi:doi:10.1161/CIRCOUTCOMES.118.005263

Piercy, K. L., Troiano, R. P., Ballard, R. M., Carlson, S. A., Fulton, J. E., Galuska, D. A., . . . Olson, R. D. (2018). The physical activity guidelines for Americans. *JAMA, 320*(19), 2020-2028.

Pilgrim, K., & Bohnet-Joschko, S. (2019). Selling health and happiness how influencers communicate on Instagram about dieting and exercise: Mixed methods research. *BMC Public Health, 19*(1), 1054. doi:10.1186/s12889-019-7387-8

Prichard, I., Kavanagh, E., Mulgrew, K. E., Lim, M. S. C., & Tiggemann, M. (2020). The effect of Instagram #fitspiration images on young women's mood, body image, and exercise behaviour. *Body Image, 33*, 1-6. doi:10.1016/j.bodyim.2020.02.002

Purkiss, A. (2017). "Beauty secrets: Fight fat" Black women's aesthetics, exercise, and fat stigma, 1900-1930s. *Journal of Women's History, 29*(2), 14-37. doi:10.1353/jowh.2017.0019

Raggatt, M., Wright, C. J. C., Carrotte, E., Jenkinson, R., Mulgrew, K., Prichard, I., & Lim, M. S. C. (2018). "I aspire to look and feel healthy like the posts convey": Engagement with fitness inspiration on social media and perceptions of its influence on health and wellbeing. *BMC Public Health, 18*(1), 1002. doi:10.1186/s12889-018-5930-7

Reade, J. (2020). Keeping it raw on the ‘gram: Authenticity, relatability and digital intimacy in fitness cultures on Instagram. *New Media & Society*, 1-19. doi:10.1177/1461444819891699

Rhodes, R. E., Kaushal, N., & Quinlan, A. (2016). Is physical activity a part of who I am? A review and meta-analysis of identity, schema and physical activity. *Health Psychology Review, 10*(2), 204-225. doi:10.1080/17437199.2016.1143334

Robinson, L., Prichard, I., Nikolaidis, A., Drummond, C., Drummond, M., & Tiggemann, M. (2017). Idealised media images: The effect of fitspiration imagery on body satisfaction and exercise behaviour. *Body Image, 22*, 65-71. doi:10.1016/j.bodyim.2017.06.001

Rodgers, R. F., McLean, S. A., & Paxton, S. J. (2019). When seeing is not believing: An examination of the mechanisms accounting for the protective effect of media literacy on body image. *Sex Roles, 81*(1-2), 87-96. doi:10.1007/s11199-018-0973-x

Rounds, E. G., & Stutts, L. A. (2021). The impact of fitspiration content on body satisfaction and negative mood: An experimental study. *Psychology of Popular Media*, 267-274. doi:10.1037/ppm0000288

Samendinger, S., & Hill, C. R. (2021). Exercise schema and motivational regulation of college students: A person-centered analysis. *Psychology of Sport and Exercise, 54*, 101921. doi:10.1016/j.psychsport.2021.101921

Sano, Y., Antabe, R., Kwon, E., Atuoye, K. N., Anfaara, F. W., & Luginaah, I. (2021). Disparities in physical activity descriptive norms: The case of immigrants and racial/ethnic minorities in New York City. *International Journal of Health Promotion and Education, 59*(5), 307-317. doi:10.1080/14635240.2020.1766992

Schaller, A., Rudolf, K., Dejonghe, L., Grieben, C., & Froboese, I. (2016). Influencing factors on the overestimation of self-reported physical activity: A cross-sectional analysis of low back pain patients and healthy controls. *Biomed Research International, 2016*, 1497213. doi:10.1155/2016/1497213

Serdar, C. C., Cihan, M., Yücel, D., & Serdar, M. A. (2021). Sample size, power and effect size revisited: simplified and practical approaches in pre-clinical, clinical and laboratory studies. *Biochemia Medica*, *31*(1), 010502. doi:10.11613/bm.2021.010502

Sheeran, P., & Orbell, S. (2000). Self-schemas and the theory of planned behaviour. *European Journal of Social Psychology*, *30*(4), 533-550. doi:10.1002/1099-0992(200007/08)30:4<533::AID-EJSP6>3.0.CO;2-F

Shephard, R. (1997). Godin leisure-time exercise questionnaire. *Medicine & Science in Sports & Exercise, 29*(6), S36-S38. Retrieved from https://oce-ovid-com.ezp3.lib.umn.edu/article/00005768-199706001-00009/PDF

Sokolova, K., & Perez, C. (2021). You follow fitness influencers on YouTube. But do you actually exercise? How parasocial relationships, and watching fitness

influencers, relate to intentions to exercise. *Journal of Retailing and Consumer Services, 58*, 102276. doi:10.1016/j.jretconser.2020.102276

Stellefson, M., Paige, S. R., Chaney, B. H., & Chaney, J. D. (2020). Evolving role of social media in health promotion: Updated responsibilities for health education specialists. *International Journal of Environmental Research and Public Health, 17*(4). doi:10.3390/ijerph17041153

Stets, J. E., & Burke, P. J. (2000). Identity theory and social identity theory. *Social Psychology Quarterly*, 224-237. doi:10.2307/2695870

Strachan, S. M., & Whaley, D. E. (2013). Identities, schemas, and definitions: how aspects of the self influence exercise behavior. In *Routledge handbook of physical activity and mental health* (pp. 234-245): Routledge.

Thomas, J. D., VanNess, J. M., & Cardinal, B. J. (2016). Physical fitness and self-image: An evaluation of the exercise self-schema questionnaire using direct measures of physical fitness. *International Journal of Exercise Science, 9*(4), 445. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5065326/

Tiggemann, M., & Anderberg, I. (2020). Muscles and bare chests on Instagram: The effect of Influencers fashion and fitspiration images on men's body image. *Body Image, 35*, 237-244. doi:10.1016/j.bodyim.2020.10.001

Tiggemann, M., & Zaccardo, M. (2015). "Exercise to be fit, not skinny": The effect of fitspiration imagery on women's body image. *Body Image, 15*, 61-67. doi:10.1016/j.bodyim.2015.06.003

Tiggemann, M., & Zaccardo, M. (2018). 'Strong is the new skinny': A content analysis of #fitspiration images on Instagram. *Journal of Health Psychology, 23*(8), 1003-1011. doi:10.1177/1359105316639436

Toll, M., & Norman, M. (2021). More than meets the eye: a relational analysis of young women's body capital and embodied understandings of health and fitness on Instagram. *Qualitative Research in Sport, Exercise and Health, 13*(1), 59-76. doi:10.1080/2159676X.2020.1836512

Tricas-Vidal, H. J., Vidal-Peracho, M. C., Lucha-Lopez, M. O., Hidalgo-Garcia, C., Monti-Ballano, S., Marquez-Gonzalvo, S., & Tricas-Moreno, J. M. (2022). Impact of fitness influencers on the level of physical activity performed by instagram users in the United States of America: Analytical cross-sectional study. *International Journal of Environmental Research & Public Health, 19*(21), 01. doi:10.3390/ijerph192114258

Trost, S. G., Owen, N., Bauman, A. E., Sallis, J. F., & Brown, W. (2002). Correlates of adults' participation in physical activity: review and update. *Medicine & science in sports & exercise, 34*(12), 1996-2001.

United States Census Bureau. (2019). Age and Sex Composition in the United States: 2019. Retrieved from https://www.census.gov/data/tables/2019/demo/age-and-sex/2019-age-sex-composition.html

US Department of Health and Human Services. (2011). *HHS Implementation Guidance on Data Collection Standards for Race, Ethnicity, Sex, Primary Language, and*

Disability Status. Retrieved from http://aspe.hhs.gov/datacncl/standards/ACA/4302

US Department of Health and Human Services. (2018). *Physical Activity Guidelines for Americans* (2nd Edition ed.). Washington D.C.: U.S. Department of Health and Human Services.

Varma, V. R., Dey, D., Leroux, A., Di, J., Urbanek, J., Xiao, L., & Zipunnikov, V. (2017). Re-evaluating the effect of age on physical activity over the lifespan. *Preventive Medicine, 101*, 102-108. doi:10.1016/j.ypmed.2017.05.030

Vaterlaus, J. M., Patten, E. V., Roche, C., & Young, J. A. (2015). #Gettinghealthy: The perceived influence of social media on young adult health behaviors. *Computers in Human Behavior, 45*, 151-157. doi:10.1016/j.chb.2014.12.013

Wang, X., Shi, J., & Kong, H. (2021). Online health information seeking: A review and meta-analysis. *Health Communication, 36*(10), 1163-1175. doi:10.1080/10410236.2020.1748829

Warburton, D. E. R., & Bredin, S. S. D. (2017). Health benefits of physical activity: A systematic review of current systematic reviews. *Current Opinion in Cardiology, 32*(5), 541-556. doi:10.1097/HCO.0000000000000437

Weaver, J. B., 3rd, Mays, D., Weaver, S. S., Hopkins, G. L., Eroglu, D., & Bernhardt, J. M. (2010). Health information-seeking behaviors, health indicators, and health risks. *American Journal of Public Health, 100*(8), 1520-1525. doi:10.2105/AJPH.2009.180521

Weiss, M. R., & Bredemeier, B. J. (1983). Developmental sport psychology: A theoretical perspective for studying children in sport. *Journal of Sport Psychology, 5*(2), 216-230. doi:10.1123/jsp.5.2.216

Wentzell, K., Walker, H. R., Hughes, A. S., & Vessey, J. A. (2021). Engaging social media influencers to recruit hard-to-reach populations. *Nursing Research, 70*(6), 455-461. doi:10.1097/NNR.0000000000000544

Werneck, A. O., Winpenny, E. M., Foubister, C., Guagliano, J. M., Monnickendam, A. G., van Sluijs, E. M. F., & Corder, K. (2020). Cohabitation and marriage during the transition between adolescence and emerging adulthood: A systematic review of changes in weight-related outcomes, diet and physical activity. *Preventive Medicine Reports, 20*, 101261. doi:10.1016/j.pmedr.2020.101261

Wicklin, R. (2017). Winsorization: The good, the bad, and the ugly. Retrieved from https://blogs.sas.com/content/iml/2017/02/08/winsorization-good-bad-and-ugly.html

Williams, G., Hamm, M. P., Shulhan, J., Vandermeer, B., & Hartling, L. (2014). Social media interventions for diet and exercise behaviours: a systematic review and meta-analysis of randomised controlled trials. *BMJ Open, 4*(2), e003926-e003926. doi:10.1136/bmjopen-2013-003926

Wong, S. N., Keum, B. T., Caffarel, D., Srinivasan, R., Morshedian, N., Capodilupo, C. M., & Brewster, M. E. (2017). Exploring the conceptualization of body image for

Asian American women. *Asian American Journal of Psychology, 8*(4), 296-307. doi:10.1037/aap0000077

Wood, D., Crapnell, T., Lau, L., Bennett, A., Lotstein, D., Ferris, M., & Kuo, A. (2018). Emerging adulthood as a critical stage in the life course. *Handbook of Life Course Health Development*, 123-143.

Wood, M., & Pila, E. (2022). Investigating the effects of fit-normative and weight-inclusive Instagram images on women's exercise motivations. *Body Image, 41*, 460-471. doi:10.1016/j.bodyim.2022.04.003

Yang, C. C., Holden, S. M., & Carter, M. D. K. (2017). Emerging adults' social media self-presentation and identity development at college transition: Mindfulness as a moderator. *Journal of Applied Developmental Psychology, 52*, 212-221. doi:10.1016/j.appdev.2017.08.006

Yin, Z., & Boyd, M. P. (2000). Behavioral and cognitive correlates of exercise self-schemata. *The Journal of Psychology, 134*(3), 269-282. doi:10.1080/00223980009600867

Zelener, J., & Schneider, M. (2016). Adolescents and self-reported physical activity: An evaluation of the modified Godin leisure-time exercise questionnaire. *International Journal of Exercise Science, 9*(5), 587-598. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5701784/

Zhang, N., Campo, S., Yang, J., Eckler, P., Snetselaar, L., Janz, K., & Leary, E. (2017). What motivates young adults to talk about physical activity on social network sites? *Journal of Medical Internet Research, 19*(6), e226. doi:10.2196/jmir.7017

Appendices

Appendix A. Scales Used

Variable Name	**Items**	**Response Options**	**Citation & Modifications**
Demographic Variables			
Age	What is your date of birth?	Open response (format: MM/DD/YYYY)	n/a
Gender identity	Which gender identity do you most identify with?	Woman Man Transgender/trans woman Transgender/trans man Non-binary/non-conforming Not listed: _____ Prefer not to reply	(Institutional Review Board)
*Racialized identity	What is your race?	White Black or African American American Indian or Alaska Native Asian Indian Chinese Filipino Japanese	(US Department of Health and Human Services, 2011)

		Korean Vietnamese Other Asian Native Hawaiian Guamanian or Chamorro Samoan Other Pacific Islander	
Ethnicized identity	Are you of Hispanic, Latino, or Spanish origin?	No, not of Hispanic, Latino/a, or Spanish origin Yes, Mexican, Mexican American, Chicano/a Yes, Puerto Rican Yes, Cuban Yes, another Hispanic, Latino/a, or Spanish origin	(US Department of Health and Human Services, 2011); Revised to include "Yes, Spanish"
Education	What is your highest level of education?	No formal education High school diploma Some college with no degree Postsecondary non-degree award Associate's degree Bachelor's degree Master's degree Doctoral or professional degree	n/a

*Job status	What is your job status?	Employed full-time Employed part-time Full-time student Part-time student Not employed	n/a
Marital/partnership status	What is your relationship status?	Single Committed dating relationship Cohabitating Married Divorced/separated Prefer not to respond	Modifications: 1. added "committed dating relationship" and "prefer not to respond"
Height	What is your height?	Open response (format: feet and inches)	n/a
Weight	What is your weight?	Open response (format: in pounds)	n/a
Instagram Use			
Daily total Instagram use (i.e., not only fitness-related content)	How much time do you spend on Instagram per day?	1 = None 2 = Less than 5 minutes 3 = About 15 minutes 4 = About 30 minutes 5 = About 1 hour 6 = 1-2 hours 7 = 2-3 hours 8 = 3-4 hours	Fardouly et al., 2017 Cited in: Fatt et al., 2019

		9 = 4 hours or more	
Frequency of fitness-related Instagram use	How often do you access fitness-related content on Instagram? Definition: any photos or videos on Instagram that relate to exercising or being physically active	Never Less than daily 1-5 times daily 5-9 times daily More than 10 times a day	DiBisceglie & Arigo, 2021 Modifications: 1. added operational definition
*Types of fitness-related content	What type of fitness-related content do you access on Instagram?	Personal trainers/athletes Posts tagged with fitness Everyday people Fitness challenges Weight loss/body transformation Body building/strength Celebrities Models Thinspiration Other	Raggat et al., 2017 Modifications: 1. changed "fitspiration" to "fitness-related" 2. removed nutrition related content types including clean eating, diets, dieticians, and detox cleanses
*Passive engagement activities with fitness-related content	How do you access fitness-related content on Instagram?	Appears on newsfeed Like/follow Scroll through posts or images Friends like/post/share	Raggat et al., 2017 Modifications:

		Visit related websites/pages/profiles Search hashtags Other	1. changed "fitspiration" to "fitness-related"
*Active contributing activities to fitness-related content	How do you contribute to fitness-related content on Instagram?	Tag friends in posts Comment on posts Post content Share with friends Participate in discussions Maintain/moderate a page	Raggat et al., 2018 Modifications: 1. changed "fitspiration" to "fitness-related"

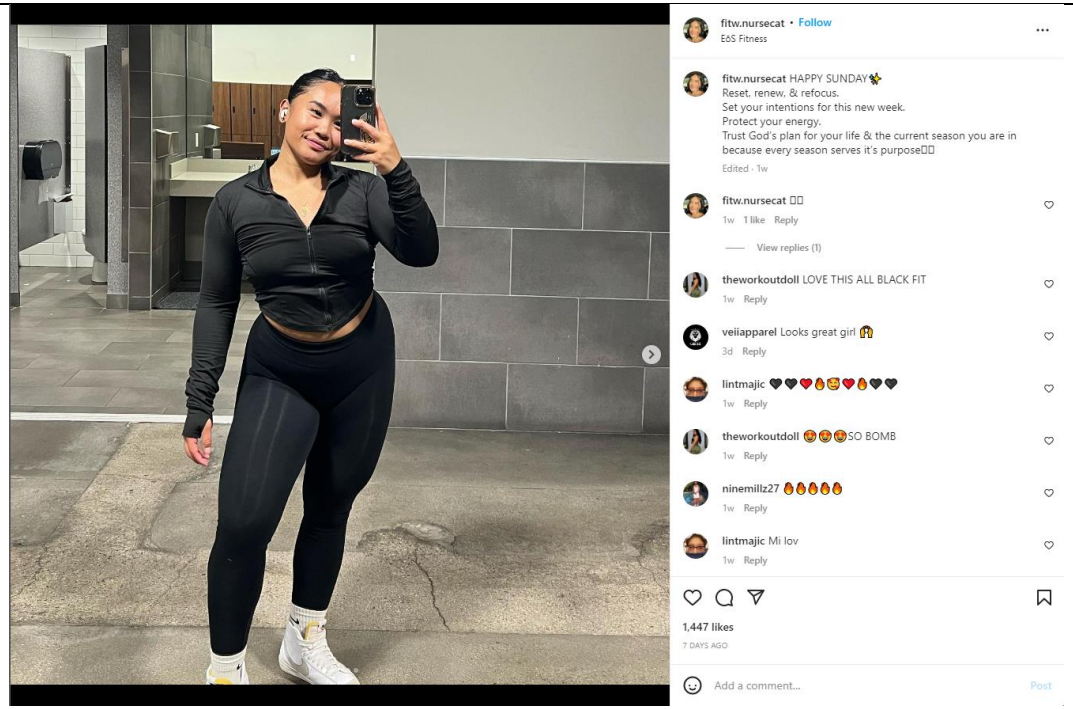
Reasons for accessing fitness-related content	Why do you access fitness-related content on Instagram?	To inspire me to exercise to improve my health or wellbeing To inspire me to eat healthy food To learn more about health and wellbeing To inspire me to change my body shape, tone, or size To inspire me to exercise to gain muscle/become stronger To inspire me to exercise or diet to lose weight To inspire me to change my appearance My friends view it/like it	Raggat et al., 2018 Modifications: 1. changed "fitspiration" to "fitness-related" 2. changed "to inspire me to **improve** my body shape, tone, or size" to "to inspire me to **change** my body shape, tone, or size" 3. changed "inspire me to **improve** my appearance" to "inspire me to **change** my appearance"
Physical Activity			
Physical activity participation	In a usual week, how many hours do you spend doing the following activities?	None (0) Less than ½ hour (0.3) ½ - 2 hours (1.3) 2 ½ - 4 hours (3.3) 4 ½ - 6 hours (5.3)	Shepard (1997); Godin (2011) Modifications:

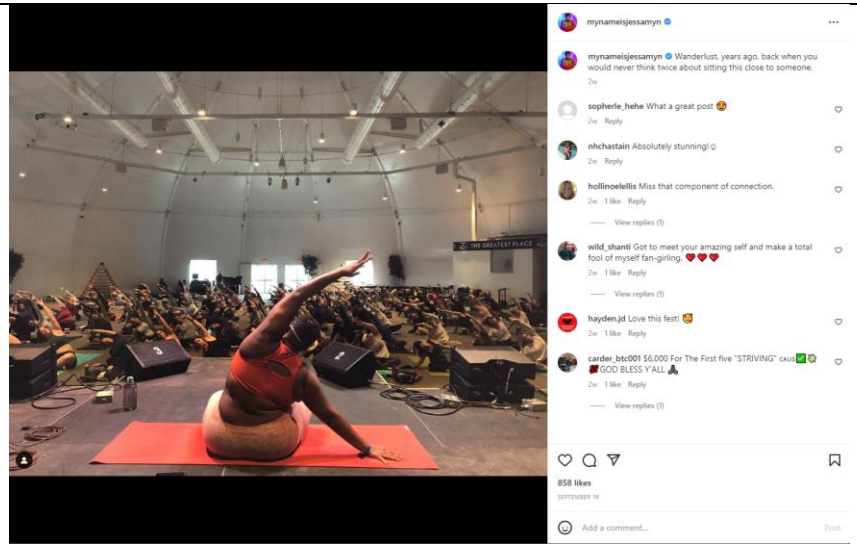
	Strenuous exercise (heart beats rapidly) Moderate exercise (not exhausting) Mild exercise (little effort) *Examples of strenuous, moderate, and mild exercise will be provided.*	More than 6 hours (8.0)	1. Open response rather than multiple choice.
Related Concepts			
Health information seeking	Select whether the following statements describe you on a scale from (1) never to (5) regularly. I look for information when I have a problem or a question about exercise or PA. I look for information, for example, on the internet or ask questions about it from other people.	Likert scale of 1 to 5 1 = Never 2 = Rarely 3 = Sometimes 4 = Often 5 = Regularly	Hirvonen et al., 2012

Exercise self-schema	On a scale from 1 (does not describe me) to 11 (describes me), indicate whether the following phrases describe you. Someone who exercises regularly Someone who keeps in shape Physically active Friendly *(filler)* Spontaneous *(filler)* Someone who consciously sets goals *(filler)* On a scale from 1 (not at all important) to 11 (very important), how important is each phrase to the image you have of yourself, regardless of whether or not the trait describes you? *Same descriptors as before.*	Scale from 1 to 11	Kendzierski, 1998

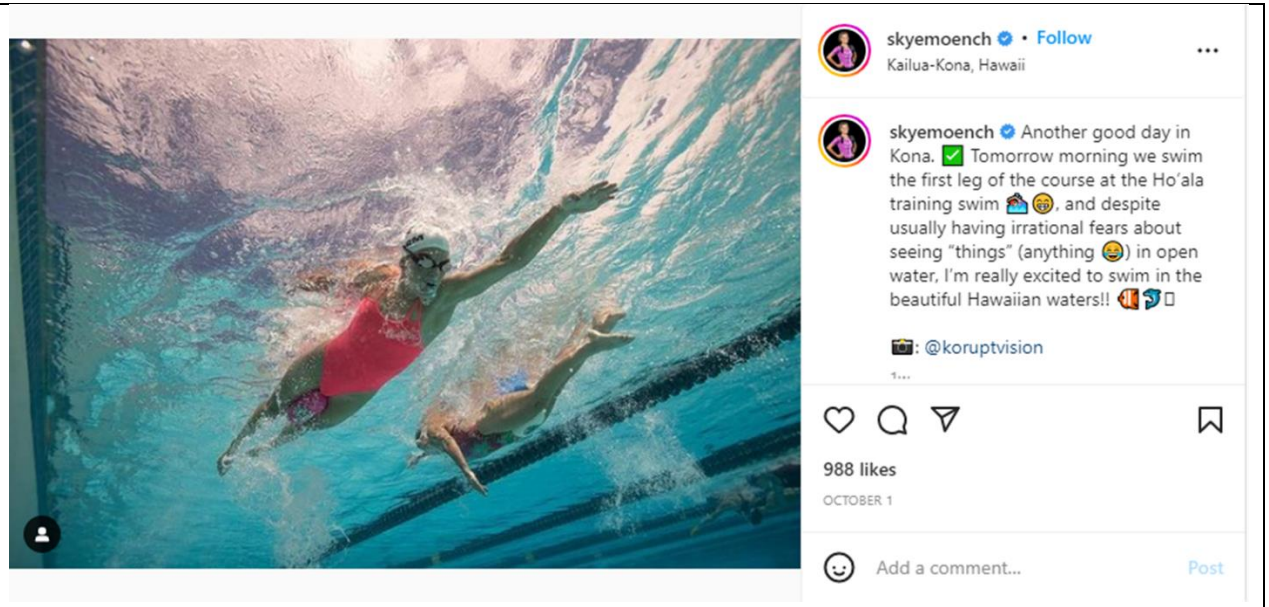
Note. Variables marked with * indicate participants may choose multiple response options.

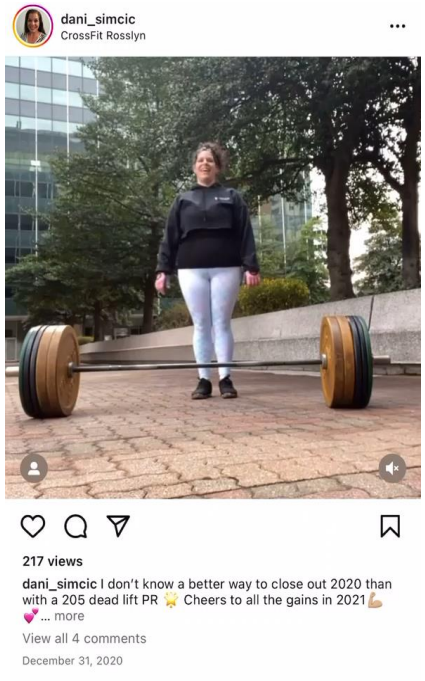
Appendix B. Examples of Fitness-Related Content

Type of Content	**Content Provided**
Definition of fitness-related Instagram content	Fitness-related content are any photos or videos on Instagram that relate to exercising or doing physical activity.
Everyday people	

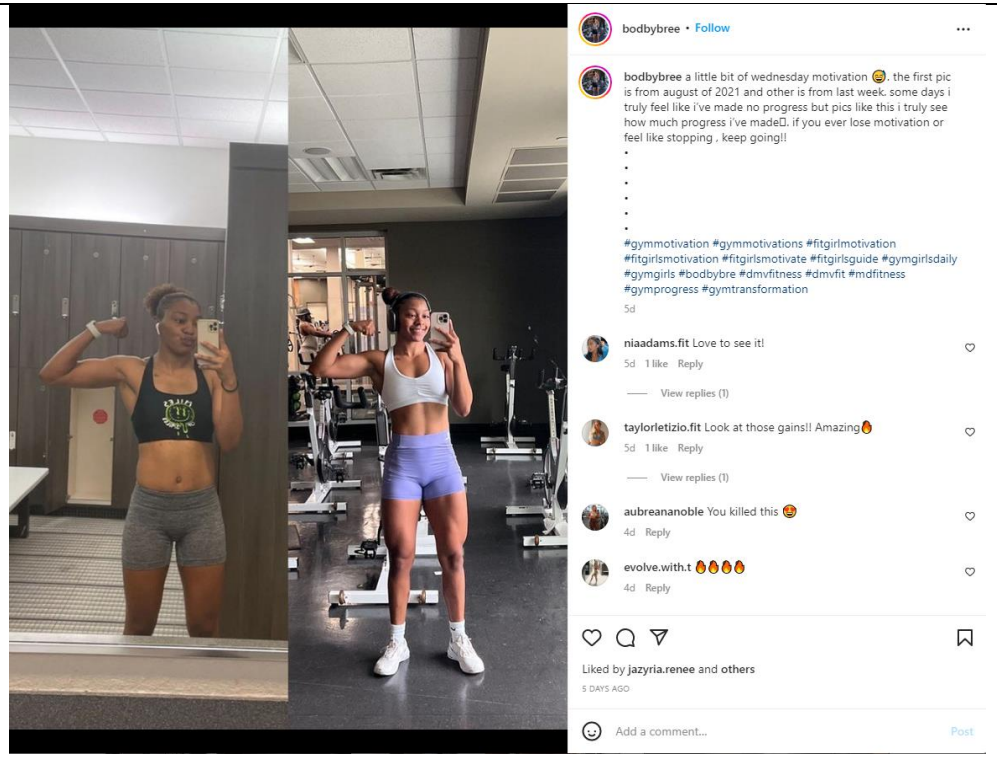
Personal trainers	


GOALS
1
kayla_itsines • Follow
kayla_itsines How to set goals p r o p e r l y !
If you still haven't set your goals for the Sweat Challenge, don't worry!! You're not alone and it's not too late.
Here's what I want you to do:
Write down a goal that you really want to achieve
Example: I want to be more flexible
Set a realistic timeline of when you want to achieve this goal
Example: I want to be more flexible in six weeks
Set three actions that you will do to help you achieve this goal
6,176 likes
JUNE 13
Add a comment...
Post

Athletes	 skyemoench • Follow Kailua-Kona, Hawaii skyemoench Another good day in Kona. ✅ Tomorrow morning we swim the first leg of the course at the Ho'ala training swim 🏊😁, and despite usually having irrational fears about seeing "things" (anything 😂) in open water, I'm really excited to swim in the beautiful Hawaiian waters!! 🇺🇸🐬 📸: @koruptvision 988 likes OCTOBER 1 Add a comment... Post

Body building/strength training	 

Fitness challenges	

Body transformations	

Note. All posts used as examples were public posts at the time of data collection. Some content shown were videos.

Appendix C. Member Checking Infographic