#FoMO: ESTABLISHING VALIDITY OF THE FEAR OF MISSING OUT SCALE WITH AN ADOLESCENT POPULATION

BY

MICHAEL A PERRONE

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Michael A. Perrone

State University of New York College at Geneseo, B.A. (2011)

Alfred University, M.A. / C.A.S. (2013)

SIGNATURE OF AUTHOR: Michael A. Perrone

APPROVED BY: Dr. Mark Fugate, Committee Chairperson

                                             Dr. Andrea Burch, Committee Member

                                             Dr. Cris Lauback, Committee Member

                                             Dr. Steve Byrne, Committee Member

ACCEPTED BY: Mark Fugate, Ph.D. , Chairperson, Division of Counseling and School
                             Psychology

                             Nancy Evangelista, Ph.D., Associate Provost and Director of Graduate
                             Studies

                             W. Richard Stevens, Jr., Ph.D., Provost & Vice President for Academic
                             Affairs

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Abstract

Limited research has attempted to quantify Fear of Missing Out. Only one prior study has examined adolescents' experience of Fear of Missing Out and did so with a small, homogenous Belgian sample. In order to expand upon this limited research base, the present study sought to examine Fear of Missing Out with an American adolescent sample. Specifically, the purpose of the present study was to analyze the reliability and validity of the Fear of Missing Out Scale (Przybylski, Murayama, DeHaan & Gladwell, 2013) that was originally developed with an adult population, as well as strengthen understanding of Fear of Missing Out as it pertained to specific demographics. Students (grades 5-12) participating in a large, urban school district after school program in North Texas were surveyed on their experience with Fear of Missing Out and frequency of social media engagement ($n = 961$; 55% male). Results of a principal components analysis confirmed the presence of a 1-factor model, maintaining all 10 original scale items with strong internal consistency ($\alpha = 0.93$). Regression analysis suggested Fear of Missing Out was predictive of increased social media engagement ($p = .003$). Gender and ethnicity were not related to Fear of Missing Out; grade level and Fear of Missing Out were inversely related, such that the older a student was, the less Fear of Missing Out was reported. Future researchers should utilize intentional and purposeful methodology for measuring social media engagement and focus on strengthening the validity and reliability of Fear of Missing Out as a unique construct. Further, theorists should consider updating their developmental perspectives related to adolescence based on advances in technology, media consumption, and interpersonal communication, particularly via social media. Practitioners are encouraged to understand and disseminate this information as it pertains to educating adolescents and their families about the benefits and costs of mobile technology and social media engagement.

CHAPTER 1 INTRODUCTION, LITERATURE REVIEW, AND STATEMENT OF PROBLEM

Introduction

Adolescence is historically regarded as a period of role confusion as teens seek out new experiences and actively explore their environment, engage with peers, and self-reflect on their newly discovered preferences (Erikson, 1968; Sullivan, 1953). Studies have shown that various forms of mass media influence users in a variety of ways including as a means of forming a personal identity (Lloyd, 2002; Moreno, Kota, Schoohs, & Whitehill, 2013). As teens seek out ways to interact with their peers, more are turning to the Internet, specifically social media sites, to fulfill this need (Boyd, 2007; Madden et al., 2013). As widespread use of social media has permeated society, many journalists and popular writers have discussed how our continuous availability, exposure, and connectedness have led many to develop a "fear of missing out" (FoMO) in others' experiences (Morford, 2010; Wortham, 2011). Although this "apprehension that someone might be having rewarding experiences from which one is absent" has always existed as a part of adolescent life, the pervasive and continuous nature of social media stands to exacerbate the experience, making it particularly relevant to the modern teen (Przybylski et al., 2013).

Although these networks have many unique benefits to their users (e.g., long-distance communication, seeking out like-minded individuals), evidence suggests that the growing influence of social media on society is related to particularly maladaptive psychological consequences for some such as increased feelings of loneliness or a "fear of missing out" on something better than what one is currently experiencing (Burke, Marlow, & Lento, 2010; Pryzbylski, Murayama, DeHaan, & Gladwell, 2013; Turkle, 2011). One's relationship with

social media might be guided by personal characteristics (i.e., self-concept, mental health, personality), driving a proactive or reactive sociocognitive schema through which one processes information (Lloyd, 2002). For example, those with greater curiosity and resiliency to adversity will likely engage more positively with social media than an individual predisposed to insecurity and low self-esteem.

Pryzbylski et al. (2013) were the first to develop a scale (Fear of Missing Out scale; FoMOs) with adults to quantify this experience, finding that FoMO was positively correlated with negative experiences in mood and life satisfaction, as well as a higher likelihood to engage in social media. When studying a Belgian adolescent population, Beyens, Frison, and Eggermont (2016) found that increased individual need for belonging and need for popularity were associated with greater FoMO, which related to increased Facebook use. Although adolescents are some of the most prominent users of social media, this is currently the only published peer reviewed research article studying FoMO in adolescents. Fear of Missing Out and its relationship to social media engagement has only been minimally studied, and never among an American adolescent population. Adolescents' experience with Fear of Missing Out may best encapsulate teens' relationship with social media and how this newfound societal shift in how teens interact may be altering the social battlefield through which adolescents find themselves via peer validation and social reciprocity.

Conquering Adolescence and Appealing to Imaginary Audiences

Identity formation and the pursuit of social interaction. In his theory of human development, Erikson (1968) famously described the primary task of adolescence as one of identity versus role confusion. While humans spend their lifetimes establishing their identities, the adolescent period marks the formative years during which this process occurs most

significantly. To Erikson, identity was not simply a question of "Who am I?" rather "What do I want to make of myself, and what do I have to work with?" (p. 314). The monumental task of identity development involved an integration of past experiences with new endeavors, exploring various positions and roles within the world and ultimately making decisive, rational commitments as one matured (e.g., religious/political affiliation, career path, etc.).

Marcia (1966) categorized Erikson's theory of identity development into four statuses: *diffusion* (confusion), *moratorium*, *foreclosure*, and *achievement*. Those categorized in the *diffusion* status are in a state of confusion, lacking ample exploration and therefore unable to commit to a designated path. Although common in younger adolescents, Erikson posited that the perpetuation of this state of identity development in later life could result in a lack of optimism and self-confidence in adulthood. The period of *moratorium* encompasses the fundamentally tumultuous climate of adolescence, stereotypically classified by immense self-exploration, a lack of confident direction, and riddled with trial-and-error. Those in moratorium are developing decision-making skills but have yet to put them into practice in the form of goal-driven commitments. Adolescents in *foreclosure* have done little-to-no exploration, and have thus prematurely committed to certain life choices or value systems based on preset ideals without adequately weighing alternatives. For example, an individual may commit to marriage early in life, thus guiding subsequent life decisions moving forward. Finally, individuals who reach *identity achievement* have had a variety of experiences used to shape their value system, priorities, and view of the world. Their commitments are informed, self-driven, and considered an "end point," yet may be revised as necessary throughout one's life based on the consideration of future experiences.

Meeus, Iedema, Helsen, and Vollebergh (1999) reconceptualized the identity achievement process previously categorized by Marcia. Focusing primarily on the dynamic relationship between levels of exploration and commitment, Meeus et al. adapted the understanding of identity formation by emphasizing the notion originally posited by Erikson that adolescents are constantly revisiting their identities throughout the lifespan. Instead of foreclosure, the authors viewed this stage as a "closed commitment," signified by high present levels of commitment accompanied by low parallel exploration. Conversely, identity achievement was replaced by "achieving commitment," notably described as high levels of both commitment *and* continued exploration. The researchers hypothesized that as teens grow throughout adolescence, both their commitments and their continued exploration of those commitments strengthen, resulting in a more solid, justified identity. This understanding of the model considers the fluidity and ever-changing landscape of identity development as teens' levels of commitment and exploration fluctuate with the new and diverse experiences they encounter and share with one another.

Developmental psychologists have long regarded adolescence as a period filled with "soul-searching" and negotiating social relationships. Sullivan (1953) classified the various developmental stages specifically through one's mastery of interpersonal relationships. According to his model, coping with societal anxiety when dealing with others signifies successful completion of identity formation through a "self-system" capable of healthy interaction. Similarly, Erikson (1968) described teenagers as faced with the task of conceptualizing their identity through active exploration of their environment, social engagement with peers, and self-reflection on their newly discovered preferences. Erikson viewed social interactions as critical for negotiating one's personal values against those of others. Though

deeply personal and individual, Stone (1981) considered the process of constructing an identity a public one, involving an "identity announcement," or how a teen claims their identity, and an "identity placement," made by those observing the teen as fitting said announcement (p. 188). When one's placement matches their announcement, identity is considered established.

The cost of newly acquired metacognition. An adolescent's journey toward identity development is made possible by her newly acquired metacognitive abilities that come with formal operational thought (Inhelder & Piaget, 1958). That is, teens may now, more than ever, monitor and reflect upon their own thoughts, problem solve, and utilize these skills to guide decision-making and identity exploration. Elkind (1967) posited that with this newfound ability comes egocentrism, consequently resulting in teens struggling to differentiate their own preoccupations and self-criticisms from the admiration and criticisms of others. Appealing to an *imaginary audience*, adolescents tend to be overly self-conscious about how others perceive them, not yet aware of the internal bias that comes with self-reflection. Conversely, teens tend to misjudge their focus, interests, and preoccupations as overly congruent with other individuals' perceptions.

> The boy who stands in front of the mirror for two hours combing his hair is probably imagining the swooning reactions he will produce in the girls. Likewise, the girl applying her makeup is more likely than not imagining the admiring glances that will come her way. When these young people actually meet, each is more concerned with being the observed than with being the observer. (p. 1030)

The day-to-day life of an adolescent is riddled with self-criticism juxtaposed against an audience that does not exist, albeit not to the extent to which a teen perceives. Parallel to the imaginary audience and a secondary component to adolescent egocentrism, adolescents are notorious for constructing a *personal fable*, such that their feelings, emotions, and experiences are unique to them and them alone.

Supporting Elkind's theories with data. Several studies provide support for Elkind's theories regarding adolescent egocentrism. Galanaki (2012) sought to broadly examine the concept of imaginary audiences and their role in adolescent development. Three hundred fourteen adolescents from low-to-middle class socioeconomic backgrounds in both urban and rural areas in Greece were given self-report measures to assess levels of *imaginary audiences* and *personal fables*. Results demonstrated increased tendency to be self-absorbed toward the end of adolescence and the beginning of adulthood, supporting past research suggesting this as a time previously considered critical to an adolescents' differentiation and identity formation. Frankenberger (2000) surveyed a group of adolescents and adults to see if aspects of the imaginary audience and personal fable were prevalent in adulthood. Results suggested that these preoccupations with self and ideations of an imaginary audience were in fact present beyond adolescence, yet inversely related with age and therefore stronger in late adolescence. Both Galanaki (2012) and Frankenberger (2000) emphasize the critical period of adolescence as one guided by over-emphasized self-concern, an inflated sense of self-importance, and active, yet developing mental processes necessary for identity formation and self-exploration. These characteristics may lend themselves to hypervigilant concern over comparing oneself to their peers.

In a similar study, Schwartz, Mayard, and Uzelac (2008) sought to quantify adolescents' and young adults' (ages 11-21) egocentric experiences, hypothesizing that reported experiences related to imaginary audiences and personal fables would be inversely related to age. Two thousand ninety participants (50.7% female) from equally representative inner city, suburban and rural schools were given self-report scales to consider their feelings associated with a variety of statements and their relevance to themselves. While results suggested that middle adolescent

participants scored lower than early adolescents, an unexpected reported increase from late adolescents was explained by the authors as possibly related to changing environmental and educational contexts, resulting in new social changes (e.g., moving away from home for college, making new friends, newfound independence, etc.). Schwartz et al. (2008) posited that egocentrism, therefore, might serve as an internal coping mechanism for handling these newfound changes to environment and social context.

Results from Schwartz et al. (2008) reaffirmed those from Frankenburger (2000) and supports Galanaki (2012) such that adolescent egocentric behavior starts alongside newly developed metacognitive abilities and exists through late adolescence and into adulthood. O'Connor (1995) sought to compare adolescent egocentrism in the context of identity development. Results supported the notion that the more egocentrism one exhibited, the more inclined one was for exploration, and thus to reach identity achievement. Additionally, Schmitt-Rodermund and Vondracek (1999) found that the more parents encouraged childhood participation in activities (creative, cultural, academic, etc.), the more inclined children were to demonstrate broader self-exploration in adolescence. Such expanded self-exploration was found to result in later identity achievement; increased opportunity and availability to compare one's social contexts appeared to favor increased likelihood for identity achievement, albeit later on in life as adolescents were slower to make commitments.

This unwillingness to commit, yet eagerness to continue exploration described by O'Connor (1995) and Rodermund and Vondracek (1999) might be best characterized by the curious, indecisive teen who often chooses new activities to explore based on the activities of his peers. As adolescents continue to ask themselves Erikson's age-old question, "What do I hope to make

of myself?," they continue to explore as new opportunities present themselves, for fear that committing too early could result in missing out on something greater.

The Rapid Expansion of Social Media Usage Among Adolescents

Decades ago, Elkind's theories were evidenced by teenage tendencies to keep a diary that highlighted many universal experiences as carrying utmost importance and weight (Elkind, 1967, p. 1031). In today's world, these developmental mechanisms may manifest themselves in the form of online blogs, social media profiles, or "Tweets" (Stokols, 1999; Schmitt, Dayanim, & Matthias, 2008; Marwick & boyd, 2011). As adolescents' newly developed cognizance of their own thoughts and feelings takes center stage, an eagerness to share extensive life events from a benign high score on a video game to an intimate high school romance roots itself in the form of Facebook brag posts and Instagram date "pics." Teens' inclination to construct personal fables exacerbates their tendency to justify every minute detail of their personal life as worthy of a post for the entire world to see.

Utilizing a surveyed sample of 500 predominately European American, middle-class children (age 8-17), Study 1 of Schmitt et al. (2008) found that 13.7% of children reported having a personal homepage or blog; 86% were adolescents (age 13-17). Of those that created such pages, 80% reported feeling as though their pages helped "others understand who [they] are" (p. 499). More than half of the respondents reported feeling it was easier to disclose personal details about themselves via their homepages than face-to-face. Study 2 qualitatively examined the contents of randomly selected homepages (through a paid service) created by children and adolescents (ages 8-17), finding preadolescents were more likely to share information related to things they were good at, and adolescents were more likely to express material associated with their value-systems, social relationships, and personalities. These

results suggest that adolescents interact with social media at a deeper level than children, carefully manicuring how they present themselves to their imaginary audiences as a means of advertisement and social bridging to their like-minded counterparts.

Most recently, modern-era social media far surpasses the popularity and functionality of the Internet chat rooms and personal homepages of yesteryear discussed by Stokols (1999) and Schmitt et al. (2008). Boyd (2007) conducted a 2-year ethnographic study based on high school youth engagement with MySpace. Utilizing qualitative interviewing and participant observations, Boyd discussed several parallels between teens' real-world interactions and those through which he referred to as "networked publics." At the time of his study, Boyd hypothesized it was the norm for adolescents to create digital profiles in order to express themselves in an online social network. Teens are likely to present themselves as positively as possible, as interactions operate under the same social scrutiny and hierarchy that exists throughout the school day. In addition, teens learn societal rules through trial-and-error and seek out validation from peers just as frequently as they risk facing rejection; this process and their resulting social identity is expected to extend both on and offline. Chayko (2014) cited information technology professional Charles Grantham on youth who have grown up in the digitally accessible world in which we live: "Their [online and offline] worlds bleed together. It is pretty useless to draw borders around different spheres of life for them" (p. 984).

Schmitt et al. (2008) highlighted early evidence of the extent to which social media *involvement* appears to be growing just as fast as the technology itself. From the time their data was collected in 2003, follow-up research (Roberts, as cited in Schmitt et al., 2008) reported that the frequency of adolescents who created personal homepages had more than doubled from 13.7% to 32% in less than 2 years among 8 to 17 year-olds.

Presently, adolescents and young adults are now among the most active users of social media in the United States. A recent study consisting of a nationally representative American sample of 802 parents and their 802 teens (ages 12-17) found that 95% of all teens are actively online (Madden et al., 2013). While this has been a consistent finding since 2006, the nature in which teens are accessing the internet has changed drastically, with 37% reportedly having a Smartphone, compared to 23% just one year prior in 2011, and 23% reporting ownership of a tablet computer. New technological advances in portable electronics are keeping teens connected more frequently and more often than ever before. Additionally, teen Internet access appears to extend across all socioeconomic statuses (SES), with 89% of low SES teens still reporting access to the internet, compared to 99% of teens from high SES families. In fact, those from low SES households are more likely to access the Internet via a cell phone, suggesting that teens' access is just as, if not more mobile, regardless of household income (Madden et al., 2013).

As of 2012, 81% of online teens reported using social media and 77% reported using Facebook (Pew Internet, 2012), with older teens more likely to engage in social media use than younger teens (Madden et al., 2013). Comparatively, as of January 2014, 74% of online adults reported using social media (ages 18-65), emphasizing the importance of continued social media research with adolescent demographics (Pew Internet, 2014). Over one fifth of teens check their social media account more than ten times daily, and more than half check at least more than once a day (American Academy of Pediatrics, 2011). Although directionality cannot be established, evidence suggests that social media usage is affecting adolescents' day-to-day lives and that their daily usage is both frequent and pervasive.

Tapping into the "System:" Self-Presentation and Identity Formation

      Self-presentation and self-disclosure. As adolescents seek to establish an autonomous identity, they must learn how to effectively navigate two essential skills: self-presentation and self-disclosure (Schlenker, 1986). Schlenker described these skills as a public performance of sorts. Adolescents actively work through these skills through the trial-and-error experimentation of identity characteristics. Supporting Erikson (1968), adolescents advance their knowledge, capability and therefore, functionality of how to present themselves through social feedback, rehearsal, and validation from peers. Furthermore, developing teens master the art of self-disclosing intimate information through others' validation of appropriate cognitions (determined through congruency within the cultural system), emotions, and behaviors. Ultimately, this can lead to the formation of friendships and romantic relationships through reciprocal disclosure from peers, as teens perceive peer reciprocity as acceptance, thus building their self-image and positively reinforcing their behavior.

      Marwick & boyd (2011) argued that a critical shift toward online communication demands that a society constantly conceptualize an imagined audience and be cognizant of whom we are communicating with via social media: "The need for variable self-presentation is complicated by increasingly mainstream social media technologies that collapse multiple contexts and bring together commonly distinct audiences." Teens seeking social reciprocity from social media-defined self-presentation demonstrate how the cultural fabric upon which past generations have grown has taken a fundamental turn. Mainstreamed social media technology may be making one's peers more available and consolidated, such that peer interaction is all available in one place, but how do social media's characteristics complicate self-presentation and at what cost?

Understanding adolescence via interconnected "systems." This validation and reciprocity comes not solely from individuals but through a complex web of interacting systems. Bronfenbrenner's Ecological Systems Theory (EST) provided a theoretical context that explained development through one's interaction with environmental systems of various sizes and influences (Bronfenbrenner, 1989). According to his theory, a typical adolescent interacts with multiple *microsystems* simultaneously: interpersonal family relationships, peer network, social groups such as youth groups, et cetera. These microsystems interact with one another (*mesosystem*) and are influenced by an *exosystem* (including mass media and a political system) which is driven by larger societal norms and attitudes referred to as the *macrosystem* (Bronfenbrenner, 1989). Additionally, over time, the changing environment within which one grows can either facilitate or disrupt developmental progress by offering new challenges and opportunities for an individual to conquer, or by interrupting progress through detrimental transitions or setbacks, respectively. For example, changes in leadership at a teen's part-time job may facilitate an opportunity for an adolescent to receive a promotion and take on additional responsibilities. Conversely, a sports-related injury for someone else could postpone or divert a teen's pursuit of an athletic future. The bi-directionality of time and its relationship with the environment is categorized as the *chronosystem* (Bronfenbrenner & Morris, 2006).

Bronfenbrenner and Morris (2006) referenced their 1994 definition of a microsystem, describing it as a "pattern of activities, social roles, and interpersonal relations experienced…in a given face-to-face setting with particular…features that [affect] engagement in sustained, progressively more complex interaction with, and activity in, the immediate environment" (p. 814). Specifically, the article insists that development takes place through regular, progressively more complex reciprocal interactions between an individual and their external environment (e.g.,

group play with peers, feeding a baby, learning new skills, etc.). Simple repetition does not work, as activities must become increasingly complex, occur regularly, and demand a degree of bidirectional reciprocity. Just as an athlete will not become stronger by lifting the same weights for the same number of repetitions, an adolescent teen must explore reciprocally complex social interactions with fellow peers and adults, ranging in topic and activity in order to grow and explore their identity.

The adolescent identity, media, and sociocognitive schema (AIMSS). Lloyd (2002) recognized the developmental task of identity formation in adolescence and the impact social comparison held in the process. He posited a conceptual framework that considered the role mass media and one's social competence played in identity formation, supplementing peer interactions by considering one's internal cognitions and how they influence one's perceptions of relevant mass media devices (i.e., television, radio, music, videogames, Internet technologies (p.85). The AIMSS expanded upon the utility of Bronfenbrenner's EST, recognizing how family microsystems (e.g., supervision practices, censorship of content, etc.) and sociopolitical macrosystems (e.g., government propaganda, societal norms associated with explicit content, etc.) help to shape identity formation.

Identity formation by way of sociocognitive schemas. Consuming mass media provides adolescents new opportunities for learning behavior through metacognition without the risk of peer rejection found through social interaction and comparison. Within the AIMSS model, Lloyd (2002) expands upon research established by Spencer et al. (1997) and addresses two sociocognitive schemas (formed by existing environmental systems) that could theoretically influence adolescents' interpretations of media input. A *proactive social schema* would suggest that an adolescent is predisposed to focus on trust and cooperation with peers, can demonstrate

empathy, and healthily forms her identity through a positive environmental interpretation. Conversely, an adolescent with a *reactive social schema* might instead focus on maladaptive messages in mass media, such as violent video games, unhealthy or abusive relationships in television programs, or prejudiced and hateful internet forums. Elaborating upon the model, these two schemas essentially represent two alternative "roads" toward complete identity formation, such that an adolescents' respective schema serves as a means of problem-solving the information they ultimately pull from mass media influences. The AIMSS emphasizes the importance of considering the social-emotional and cognitive predispositions of an individual. These predispositions affect the way in which one digests environmental stimuli, whether conversations with peers or a particularly graphic fight in a popular movie.

Upon revisiting the applicability of bioecological systems theory, Bronfenbrenner and Morris (2006) supported the findings of Spencer et al. (1997) and Lloyd (2002), emphasizing that "the scientifically relevant features of an environment for human development not only include its objective properties but also the way in which the properties are subjectively experienced by the person living in that environment" (p. 796-797). Akin to the proactive and reactive social schemas addressed by Spencer et al. (1997), Bronfenbrenner and Morris (2006) cited the influence of active behavioral dispositions as shapers of development. For example, developmentally disruptive characteristics include distractibility, a propensity for aggression or violence, impulsiveness, or feelings of insecurity. Conversely, an individual's curiosity, perseverance, willingness to take initiative with or without social motivation, and resilience to setbacks all may serve as developmentally generative qualities (p. 810).

It seems only natural to extend these interpretative considerations to encompass teens' uses of the Internet as modern media becomes increasingly socialized through online

communication, sharing and interaction. Current research has started exploring a link between clinical symptoms of psychiatric disorders (e.g., anxiety, narcissism, compulsivity, depression) and technology use, including social media, in adults and teens (Rosen et al., 2013; Jelenchick, Eickhoff, & Moreno, 2013; Bonetti, Campbell, & Gilmore, 2010). As we seek to understand teens' use of modern mass media in an age now riddled with online sharing and social interaction, considering individuality that defines one's internal metacognitive processes will be particularly essential to understand not only *what* adolescents do with social media and *why* it is so appealing, but *how* their social quest for an identity may be affected by their personal relationship with social media itself.

Plugging In: Why Adolescents Are Turning to Social Media

Stokols (1999) highlighted how individuals' online interactions were blurring the boundaries of such aforementioned intertwined systems, driven largely by the vast accessibility and endless connectedness that Internet-based chat rooms and other social outlets provided. In the past, adolescents have developed self-presentation and self-disclosure skills through face-to-face interactions. However, modern-day teens have been looking toward the Internet to fulfill this task for years through the creation of blogs, online diaries, and personal homepages (Schmitt et al., 2008; boyd, 2007; 2011; Amichai-Hamburger, 2005; Amichai-Hamburger & Barak, 2009). By definition, online social interactions necessitate one of the fundamental skills required of adolescents (Schlenker, 1986) as they navigate their developmental stage: online media lack the non-verbal communication seen in face-to-face interactions, thereby facilitating greater need for self-disclosure via a reliance on information sharing and direct questioning to help alleviate otherwise potential uncertainty (Schouten, Valkenburg & Peter, 2009).

The unique social playing field of the modern teen. Boyd (2007) discussed several properties that are unique to social media, thus changing the dynamic through which adolescents navigate social relationships online. First, *persistence*, or the asynchronous nature of communication allows for messages to linger for all to see at any given time, as well as perpetuates a desire to be connected and up-to-speed with others at all times. Next, the *searchability* of social media makes it convenient and accessible to seek out other like-minded individuals with which to compare and contrast with oneself. Furthermore, while gossip in real life can be deflected as a misinterpretation, online communications are replicable and therefore original impressions are often indistinguishable from those copied or passed on by others from their source. Finally, adolescents must now be aware of the *invisible audiences* who may be viewing their online activity. Social media complicates communication by shrouding the true audience of one's online identity. Boyd's research suggests that the imaginary audience previously theorized by Elkind (1967) to be a critical component of adolescents' battle with egocentrism has, in a sense, become a reality that today's teens face.

Supporting the considerations posited by Boyd (2007), three major characteristics of online social media encourage adolescent use as a means of developing self-presentation and self-disclosure, giving teens an added sense of control over social interactions that, should they occur face-to-face offer unpredictability and the potential for immediate social backlash: anonymity, asynchronization, and accessibility (Valkenburg & Peter, 2011).

Anonymity. Defined by many forms, online communication affords adolescents anonymity they do not have in a face-to-face interaction. In the strictest sense, chat rooms and message boards offer source anonymity, where users may contribute to the community behind a pseudonym or online "screen name." To a lesser degree, teens have the control to communicate

only via text, hiding visual-auditory information (e.g., facial expressions, tone of voice) from others and thus simplifying self-presentation and self-disclosure to a curated verbal exchange. Anonymity offers several benefits such as affording adolescents relief from concerns over their physical appearance, perhaps improving their chances for positive social interaction. However, with inhibited fear of rejection or backlash comes the potential for impulsive or aggressive behaviors (i.e., cyberbullying, harassment, etc.).

Asynchronization. Unlike in face-to-face interactions where both parties participate and react in real time with others, online communication allows for information to essentially be "proofread" before one clicks "send." Furthermore, it can be easier to edit information (e.g., alter a blog post) after it has been sent than in real life where once something has been said, it cannot be taken back as readily. Asynchonization may make it easier for self-conscious or shy teens to carefully tailor their self-presentation and self-disclosure toward the ideal. However, in conjunction with anonymity, the same tool could be used by one to deliver a piercing calculated blow to another.

Accessibility. Finally, the Internet affords adolescents immediate access to a near infinite amount of information and like-minded individuals with whom they can collaborate and interact. Naturally, online communication and social media allow teens to spread information about themselves quickly and to a large, targeted audience. They have access to sensitive information (e.g., sex, intimacy, relationships, substances, etc.) that they may be too shy to ask about in person, as well as support or guidance from individuals going through similar situations or from experts in the field. Additionally, there are opportunities to connect with friends and family otherwise impossible to reach due to geographical constraints. Although online accessibility provides adolescents opportunities to further control their self-presentation and self-disclosure, it

comes at the risk of not always knowing if the information one is receiving is accurate or safe, nor if individuals one interacts with are necessarily who they claim to be. As adolescents begin to differentiate from their parental attachments and seek opportunities for increased control and autonomy, social media affords them an opportunity for heightened control of their social life with a perception of reduced risk and anxiety of encountering the perhaps uncomfortable or ambiguous lessons that can come with face-to-face interaction (Valkenburg & Peter, 2011).

Bridging parallel identities and perpetuated self-misrepresentation. Networked publics are primarily filled with individuals an adolescent knows offline (Ellison, Steinfield, & Lampe, 2007; boyd & Ellison, 2008). This suggests that such online communities serve as an extension of a teen's already-existing social network, requiring teens to bridge their social clout between their online and offline identities. Zhao, Grasmuck, and Martin (2008) explored how college students constructed their identities in "nonymous" (antonym of anonymous) online communities where individuals are "anchored" to their real-life identities by an institutional means (i.e., registering with a school, university, or workplace on Facebook). They found that students were more likely to "show" than "tell" when it came to expressing their personal characteristics, interests, and relationships on the site. By expressing oneself through group photos and publicly shared media with peers, students appeal to their virtual audiences and display themselves without explicit self-description. Further, the vast majority of students kept friend postings and shared photographs by others "public" for anyone to view, boasting their perceived social relevance and clout by openly displaying their level of social connectedness and popularity with other users on the site. Essentially, because sites like Facebook succeed through the sharing of media between friends, perceived social circles shape identity.

Markus and Nurius (1986) posited two categories of the identity: the "now self" and the "possible self." The now self is an identity known to others, while the possible self remains unknown, representative of one's ideal self-image. Although teens are restricted in how much they can fabricate on nonymous (i.e., revealing one's true identity) social networks where social capital with real friends can be won or lost, their ability to present themselves through the careful soliciting of what information becomes public and private domain allows for the presentation of an ideal possible self that may or may not be an accurate portrayal of one's true self.

A combination of this online identity caveat with a constant, reinforcing drive to keep up with one's peers as discussed by Moreno et al. (2013) could create the perfect storm of maladaptive "fear of missing out" for the egocentric adolescent. Researchers sought to better understand the functionality with which the largest and most popular social network, Facebook, serves its users in an adult population (Moreno et al., 2013). Facilitating a concept-mapping brainstorm process, 80 participants (M = 20.5 years old) generated a total of 169 statements regarding how they perceived Facebook to influence society. Participants then sorted these statements by their perceived function. Upon analyzing the results, researchers identified 4 major domains (Connection, Identification, Comparison, and the Facebook "Experience") with which participants saw Facebook influence their lives. Replicating and extending the results of Boyd (2007) with an adult sample, Moreno et al. (2013) found that Facebook allows for greater accessibility to social interactions otherwise prohibited by distance and at any time. Participation in the social network fuels one's identity expression as well as perception through a perpetuating desire to compare oneself to one's peers. Participants agreed that the experience itself had an addictive quality, allowing individuals to "stalk" their peers' personal lives without consequence, reinforce or refute their opinions and beliefs through likes and comments, and merely to distract

oneself from everyday life. Finally, participants felt that while Facebook use boosted mood, it could also harness a negative experience through fostered competition to keep up with what one's peers were doing or experiencing, as well as for attention through reinforcing "likes" and comments on posted activity.

Chou and Edge (2012) found that the longer a sample of undergraduate students used Facebook, the more inclined they were to remember positive messages and happy pictures posted on Facebook, and thus believe that others were "always" happy and therefore happier than themselves. These individuals were more likely to agree with a statement that life was unfair. The researchers attributed this relationship to an availability heuristic, such that individuals based perceptions on examples that were easy to recall, therefore incorrectly concluding that the happiness recall was all the time, when compared to the unhappy events they could remember in their own lives.

Because social media users' perceived identities are driven by a depiction of shared group experiences, they are more inclined to misrepresent themselves in the most positive light possible as part of this shared group identity. In turn, the technology again rewards the user through increased viewership, and conditionally rewarding "likes" and "comments" that come with viewer attention. With these experiences most available in users' minds, individuals irrationally assume that the lives of others are happier and more exciting than their own.

> "Social media exposes us to far more opportunities for fleeting social interactions with far more people at a "low cost of admission" than ever before; those interactions are disproportionately likely to involve the emotional high and low points of their lives" (Burkeman, 2015).

For the self-absorbed, egocentric teen seeking to practice appropriate self-presentation skills, social media *rewards* a lack of appropriate self-disclosure (of both positive and negative

experiences). This feedback loop not only encourages reciprocal participation from one's peers, but also exacerbates a preoccupation (or "fear") that one's own life experiences are not nearly as exciting as the perceived lives of others**.**

Personal Characteristics and their Effect on Social Media Engagement

Although social media usage has become as ubiquitous in everyday life as owning a mobile phone, its effect on our health and wellbeing has been hotly debated. In particular, research has suggested that our commitment to our online relationships and identities may serve us both positively and negatively, often producing mixed results. As previously suggested, our underlying personal characteristics (i.e., feelings of loneliness, self-esteem, self-image, perceived social status) might steer our relationship with social media (Lloyd, 2002; Bronfenbrenner, 2006).

Research suggests that personality may play a key role in how one engages with social media both positively and negatively. Correa, Hinsley, and Zuniga (2010) found that extraversion and openness were both positively correlated with social media engagement in adults. Social media use was measured via a 10-point Likert scale, such that participants were asked how often they used the Internet for both instant messaging and social networking sites, where '1' meant rarely/never and '10' signified often. The relationship between extraversion and social media use was stronger with young adults. Additionally, Amichai-Hamburger and Vinitzky (2010) found highly extroverted individuals to demonstrate lower use of personal information and more online friends than those who were less extroverted. Results suggest that introverts may place more emphasis on self-disclosing personal information perhaps due to an increased need to promote themselves without the abundance of face-to-face social interaction seen by their extroverted counterparts.

Burke et al. (2010) surveyed an international sample of Facebook users (N = 1193; Age M = 33.7) and found that social network usage was associated with higher social capital (benefits such as access to diverse information and emotional support from friends) and lower reported feelings of loneliness. However, directionality of this association was not established. That is, the research design does not suggest whether social network sites perpetuate lesser loneliness or those who report less loneliness engage more with social media. Bonetti, Campbell, and Gilmore (2010), however, suggest that those adolescents who self-identify as lonely appear to communicate online more frequently and regarding more personal topics (i.e., greater self-disclosure). These results suggest that perhaps adolescents who engage in social media might be more susceptible toward feelings of loneliness than adults, or conversely, that adolescents who feel lonelier seek out social media to compensate.

Theoretically, individuals with low self-esteem may be particularly drawn to social media due to its ability to provide a social avenue free of discomfort or insecurity that may come from face-to-face interaction (Forest & Wood, 2012). These individuals may benefit from the anonymity the Internet affords them to overcome social anxieties that might otherwise be prohibitive to their social-emotional growth. Forest and Wood (2012) found that among an undergraduate sample, those who reported lower self-esteem on Rosenberg's Self-Esteem Scale (Rosenberg, 1965) were more likely to identify Facebook as a safe place to self-disclose than those with high self-esteem. However, as hypothesized, researchers found that these individuals were also more likely to make posts and status updates with higher negativity and lower positivity (as measured by coders rating their individual liking of the participant and eagerness to spend time with the participant based upon what participants posted) than those with high self-esteem, potentially pushing others away and exacerbating social rejection. These results

highlight a critical difference between adolescent mastery of self-disclosure versus self-presentation (and notably, one's awareness of such presentation). Conversely, those with already fruitful face-to-face interactions and capable of successful self-disclosure and self-presentation could theoretically supplement their social development through social media. Dubbed the "the rich get richer" hypothesis, those who already flourish socially could benefit further from the additional opportunities provided by social media (Valkenburg & Peter, 2007; 2011).

Etiologically rooted in a fragile self-esteem, studies have examined how narcissism plays a role in social media engagement. Mehdizadeh (2010) analyzed the Facebook content, self-esteem, and personality self-reports of 100 Facebook users attending college. Results suggested that both higher self-reports of narcissism and lower reports of self-esteem were indicative of greater social media engagement. Additionally, Rosen et al. (2013) suggested that more general Facebook use, more Facebook use for impression management, and more Facebook friends all predicted narcissism in teens, young adults, and adults.

Notably, in his commentary distinguishing between egocentrism and narcissism in individual and cultural development, Blatt (1983) likely would have been critical of both Mehdizadeh (2010) and Rosen et al. (2013) for their emphasis on studying narcissism in the context of social media as a cultural development. Blatt identified the study of narcissism as best reserved for describing clinical phenomena, thus having little applicability to normative psychological development and cultural change. According to his hypotheses, Blatt observed narcissism as a polar expression of egocentrism: a focus on a "grandiose self" in which world and people are used to reflect and express one's strength and perfection serves as a defense against feelings of unworthiness. Supporting the aforementioned research from Schwartz et al. (2008), Blatt posited that egocentrism serves as a complex defense against feelings of depression

stimulated by threatening feelings of being unwanted or unacceptable, as are often common in periods of environmental or social change that are all too common in late adolescence and early adulthood (e.g., moving away to college, starting a new job, etc.). Decades ahead of Rosen et al. (2013) and the dawn of social media, Blatt reflected, "a mobile, highly technological, impersonal, computerized society has created a sense of loss—of interpersonal relatedness, of ties to an extended family, and of belonging to a community" (p. 295).

More recent research has highlighted a broader understanding of narcissism beyond a clinical condition or disorder, but rather a potential generational shift in personal self-attitudes. In a cross-temporal meta-analysis studying American college students' self-reported levels of narcissism as measured by the Narcissistic Personality Inventory (NPI), Twenge, Konrath, Foster, Campbell, and Bushman (2008) concluded that scores had increased by 30% since 1982. However, Trzesniewski, Donnellan, and Robins (2008) challenged the notion that "Generation Me" (those born from the 1970s-1990s) was more narcissistic than previous generations, citing direct flaws in methodology of the Twenge et al. (2008) study, most notably the use of convenience sampling, thereby making it impossible to make generalizations regarding the population at large. Further, Trzesniewski et al. challenged a notion established by Twenge that the rise of self-esteem interventions (with an emphasis on feeling good over real accomplishments) was to blame for a rise in narcissism, instead citing evidence of positive child and adolescent outcomes from such programs and insisting that results regarding these generational assumptions was inconclusive. Nevertheless, the scientific debate surrounding potential generational increases in personal characteristics such as narcissism and self-esteem begs the question regarding whether increased social media engagement is the cause, or instead the result of such personal differences.

Ahn and Shin (2013) explain how two components of relatedness operate under unique neural systems, with one system to avoid social isolation, and another to establish *connectedness* with other. Humans have evolutionarily developed to activate pain receptors (affectively shared with physical pain) that exhibit themselves as feelings of fear or anxiety when detecting possible social isolation. Contrastingly, connectedness operates as a positive system, such that the formation and maintenance of pro-social friendships or romantic relationships is rewarded by dopamine releases in the brain. While both of these functions of relatedness are accomplished through face-to-face communication, only seeking connectedness (and not avoiding social isolation) is encompassed through social media usage (Ahn & Shin, 2013).

In an attempt to bridge competing claims regarding social media's role in an individual's sense of belonging (i.e., inconclusive results between the augmentation and displacement hypotheses), Ahn and Shin (2013) sought to explain the distinction between face-to-face and social media communication with their survey study of 300 Korean adults, ages 19 to 39 (M = 29.02). Results supported their predictions, such that face-to-face communication allows for both avoiding social isolation as well as seeking connectedness, yet the nature of social media only allows for the latter. The study sheds light on the social limitations of social media (such that it may not resolve feelings of social isolation) and offers a potential explanation for mixed results in the literature regarding social media's effect on individuals' wellbeing.

Understanding Fear of Missing Out as a Mediator of Social Media Interaction

The cost of continuous connectivity. The present literature review has demonstrated the importance, albeit inconclusively, of personal characteristics and their effect on social media engagement via our drive to seek social connection, propensity to misperceive social media as more positive than our realities, and nature in which we are rewarded for perpetuating these

misperceptions (Ahn & Shin, 2013; Chou & Edge, 2012; Moreno et al., 2013). Research thus far

is unclear on the breadth of positive and negative consequences associated with our mainstream

adoption of social media. However, the most recent literature alludes to the inevitable cost

associated with remaining "plugged in" and accessible at all times. Research suggests that the

constant availability afforded by social media in conjunction with mobile technology can offer

an unprecedented sense of connectedness, access to endless information, and social support (Ahn

& Shin, 2013; Chayko, 2014). However, within this immense opportunity can grow dependency,

and therefore potential side effects akin to an addiction. Significant anxiety and stress may result

from when an individual disconnects, even if only temporarily (Bawden & Robinson, 2009;

Przybylski et al., 2013; Turkle, 2011). A "worry that one may be out of touch at some point can

induce anxiety- a sense of being overwhelmed and 'fear of missing out'" (Chayko, 2014, p. 980).

Evidence suggests that our perceptions can be negatively skewed when we compare our

own lives to the perceived lives of others' social media accounts (Chou & Edge, 2012), such that

others appear happier due to the nature in which individuals present themselves through these

outlets. Furthermore, the pressure to keep up with the latest technologies (new social networks,

upgraded mobile devices, etc.) and the information we see our friends posting (upcoming social

events, vacations, life milestones) pushes us to stay plugged in while overwhelming us with too

many decisions and choices (Chayko, 2014).

Social media technology is rapidly changing how often we are exposed to the activities of

one another and the misrepresentative manner in which such activities are presented. At

unprecedented rates, teens are turning to social media to supplement their ever-essential social

lives as they explore their identities. One's macrosystem is figuratively converging inward, as

teens have the exceptional opportunity to stay closely and continuously connected to the broader

social world around them. As teens stay connected with one another, they inherently share more experiences. This blooming opportunity, however, comes with a cost: one cannot possibly attend to all that is presently made available to her. A "fear of missing out" is the inevitable opportunity cost with which modern-day teens must learn to grapple, as they struggle to keep up with all of the opportunities immediately visible to them.

  FoMO in popular media. As social media usage has become mainstream in our society, increased attention has been brought to a now-exacerbated personal experience that adolescents have arguably wrestled with since the beginning of the modern era. Journalists and authors alike have described the opportunity behind "Fear of Missing Out," or FoMO, as both positive *and* negative (Burke et al., 2010; Morford, 2010; Turkle, 2011; Moreno et al., 2013). While the connectedness of staying in touch with friends regardless of geographical restraints can be invaluable, the overwhelming and pervasive input may result in a "blend of anxiety, inadequacy and irritation that can flare up while skimming social media… as billions of Twitter messages, status updates and photographs provide thrilling glimpses of the daily lives and activities of friends…" (Wortham, 2011). Said differently, "Fear of Missing Out is characterized by the desire to stay continually connected with what others are doing…" and results in "a pervasive apprehension that others might be having rewarding experiences from which one is absent" (Przybylski et al., 2013, p. 1841). This apprehension may encompass something as benign as missing a weekend gathering with friends or as serious as grieving the loss of a literary icon (Burkeman, 2015).

  Quantifying FoMO. Although the term FoMO has been recently explored in popular culture, Pryzbylski et al. (2013) were the first to attempt to empirically quantify the phenomenon. After reviewing relevant popular and industry writing on FoMO, Pryzbylski et

al. created 32 items reflecting "the fears, worries, and anxieties people may have in relation to being in (or out of) touch with the events, experiences, and conversations happening across their extended social circles" (p. 1842). Participants were comprised of an international adult sample (N = 1013; Male = 66%; M = 28.5 years old) recruited via an online survey system. Each participant completed basic demographic questions and the 32 FoMO-related items briefed with the following instructions:

> "Below is a collection of statements about your everyday experience. Using the scale provided, please indicate how true each statement is of your general experiences. Please answer according to what really reflects your experiences rather than what you think your experiences should be. Please treat each item separately from every other item" (p. 1843).

Items were presented in a randomized order and each item was scored on a five-point Likert scale (1 = "not at all true of me" to 5 = "Extremely true of me"). Researchers ran a principle components analysis, which determined that the 32 items had a strong single factor solution. Weaker factor-loaded questions were removed from the pool to improve model fit. Next, an Item Response Theory approach was utilized on the remaining 25 items to identify 10 items that most effectively measured a broad range of information. Internal consistency and appropriate distribution were measured, leaving researchers with a valid and reliable 10-item Fear of Missing Out scale (FoMOs; α = .87; See Appendix A)

In Part 2 of their study with 2079 adult British participants (Male = 50%; M = 43.21 years old), Przybylski et al. (2013) sought to explore how FoMO related to demographics, individual differences in need satisfaction and wellbeing, and social media engagement. Researchers hypothesized the following:

1) Individuals who had their basic needs (competence, autonomy, and relatedness according to Self Determination Theory; Deci & Ryan, 1985) satisfied on a daily basis would

report lower FoMO, 2) FoMO would be negatively associated with psychological wellbeing (measured by questions pertaining to overall life satisfaction and general mood), and 3) FoMO would be related to social media use, specifically mediating the relationship between individual's basic need satisfaction, general mood, and life satisfaction to social media engagement.

The study found that young individuals, particularly young men, were more likely to experience FoMO. In addition, results suggested that those with lower levels of self-esteem, perceived autonomy, and relatedness (basic psychological needs according to Self Determination Theory) to peers were more likely to report higher experiences of FoMO. Most importantly, researchers determined FoMO to have a mediating effect between these low psychological needs and social media engagement, such that those with low psychological needs were more likely to engage in social media, but only insofar as it related to higher overall levels of FoMO.

FoMO as a maladaptive mediator. Elhai, Levine, Dvorak, and Hall (2016) explored problematic smartphone usage as it pertained to individual needs and psychological issues in adults. Although Fear of Missing Out was not related to how often one used a smartphone, it was the variable *most* related to *problematic* smartphone use (defined by a Smartphone Addiction Scale highlighting maladaptive patterns of smartphone-related behavior; Kwon et al., 2013). This study provides further evidence of the potentiality for negative side-effects associated with pervasive connectedness (e.g., Bawden & Robinson, 2009; Przybylski et al., 2013; Turkle, 2011; Chayko, 2014). Because Fear of Missing Out was most related with problematic smartphone use, results expand upon existing research by highlighting how FoMO may be an underlying key in understanding how individual precursors may explain how positive or negative one's experience with technology and social media may be.

Recent follow-up studies have begun to elaborate on the underlying mediating potential of Fear of Missing Out as it pertains to our perpetual desire to stay connected and engage with technology and social media, as well as the potential effects of this pervasive connectedness. Alt (2015) examined the link between an individual's motivation to learn and his social media engagement. Utilizing a predominately female Israeli college student sample, results indicated that both extrinsically motivated and a-motivated students were more inclined to utilize social media in the classroom compared to intrinsically motivated students. However, like Pryzbylski et al. (2013) discovered, these individual motivational psychological differences were best explained as indirectly mediated by Fear of Missing Out.

Beyens et al. (2016) sought to investigate adolescents' Fear of Missing Out as it pertained to their perceived stress related to the use of Facebook. The study surveyed 402 adolescents (43% male) in various schools in Belgium. Increased individual need for belonging and need for popularity were associated with greater FoMO, which related to increased Facebook use. Beyens et al.'s results corroborate past research (e.g., Alt, 2015; Pryzbylski et al., 2013) by expanding the understanding of FoMO as a mediating factor between one's individual differences and social media engagement with an adolescent Belgian population.

Expanding upon Pryzbylski. Although Pryzbylski et al. (2013) were the first to empirically quantify Fear of Missing Out, their scale-building sample, with a male representation of 66%, may have posed a bias to the instrument, thus potentially skewing the results in the follow-up study to be more sensitive to male participants. In addition, the measure was used with a solely British sample. Most importantly, the sample was created using only adult participants, leaving out the population arguably in the developmental stage most susceptible to experiencing Fear of Missing Out-- adolescents.

Adolescents now develop in a society virtually expecting them to hold a presence in social media. It is essential to understand how teens experience social media engagement in order to encapsulate the societal shift that presently affects identity formation in this critical developmental period. The aforementioned research suggests that social media users are prone to a variety of psychological pressures, both positive and negative. Adolescents' self-preserving egocentric tendencies, combined with their eagerness to explore new activities and connect with peers results in a tendency to inappropriately and frequently self-disclose both in person and via social media, due to the rewarding nature of such interactions. Developmentally, teens' desires for social interaction and their susceptibility to peer influence through the unique qualities of social media make them particularly vulnerable to experiencing a fear that the experiences of others are more fulfilling than their own. However, no research has yet been conducted to attempt to understand American adolescents' experience with this construct.

Summary and Justification

The present study seeks to explore the construct validity of the Fear of Missing Out Scale, as developed and published by Pryzbylski et al. (2013) with an adolescent American population. Pryzbylski et al. developed the Fear of Missing Out Scale supported by the pretense of Self-Determination Theory (Deci & Ryan, 1985), which states that humans are naturally seeking fulfillment of three basic psychological needs: competence, autonomy, and closeness. As previously cited, adolescents are some of the most pervasive and intimate users of social media as they seek social validation from peers on their path to establishing personal identity. The present study justifies the adaptation of the Fear of Missing Out Scale as the adolescent developmental period is guided largely by the pursuit of these same psychological needs through

the exploration, reciprocal peer interaction, and increased autonomy that comes with the task of identity formation.

Although the psychological outcomes of social media usage are thus far inconclusive, Fear of Missing Out may stand as a potential underlying indicator for predicting these outcomes in an otherwise complex and convoluted web of interacting internal and external systems. An improved understanding of adolescents' experiences with Fear of Missing Out may reveal what is truly at stake as modern-day socialization enters unchartered territory and continues to evolve at an unprecedented rate. The present study seeks to add to the validity of a necessary tool with which to expand research in this limited investigative area. In the process, the present study seeks to develop an exploratory understanding of how demographic characteristics (age, gender, race/ethnicity, etc.) might influence Fear of Missing Out as a way of strengthening the limited knowledge base associated with the phenomenon.

Research Questions

1. Is the Fear of Missing Out Scale (FoMOs) developed by Przybylski, Murayama, DeHaan and Gladwell (2013) a reliable and valid measure for use with an adolescent population?

2. Is Fear of Missing Out related to adolescents' social media engagement?

3. Is Fear of Missing Out influenced by individual demographic characteristics (e.g., age, gender, race/ethnicity)?

CHAPTER 2 RESEARCH DESIGN and METHODOLOGY

Participants

The sample consisted of 961 students (male = 55%) who were members of a large urban school district afterschool program in North Texas. All participants were enrolled in grades 5-12. Ethnically, students were about 60% Hispanic, 30% Black, 6% White, and 4% Other. The sample demographics are described in Table 1.

Variables

Using district data, the following demographic predictor variables were identified in each participant: age, grade level, gender, ethnicity, special education status (yes or no), and whether or not the student was identified as 'at-risk' of dropping out of school. Components included in the at-risk qualifier are listed in the Appendix C. Outcome variables included Fear of Missing Out and Social Media Engagement and were measured as described in Przybylski et al. (2013). Additionally, Fear of Missing Out served as a predictor variable, compared to Social Media Engagement as an outcome variable in order to test the predictive validity of the resulting scale. These measures are described in detail below.

Measures

Fear of Missing Out scale (FoMOs). Participants were asked to reflect on their experiences rather than what they think their experiences *should* be and to treat each item separately from every other item. Participants then rated 10 provided items on a Likert scale from 1 (Not at all true of me) to 5 (Extremely true of me). A full list of items is provided in Appendix A. The mean of provided responses was taken to calculate an overall composite score representative of participant reported FoMO (Przybylski et al., 2013).

Social media engagement. Participants were asked to "Please reflect on how you used social media (e.g., Instagram, Facebook, Twitter, Snapchat, Kik, etc.) in the past week and report the number of times you used it under the circumstances listed below." Participants then used an eight-point Likert scale ranging from 0 = "Not one day last week" to 7 = "Every day last week" to rate ten statements (i.e., "How many days per week do you use social media… within 15 minutes of waking up?). Statements are listed in Appendix B. The items were summed, to create a social media engagement score (Przybylski et al., 2013).

Research Design

The first part of this study sought to expand the validity of the FoMOs with a child and adolescent population, assessing the reliability and construct validity of the items previously validated with an adolescent population. This process is described in detail below in the "Data Analysis" section. Part 2 of the study was a quantitative, correlational design that sought to explore the relationship between Fear of Missing Out and Social Media Engagement, as defined above.

Procedure

The study was conducted during the Spring 2015 school semester with participating students from a large urban school district in North Texas. The research proposal was approved by the author's university Human Subjects Research Committee. The author then submitted an External Research Proposal to the participating school district's Research and Development department for approval and access to resulting data collected. The district approved the proposal, citing no foreseeable harm to participants and justifiable benefit of the data for the district. The research questions were added to a district-wide afterschool program survey disseminated throughout participating program sites. Data was collected from March 2nd, 2015,

to April 10th, 2015. The study was disseminated via an online survey tool (e.g., Survey Monkey) and included prompt screens that addressed consensual participation and debriefing. Participants were given the option on whether or not they wished to participate and the opportunity to cease participation at any time throughout the study without penalty. For the purposes of the present study, participants were asked to respond to the 10-item FoMOs and 10-item Social Media Engagement survey. The completion of the questions relevant to the present study was expected to take no more than 15 minutes; participants completed the online survey in time allotted during their after-school programming.

Data Analysis

Testing validity. The present study ran a principal components analysis to measure the construct validity of the FoMOs with a youth population. Cronbach's alpha analyses was used to determine the internal consistency of item responses based on average correlation between items. Additionally, Cronbach's alpha results were used to filter out any suboptimal items that may adversely affect the integrity of the measure. Results were analyzed to determine whether the scale's ten items load together into a singular latent variable (construct) as originally intended and validated with an adult sample by Przybylski et al. (2013).

Follow-up analysis. In order to further assess the validity of the resulting Fear of Missing Out measure, linear regression analyses were conducted to explore whether the resulting scale held predictive validity to social media engagement (as found in the original study). Additionally, demographic predictor variables (gender, grade, ethnicity, at-risk, etc.) were utilized in a hierarchical multiple regressions analysis to analyze the comparative relationships between FoMO and individual demographic characteristics. A significance level of 0.05 was used throughout the analyses. All analyses were conducted using SPSS software.

Privacy safeguards. Data was treated with the utmost attention to safeguards and security. The researcher utilized password encryption on all data sets and research documents. Furthermore, requested data was de-identified and participants were anonymously coded into the data set, with no identifying attributes linking students to their responses or related demographic information. As agreed upon in an external research proposal agreement with the participating school district, the data were used solely for the purposes of the researcher's dissertation and in the context of sharing and discussing results.

CHAPTER 3 RESULTS

All data collected were imported into the Statistical Package for the Social Sciences (SPSS) for analysis. Due to survey readability and in accordance with participant directions, only participants grades 5 and greater were included. To account for missing data, participants with responses to 80% of FoMO items were included in the factor analysis of the study; of these, participants with responses to 80% of social media engagement items were included in the regression analyses. Specific information containing all descriptive statistics for both demographics and assessment measures are located in Tables 1 and 2, respectively.

Principle Components Analysis

In order to address the present study's first research question [Is the Fear of Missing Out Scale (FoMOs) developed by Przybylski, Murayama, DeHaan and Gladwell (2013) a reliable and valid measure for use with an adolescent population?], a principle components analysis (PCA) was run on the 10-item FoMOs that measured participants' level of perceived experience with FoMO. The typical purpose of a PCA is to examine a larger set of variables and reduce it into a smaller set of variables that account for the majority of explainable variance in the original set. Since the ten variables in the FoMOs were the resulting scale items from such analysis, the hope of the present study was that the PCA would maintain all ten items as ideal for explaining the variance of the set. Prior to factor extraction in the PCA, a correlation matrix was generated between survey items to identify if 1) variables correlated enough with one another to generate a latent, or inferred overarching, variable, yet 2) enough uniqueness to ensure variables did not observably measure the same identical thing. The determinant, or the measured area of the plotted data, equaled .001. Determinant values greater than .00001 indicate multicollinearity

between variables is not of concern (Cramer, 2003; Field, 2009). Thus, the 10-items of the

FoMOS met both objectives. The correlation matrix is located in Table 3.

Several assumptions were tested in order to verify the suitability of conducting a PCA.

First, multiple variables were used in the analysis and all variables were ordinal (Likert-scale),

and therefore acceptable. Second, variables must share a linear relationship. The Kaiser-Meyer-

Olkin measure was used as an indicator of linearity between variables. The overall Kaiser-

Meyer-Olkin (KMO) measure was 0.911; individual KMO amounts were all greater than

recommended 0.7, all exceeding 0.8. Kaiser (1974) classified measures of 0.8 to 0.9 as

'meritorious' and those greater than 0.9 as 'marvelous'. Bartlett's Test of Sphericity was

statistically significant ($p < .001$), suggesting the data correlated, and were therefore related

enough to be factorable. Third, individual cases were examined for extreme values; there were

no identified statistically significant outliers (greater than 3 standard deviations away from the

mean). Lastly, PCAs require a large sample size, usually five to ten cases per variable. The

present study's sample far exceeded this requirement.

Results from the PCA revealed one factor with an eigenvalue greater than one, explaining

61.94% of total variance. When an eigenvalue is greater than one, it is considered significant

enough to retain in a PCA (Kaiser, 1960). Via examination of the scree plot (Figure 1), a clear

inflection point is visible after one component, plateauing from components two thru ten, further

justifying the retention of single component (Cattell, 1966).

A second PCA was run with a forced two-factor model in order to compare component

results with the initial PCA that produced a single factor. Analysis of the component matrix

illustrated a lack of interpretability due to markedly weaker loadings of the factor onto each

variable, as well as visibly incongruent data with both positive and negative values. Further, the

two-factor model did not exhibit "simple structure," or a cohesive differentiation between components, such that no variables overlapped across loadings (Thurstone, 1947). Analysis of this side-by-side data can be found in Table 4. As predicted, these results support the hypothesis that the FoMOs items are most parsimoniously explained by a single factor model, specifically the construct (latent variable) Fear of Missing Out.

Reliability and Validity

      Internal consistency. Having provided evidence that the Fear of Missing Out scale maintained its strength as a one-factor scale, reliability was tested using Cronbach's alpha. The 10-item Fear of Missing Out Scale had a high level of internal consistency ($\alpha = 0.93$).

      Face validity. Several measures of validity were obtained in order to effectively establish whether the FoMOs was an effective measure for use with children and adolescents. The FoMOs items were statistically selected by Pryzybylski et al.'s (2013) original study from 32 originally devised items to be the most topically representative and statistically strong measurement of the desired construct (i.e., Fear of Missing Out). Given Pryzybylski et al. was the original study to quantify FoMO, face validity was assumed for the purposes of the present study; that is, the researcher accepted the questions as a valid measurement of the construct based on the shared vision of the original researcher and concurrent with the present study's review of relevant literature.

      In order to account for the scale being administered to children, items were reviewed for age-related content; the researcher determined scale items to be acceptable and understandable to children. Readability of the scale items was determined to be 6.3 (or beginning of 6th grade), according to the Flesch and Kincaid reading level calculated by Microsoft Word. Although this reading level was slightly higher than the study's youngest participants (5th graders), the

researcher decided to leave the questions unchanged in order to keep methodology as similar to the original study's wording as possible given the small *n* this demographic represented of the entire sample.

Predictive validity. The study sought to establish predictive validity by regressing participants' overall rating of social media engagement onto their reported level of Fear of Missing Out on the FoMOs (calculated by a mean composite score) addressing its second research question [*Is Fear of Missing Out related to adolescents' social media engagement?*]. Assumptions of normality, or whether the distribution of data approximates a normal distribution, were assessed. Skewness and kurtosis values indicated all distributions fell within the tolerable ranges of +/- 1 and +/- 3, respectively. Individual cases were examined for extreme values; there were no identified statistically significant outliers (greater than 3 standard deviations away from the mean). There was homoscedasticity, determined by visually examining a plot of standardized residuals versus standardized predicted values. Residuals were normally distributed, as illustrated by review of a normal probability plot.

Fear of Missing Out significantly predicted amount of reported Social Media Engagement, $F(1, 944) = 8.852$, $p = .003$. Fear of Missing Out accounted for 0.9% of the variation in Social Media Engagement according to the R^2 value, considered a small size effect according to Cohen (1988). For every additional point of reported FoMO, reported weekly occurrence of social media engagement (out of 70) increased by 1.997. Regression coefficients and standard errors can be found in Table 5.

Hierarchical Multiple Regressions Analysis

In order to consider other capacities possibly affecting one's reported experience with Fear of Missing Out, hierarchical multiple regressions analysis was conducted to include gender,

ethnicity, grade, and whether or not a student was labeled 'at-risk' of dropping out of school, thus addressing the study's third research question (Is Fear of Missing Out influenced by individual demographic characteristics?). Assumptions of normality were assessed. Skewness and kurtosis values indicated all distributions fell within the tolerable ranges of +/- 1 and +/- 3, respectively. Individual cases were examined for extreme values; there were no identified statistically significant outliers (greater than 3 standard deviations away from the mean). There was homoscedasticity, determined by visually examining a plot of standardized residuals versus standardized predicted values. Residuals were normally distributed, as illustrated by review of a normal probability plot.

Model 1 including ethnicity (inputted as dummy variables with Hispanic as the reference variable) and gender was not significant. Although gender was found to be not significant in the regression equation, a two-way 2x3 ANOVA was run as a follow-up to assess if any interaction effect existed between grade (early, middle, high school grades) and gender (male, female) on Fear of Missing Out; the analysis failed Levene's test ($p = .007$), such that the assumption of homogeneity of variances error between groups was violated. A follow-up visual review of profile plots further verified that no clear, interpretable interaction effect existed between gender and grade. The addition of grade to predict FoMO (Model 2) was statistically significant and led to a change in $R^2 = .011$, $F(1, 955) = 3.033$, $p = .01$. The addition of 'at-risk' to the prediction of FoMO (Model 3) led to a statistically significant increase in R^2 of .021, $F(1, 954) = 5.996$, $p < .001$. Full details can be found in Table 6.

CHAPTER 4 DISCUSSION

Summary

The present study sought to explore the reliability and validity of the Fear of Missing Out scale, as developed and published by Pryzbylski et al. (2013), with an adolescent population. By measuring the reliability and validity of the FoMOs with adolescents, the present study took the initial steps toward strengthening the versatility of a tangible tool with which future studies may quantify FoMO across one of the populations most inclined to interact through social media. In doing so, the study attempted to address whether FoMO was predictive of adolescent social media engagement, as well as whether individual demographic characteristics (e.g., age, gender, race/ethnicity, at-risk) appeared to have any influence on one's likelihood to report higher rates of FoMO.

Research question one. As predicted, the 10-item *Fear of Missing Out Scale* from the principle Pryzbylski et al. (2013) study was a reliable, single-factor construct when administered to children and adolescents, similar to how it was with adults from the original sample. Results suggest that the FoMOs is a reliable and valid self-report measure for quantifying FoMO. The present study's results add flexibility and utility to the use of the FoMOs with a variety of populations, by supporting past research for its use with adolescents (i.e., Beyens et al., 2013) as well as being the first to validate the measure with Americans, particularly with an ethnically-diverse sample.

Research question two. Pryzbylski et al.'s (2013) original study found a positive correlation between Fear of Missing Out and social media engagement; that is, one's reported experience of Fear of Missing Out was predictive of increased social media engagement. As predicted, results from the present study evidenced a similar result, such that those that reported higher rates of Fear of Missing Out also reported higher rates of social media engagement. This

result extended previous research, further substantiating the hypothesis that those who struggle most with Fear of Missing Out tend to be the heaviest users of social media (Alt, 2015; Pryzbylski et al., 2013). Further, the predictive nature of this relationship adds to the validity of the Fear of Missing Out scale, particularly in expanding justification for its appropriateness of use with an adolescent population (Beyens et al., 2016).

Although the effect size of this relationship was considered small, the difference was particularly significant given the large sample size of the study. Had the study been able to test for Fear of Missing Out as a mediator between individual characteristics and social media engagement, this mediating effect size might have been more substantial, as other research has concluded (Pryzbylski, 2013; Alt, 2015; Beyens et al., 2016).

Research question three. Addressing the study's third and final research question, whether Fear of Missing Out was related to an individual's social demographics, the results found no significant difference between ethnic groups in predicting Fear of Missing Out. Past research exploring teens' social media usage suggested that modern-day teens, despite socioeconomic status, were all heavy users of social media (Madden et al., 2013). The present study predicted no significant difference related to ethnicity; that said, future research would benefit from exploring if ethnic differences of FoMO might exist while controlling for SES, as one's experience with Fear of Missing Out might be related to one's value set instilled and inspired by one's family and cultural background.

Pryzbylski et al. (2013) found that younger males were more inclined to report higher rates of FoMO than younger females. While significant, the interaction effect was small. Conversely, Beyens et al. (2016) concluded that girls reported higher levels of FoMO than boys. The present study found no difference between genders, nor an interaction effect between gender and age, suggesting an inconclusive or non-existent relationship between gender and Fear of Missing Out. Although gender was not significant, results indicated an inverse relationship

between grade and Fear of Missing Out, such that students in higher grades reported lower levels of Fear of Missing Out. This result supported the present study's hypothesis and coincided with the existing research (e.g., Pryzbylski et al., 2013).

Pryzbylski et al.'s results suggested that lower levels of psychological needs met (competence, autonomy, and relatedness), general mood and overall life satisfaction were correlated with higher levels of Fear of Missing Out. Those participants in the present study who were indicated to be 'at-risk' of dropping out of school experience historical academic difficulties, frequent suspensions or disciplinary issues, life stressors such as trouble with the law, pregnancy or teen parenting, and homelessness, among other characteristics. Unsurprisingly, of the demographics measured, this variable was the most predictive of FoMO. The resulting positive relationship between being 'at-risk' and experiencing FoMO could be explained by the assumed likelihood of comorbidity in 'at-risk' factors and lower achievement of individual psychological needs (competency, relatedness, and/or belonging) as explored by Pryzbylski et al. (2013). 'At-risk' adolescents, in their pursuit of identity, may be more inclined to be metaphorically 'trapped' in Erikson's *foreclosure* stage of identity formation, such that their past decisions, life circumstances, genetic predispositions or environmental characteristics (e.g., poor school performance, disability, incarceration, poverty, homelessness, pregnancy, teen parent, etc.) leave them feeling limited in their future potential. With risk of not graduating, limited job prospects, responsibilities related to financially supporting their families or children of their own, and lower self-esteem or overall life satisfaction, these teens may experience greater Fear of Missing Out as they compare their circumstances to those of their more successful or privileged peers.

General Limitations

The present study was not without its limitations. First, the results should be interpreted through the lens of its self-report design. Participants answered items via online survey during a time when they would normally be doing perhaps more desirable activities in their after-school program. Although consent was emphasized as voluntary, participants may have answered items

more hastily in order to finish the task quickly, therefore with less than ideal foresight for the sake of compiling accurate and representative data. Furthermore, although items were deemed benign and harmless to administer to children by an Internal Research Committee employed by the school district and university IRB, participants may have been experienced embarrassment regarding answering honestly beside their peers responding to the same items; therefore, a social desirability bias may have affected participant responses.

Besides the rigor and seriousness with which participants responded to items, another characteristic that may have affected results was the readability of the questions themselves. While the readability of the items was tested and deemed acceptable considering the sample's respective education level, many of the students that participate in this district's afterschool program are oftentimes the most 'at-risk' student population, with lower academic performance, particularly in relation to reading level. As reading level of each participant was not assessed, this may have been a significant factor worth mentioning when considering the accuracy of responses.

In regards to sample demographics, the ethnic breakdown of the study sample was not representative of the local population or the United States as a whole, with non-white minorities encapsulating over 90% of the sample. Though minor, this is notable insofar as the external validity is limited. General inferences surrounding the conclusions of the study and its implications should be interpreted with caution through this lens. Further, the study demographics had an imbalance of lower-grade level students compared to their limited number of high school counterparts. Results may have been more significant with higher effect sizes had more high school students taken part in the study.

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As is the case with other cross-sectional research designs, the present study only reflects a snapshot in time of participant experiences. Future research would benefit greatly from a longitudinal approach to how Fear of Missing Out plays a role in adolescents in modern society's interaction with one another, particularly via technology and social media. As demonstrated by the present study, a thorough understanding of Fear of Missing Out will be especially crucial in grasping how mobile technology and social media are rapidly altering the socio-political playing field millennials face as they seek to explore and form personal identities via interpersonal relationships both on- and off-line.

The present study originally decided to measure social media engagement in a replicative fashion to Pryzbylski et al. (2013) while additionally adding items that might help guide awareness and intervention regarding students' engagement with social media throughout the school day. In retrospect, although approaching the variable in this fashion maintained fidelity in the methodology, the researcher did not anticipate the lack of variability in responses. Unsurprisingly, children and adolescents reported much higher overall ratings of social media engagement with less overall disbursement of responses than the principal study's 18-to-62-year-old demographic. In fact, the resulting pattern was bi-modal, such that most respondents either reported no social media engagement (although accurately for some, more likely as a means of completing the question set in a faster manner) or overwhelmingly high engagement. This resulted in less applicability for meaningful difference or predictive validity testing across the sample size.

General Strengths of Study

At its conception in 2014, the present study was drafted to become the first to explore the social construct of Fear of Missing Out with an adolescent population. At its completion, the

study adds to a lone study published in 2016 (e.g., Beyens et al., 2016) that address FoMO in adolescents. It successfully tested and strengthened the credibility and justification of administering the Fear of Missing Out scale to children and adolescents.

While the study was fortunate enough to have a large, ethnically diverse urban district collect data on behalf of the researcher, the researcher had to confine to limitations on how many variables could be studied (i.e., how many items could be included) in exchange for affordability, uniform administration, and most importantly, a larger n. This trade-off strengthened the power of results and conclusions, thus strengthening the research base which had previously included much smaller, and therefore less generalizable sample sizes (e.g., Beyens et al., 2016). Furthermore, it was the first to study FoMO in an American adolescent population.

Although the makeup of the sample was not ethnically representative of the United States, the extensive ethnic diversity with over 90% non-white minorities encompassing the sample extends the research in itself by emphasizing the universal nature of the issues addressed. On a related note, although a sample with roughly 2/3 of its participants identified as 'at-risk' of dropping out of school is also not generalizable to a wider population, the significance of 'at-risk' as a predictor for FoMO directly lends itself as a practical strength by highlighting how those with particular risk factors might be particularly susceptible to negative outcomes in today's modern social arena.

Directions for Future Research

From the time that the researcher first conceived the idea for the present study in the beginning of 2014 to present, about two years later, the existing quantitative literature examining Fear of Missing Out ballooned from solely the principal Pryzbylski et al. (2013) study to more than a dozen scholarly peer-reviewed journal articles on the subject across several academic

arenas (e.g., psychology, sociology, business, medicine). Although research specifically

targeting *adolescent* experience with Fear of Missing Out are limited to the present study and

Beyens et al. (2016), the magnitude with which research interest has grown on the subject gives

credence to researchers' recognition and awareness of Fear of Missing Out as a critical area to

explore. Findings regarding the influence of gender as a predictor of Fear of Missing Out are

inconclusive. Future researchers should continue to strengthen the validity and reliability of the

Fear of Missing Out scale via studies focused on predictive and both concurrent and discriminant

validity. Although the limited available studies measuring FoMO have been promising, research

is in its early stages; it is unclear whether Fear of Missing Out is a unique social

construct/personality characteristic or rather an indicator of some specific anxiety and just a

"rose by a different name."

When working with adolescents, future studies should consider alternative methods for

measuring social media engagement to boost statistical versatility, but more importantly the

meaningfulness of data. For example, experimental designs could theoretically track time spent

or number of unique participant logins to social media applications in a given week. Recent

research has already begun experimenting with different methods for measuring social media

engagement. For example, Beyens et al. (2016) quantified Facebook usage via the Facebook

intensity scale (developed by Ellison et al., 2007), which is considers 1) number of Facebook

friends, 2) amount of time spent on Facebook, and 3) six questions addressing participants'

attitude toward Facebook. Alternatively, Alt (2015) specifically designed a Social Media

Engagement questionnaire, measuring the extent to which students used social media in the

classroom into three meaningful categories: social engagement, news information engagement,

and commercial information engagement. This are creative examples of incorporating purpose,

or how and why individuals are engaging in social media, in order to guide research. It is clear from the research and in day-to-day observation that social media is here to stay. As adolescents continue to interact via social media, it will be important for future researchers to find ways of quantifying this immersion in an ever-evolving technology to effectively meet their study's purpose.

As research continues to develop surrounding adolescent social media engagement and Fear of Missing Out, developmental theorists should take heed and consider updating their perspectives on adolescent development. From an Eriksonian perspective, the rise of social media and mobile technology has exacerbated the rate at which identity-seeking adolescents can compare and contrast their personal experiences with those of their peers. The environment in which today's adolescents lends itself to broadcasting seemingly endless opportunities for teens to choose from. Whether it be the vast range of hobbies and extracurricular activities illustrated by peers showcasing their accomplishments and talents, or the travels taken by friends and family and the delicious meals shared in the process, the constant, immediate stream of information available to adolescents may lead to a perpetuation of their exploration and search for identity.

From a Piagetian worldview, teens now have the cognitive command to problem solve, to think critically, and to be self-critical. Their abstract thoughts and metacognitive capacity to self-reflect, considered a cornerstone of the formal operational stage of cognitive development (Inhelder & Piaget, 1958), face new challenges not otherwise considered in a childhood without social media and smartphones. The imaginary audiences and personal fables of Elkind's theories regarding egocentrism now take life as teens, who were always naturally inclined to be self-absorbed, perpetuate a feedback loop of falsely representing every minute aspect of their day-to-

day in an ideal light to keep up with their friends who society has conditioned to behave the same exact way (Elkind, 1967; Chou & Edge, 2012; Burkeman, 2015). As technology continues to advance and the world continues to reconcile unprecedented awareness of endless opportunity with the inevitable burden of trying to keep up and fear of missing out a better option, developmental psychology should consider how this irreversible environmental shift may delay, or even alter adolescents' path toward self-discovery and independence in adulthood. Finally, the present study justifies the relevance and importance of further studying Fear of Missing Out with adolescents. While existing research has highlighted the importance of Fear of Missing Out in understanding adolescents' social needs (i.e., need to belong and need for popularity; Beyens et al., 2016), future studies should continue to explore what relationships FoMO might have with constructs such as self-esteem, well-being, and mental health (i.e., anxiety, depression, etc.). We know that Fear of Missing Out can serve as a mediator between one's individual characteristics (e.g., psychological needs, level of motivation, some personality characteristics, etc.) and social media engagement. Treating FoMO as the bridge to understanding our interaction and propensity to utilize social media, research would benefit from further exploring individual differences in the context of how they can guide intervention and educating individuals on the benefits (and risks) of our expanding connectivity. How should parents speak to their children about social media? How can parents and educators balance respect for students' privacy and eagerness to interact via social media with protecting them from the addictive and maladaptive nature of the platform?

Implications for School Psychologists

The significance of the present study further justifies a reexamination of our understanding of the systems and individual characteristics at play when examining adolescent

social media engagement and its role in human development. The research makes it abundantly clear that the adolescent development rulebook has changed. With the research in its infancy stages, the primary role of practitioners is to keep up, and disseminate the research to educate others. Child and adolescent behavior regarding their obsession with their phones and short attention spans often puzzles and frustrates older generations: "Why won't my students pay attention in class? How come Jake is always texting his friends instead of chatting with the family at dinner? Cindy seems *so* into taking selfies in the bathroom! What's her deal?"

Through a better understanding of the societal pressure put on teens and the social landscape with which teens must navigate, we can address such issues with more understanding and compassion. Balancing an online presence in addition to day-to-day life is the new norm. Keeping up with what is going on across social media platforms is equivalent to a teen as recently as 10 years ago ensuring they sat with their friends in the cafeteria in order to keep up with what was going on that day. The caveat is that this online presence is perceived as necessary and involves navigating an online environment designed to be socially reinforcing and addictive via the immediacy and extent to which one can send and receive social feedback via likes, shares, and comments. School psychologists can help educate other practitioners, educators, and parents on *why* students are seeking out social media: not as an escape from reality, but their behavior is more reflective of a broader paradigm shift in how teens socialize.

Our understanding of Fear of Missing Out lends itself to practical implications for mental health practitioners, particularly school psychologists. It may serve as the quintessential "why" as far as understanding how adolescents might be affected by their continuous engagement with (and perhaps disconnection from) social media. With more research suggesting a mediating factor of Fear of Missing Out between personal characteristics and social media engagement,

FoMO may serve as the quintessential "why" behind social media's resulting effect on daily adolescent life. The more fear of missing out one experiences may exacerbate one's pervasive desire to check up on the whereabouts of their peers; conversely, those less inclined to experience FoMO may avoid social media altogether.

As research continues to grow, FoMO might serve as an indicator or perhaps be used as a possible screener for those that may be more inclined to experience stress or negative mental health effects associated with social media. Instead of screening for depression and anxiety in student populations, a screener for fear of missing out might offer a less-taboo avenue for identifying students at risk of significant mental health issues than screening for depression, anxiety, feelings of loneliness, or low self-esteem to which students may feel less comfortable revealing concerns. This could open the door for school psychologists, educators, and parents alike to take preventative action toward serving these students via education with the goal of alleviating the inherent stress and burden associated with day-to-day online connectivity and socialization.

The present study emphasizes the importance of breaking the mold of what we think we know about technology and social media, and to direct the dialogue towards the reality. It is important for practitioners to better educate students on the realities of their "virtual" selves that they otherwise accept as the norm at face value. Our students will need to be explicitly taught about the misinformation being presented to them, with peers representing themselves in their most ideal light. Further, this dialogue lends itself to broader media consumption. As companies take advantage of the vast interactive time social media users, particularly adolescents, log in, it will be necessary for educators and practitioners to help children understand how to differentiate reality from that which is altered. For example, advertisements slip seamlessly into adolescents'

newsfeeds or timelines, disguised as users, and highlighted by perfectly groomed and filtered graphics depicting a perhaps unrealistic ideal. Implications lend themselves to discussing topics such as body image with teens that might otherwise develop unrealistic and unhealthy physical expectations.

The present state of virtual interaction is a perfect storm for adolescents. Those that opt out of an online presence are the exception to the rule. For the majority, users anxiously check their phone for status updates or the new whereabouts or activities of their peers. Fear of Missing Out derives from the constant awareness of everything that one could be doing or could be accomplishing. In today's schools, it only takes a brief moment to realize the impact social media and mobile technology has on daily teen life. Students "snap" their friends as they meander blindly through crowded school corridors, heads down in their tiny screens. Others religiously check their phones for status updates and goofy selfies from friends, not-so-discreetly lowering their hands beneath their desks during class.

For teens, there is a perceived norm that others are happier than they really are. On the surface, there are benefits to the incredible technological revolution surrounding social media that has seemingly taken place overnight. People can reconnect with old friends despite geographically hurdles that may have previously prohibited such socialization. Individuals can find and take active participation in virtual communities of like-minded individuals with the click of a button. Adolescents take advantage of discovering and sharing every aspect of their lives: music preferences via Spotify, TV show and movie preferences via Netflix, food and restaurants via Yelp, an eagerness to explore and learn new skills by watching others perform talents or tricks on YouTube. But along with a perceived norm that peers are happier than they really are comes a desire and expectation that it is *possible* to keep up with all that is available,

whether it be the latest TV episode before one's peers spoil the plot twist, the funny video one's friend posted that everyone in school is talking about, or the invitation to the coolest peer's party that one might otherwise miss on their Facebook feed.

The role of a school psychologist should feasibly expand to teaching social skills regarding appropriate self-disclosure and self-presentation to teens (Schlenker, 1986) in a world where the normalized nature of social media leaves adolescents ignorant to privacy and blind to the biased lens through which they've been trained to perceive the world. School psychologists should lead education efforts in how to address concerns related to signs of technology addiction or distress when disconnected. Practitioners can use this awareness to address signs of behavioral difficulties such as loss of appetite, poor sleeping habits, or unsafe driving behaviors that may be caused by technology addiction or connectivity. They can help students challenge their assumptions regarding social media, reframe their negative thoughts and feelings associated with Fear of Missing Out or negative self-image, and encourage programming efforts that address healthy social media habits or initiatives to limit screen time and to make a conscious effort to "unplug" from time to time.

As today's youth wrestle with the exponential growth of constant access to social connectivity, it is clear that the unending battle for peer attention through online interaction and self-promotion has forever and undoubtedly complicated what it means to grow up. Our understanding of Fear of Missing Out and its mediating role related to social media engagement may hold the key to educating parents and teachers in best practices for raising a generation that will only know of a time when their entire social life was but a swipe away.

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Tables

Table 1

Descriptive Statistics for Demographic Variables

	Factor Analysis		Multiple Regression	
	n	%	n	%
Total	961	100	946	100
Gender				
Male	532	55.4	518	54.8
Female	429	44.6	428	45.2
Ethnicity				
Hispanic	568	59.1	563	59.5
Black	288	30.0	280	29.6
White	61	6.3	60	6.3
Other	44	4.6	43	4.5
Grade				
5th	39	4.1	38	4.0
6th	251	26.1	249	26.3
7th	200	20.8	194	20.5
8th	318	33.1	318	33.6
9th	52	5.4	51	5.4
10th	46	4.8	44	4.7
11th	33	3.4	32	3.4
12th	22	2.3	20	2.1
At-Risk*				
No	318	33.1	316	33.4
Yes	643	66.9	630	66.6

* 'at-risk' indicator according to district records; refer to Appendix C for determining factors of at-risk indication

Table 2

Descriptive Statistics for Predictive Variables by Grade Level

	Mean	Standard Deviation	Range
Early Grades (5-6)			
FoMO	2.795	1.169	4.00
Social media engagement	29.27	24.183	70.00
Middle Grades (7-8)			
FoMO	2.614	1.145	4.00
Social media engagement	28.80	22.459	70.00
High Grades (9-12)			
FoMO	2.562	1.153	4.00
Social media engagement	39.57	25.052	70.00

Table 3

Inter-Item Correlation Matrix for FoMOs items*

	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
F1	1.000	.841	.640	.583	.496	.592	.521	.480	.492	.440
F2	.841	1.000	.673	.608	.472	.584	.531	.497	.515	.462
F3	.640	.673	1.000	.759	.526	.642	.617	.531	.614	.497
F4	.583	.608	.759	1.000	.556	.679	.606	.540	.628	.574
F5	.496	.472	.526	.556	1.000	.621	.575	.483	.504	.496
F6	.592	.584	.642	.679	.621	1.000	.621	.580	.566	.546
F7	.521	.531	.617	.606	.575	.621	1.000	.521	.766	.569
F8	.480	.497	.531	.540	.483	.580	.521	1.000	.578	.630
F9	.492	.515	.614	.628	.504	.566	.766	.578	1.000	.652
F10	.440	.462	.497	.574	.496	.546	.569	.630	.652	1.000

*Determinant = .001

Table 4

Rotated Structure Matrix for PCA with Varimax Rotation of a Two-Factor "Forced" Model

FoMOs item	Component 1	Component 2
F1	.774	-.504
F2	.787	-.487
F3	.831	-.190
F4	.835	
F5	.724	
F6	.819	
F7	.806	.220
F8	.738	.252
F9	.804	.314
F10	.741	.395

Table 5

Summary of Linear Regression Analysis of FoMO predicting Social Media Engagement

| Variable	B	SE$_B$	β
Intercept	25.859	1.943	-
FoMO	1.997	.671	.096*

* $p = .003$

Table 6

Hierarchical Multiple Regression Predicting FoMO from Gender, Ethnicity, Grade, and 'at-risk' of Dropping Out

	Fear of Missing Out					
	Model 1		Model 2		Model 3	
Variable	B	β	B	β	B	β
(Intercept)	2.671		3.284		3.006	
Gender	-.046	-.020	-.045	-.019	-.040	-.017
Black	.066	.026	.066	.026	.046	.018
White	-.183	-.039	-.193	-.041	-.162	-.034
Other	.208	.037	.221	.040	.228	.041
Grade			-.082	-.107*	-.076	-.100*
At-Risk					.356	.145**
R^2	.004		.016		.036	
F	1.010		3.033		5.996	
ΔR^2	.004		.011		.021	
ΔF	1.010		11.085*		20.499**	

Note. N=961 *$p < .003$, **$p < .001$

Figures

Figure 1 Scree Plot
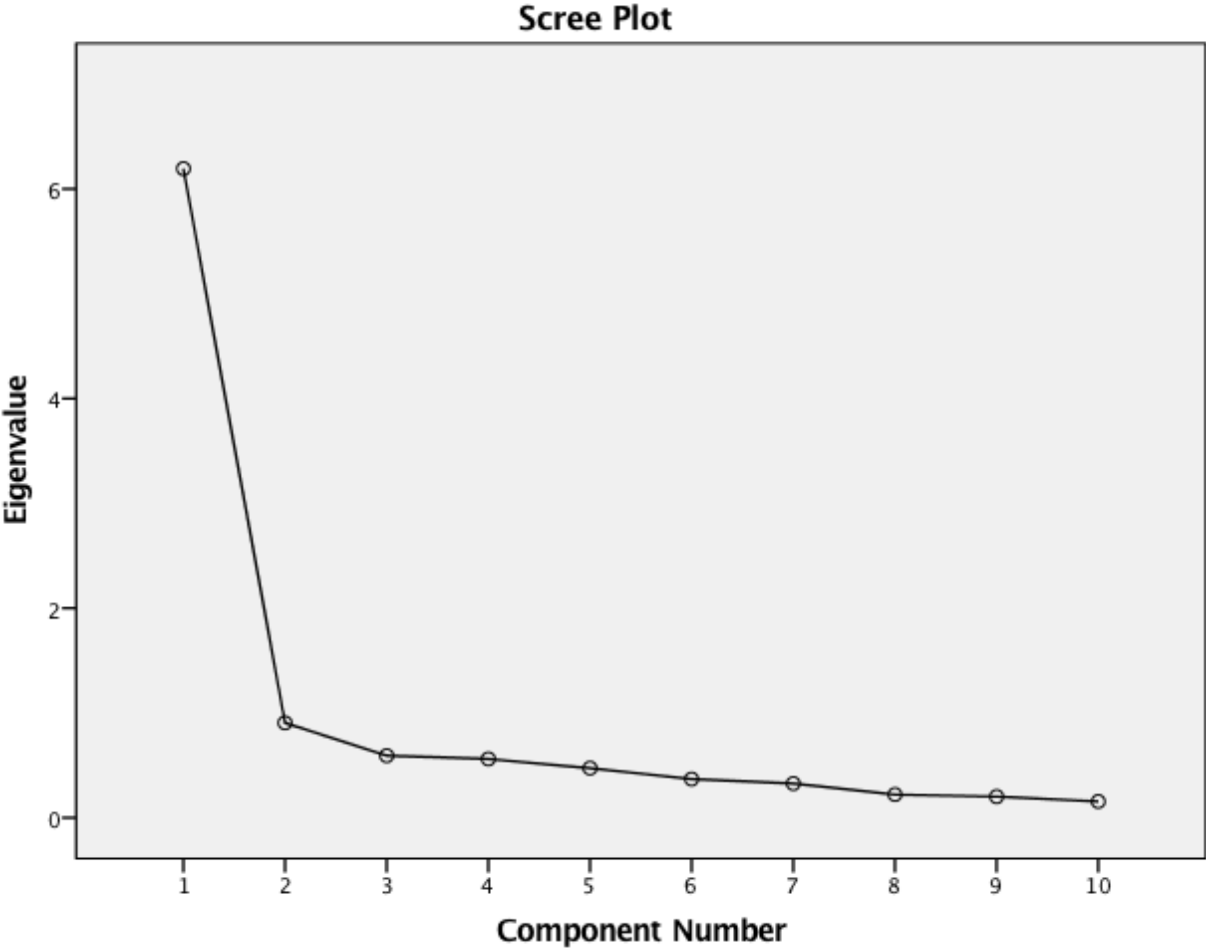
Appendix A: Fear of Missing Out Scale (FoMOs)- Przybylski et al. (2013)

Below is a collection of statements about your everyday experience. Using the scale provided please indicate how true each statement is of your general experiences. Please answer according to what really reflects your experiences rather than what you think your experiences should be. Please treat each item separately from every other item.

Not at all true of me- 1
Slightly true of me- 2
Moderately true of me- 3
Very true of me- 4
Extremely true of me- 5

1. I fear others have more rewarding experiences than me.
2. I fear my friends have more rewarding experiences than me.
3. I get worried when I find out my friends are having fun without me.
4. I get anxious when I don't know what my friends are up to.
5. It is important that I understand my friends ''inside jokes''.
6. Sometimes, I wonder if I spend too much time keeping up with what is going on.
7. It bothers me when I miss an opportunity to meet up with friends.
8. When I have a good time it is important for me to share the details online (e.g., updating status).
9. When I miss out on a planned get-together it bothers me.
10. When I go on vacation, I continue to keep tabs on what my friends are doing.

Appendix B: Social Media Engagement- Przybylski et al. (2013)

Please reflect on how you used social media (e.g., Instagram, Facebook, Twitter, Snapchat, Kik, etc.) in the past week and report the number of times you used it under the circumstances listed below:

(Participants use an 8-point Likert style-scale ranging from 0 to 7 days of the week)

1. Within 15 minutes of waking up
2. When eating breakfast
3. When eating lunch
4. When eating dinner
5. Within 15 minutes of going to sleep
6. Traveling to and from school
7. Between classes at school
8. During classes at school
9. During a class
10. Within 15 minutes of returning home from school

**Appendix C: Public Education Information Management System (PEIMS) Data
Standards**

In accordance with Texas Education Agency data standards, the following list of characteristics
define whether or not a student is indicated as 'at-risk' of dropping out of school (TEC §29.081,
Compensatory and Accelerated Instruction):

A student at-risk of dropping out of school includes each student who is under 21 years of age
and who:

1. is in prekindergarten, kindergarten or grade 1, 2, or 3 and did not perform satisfactorily on a
readiness test or assessment instrument administered during the current school year;

2. is in grade 7, 8, 9, 10, 11, or 12 and did not maintain an average equivalent to 70 on a scale of
100 in two or more subjects in the foundation curriculum during a semester in the preceding or
current school year or is not maintaining such an average in two or more subjects in the
foundation curriculum in the current semester;

3. was not advanced from one grade level to the next for one or more school years; (Note: From
2010-2011 forward, TEC 29.081 (d-1) excludes from this criteria prekindergarten or
kindergarten students who were not advanced to the next grade level as a result of
a documented request by the student's parent.)

4. did not perform satisfactorily on an assessment instrument administered to the student under
TEC Subchapter B, Chapter 39, and who has not in the previous or current school year
subsequently performed on that instrument or another appropriate instrument at a level equal to
at least 110 percent of the level of satisfactory performance on that instrument;

5. is pregnant or is a parent;

6. has been placed in an alternative education program in accordance with TEC §37.006 during
the preceding or current school year;

7. has been expelled in accordance with TEC §37.007 during the preceding or current school
year;

8. is currently on parole, probation, deferred prosecution, or other conditional release;

9. was previously reported through the Public Education Information Management System
(PEIMS) to have dropped out of school;

10. is a student of limited English proficiency, as defined by TEC §29.052;

11. is in the custody or care of the Department of Protective and Regulatory Services or has,
during the current school year, been referred to the department by a school official, officer of the
juvenile court, or law enforcement official;

12. is homeless, as defined NCLB, Title X, Part C, Section 725(2), the term "homeless children and youths," and its subsequent amendments; or

13. resided in the preceding school year or resides in the current school year in a residential placement facility in the district, including a detention facility, substance abuse treatment facility, emergency shelter, psychiatric hospital, halfway house, or foster group home.

**Please note that a student with a disability may be considered to be at-risk of dropping out of school if the student meets one or more of the statutory criteria for being in an at-risk situation that is not considered to be part of the student's disability. A student with a disability is not automatically coded as being in an at-risk situation. Districts should use the student's individualized education program (IEP) and other appropriate information to make the determination.

Appendix D: Author Biography

Michael Perrone was born in Rochester, New York. He received his Bachelor of Arts degree in psychology from the State University of New York- College at Geneseo in 2011, his Master of Arts degree in school psychology from Alfred University in 2013, and his Doctor of Psychology degree in school psychology from Alfred University in 2016. During his time at Alfred University, he received the David Olin-Carpenter Fellowship Award (2011-2012), and the Lea R. Powell Honors Award for excellence among doctoral students (2015). Michael completed an APA-accredited internship at Fort Worth Independent School District in Fort Worth, Texas where he currently resides. His professional interests include psychotherapy, working with students with severe social-emotional issues, crisis intervention, autism, and understanding adolescents' relationship with technology. Beyond his commitment to helping students with special needs and their families, Michael is a competitive part-time professional poker player, funding his graduate studies, burning wanderlust, and pursuit for the best tasty noms around the globe as a card shark. When he is not saving children's lives, Michael can be found rounding a poker table, devouring a plate of soup dumplings, or impossibly struggling to practice mindfulness via a rigorous hike with a rewarding mountain view.