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How Video Streamers' Mental Health Disclosures Affect Viewers' Risk Perceptions

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ABSTRACT

Celebrities' self-disclosures about their mental health issues can enhance public awareness of mental illness such as depression. As online live streaming becomes a popular choice for media entertainment, microcelebrities such as video streamers may have similar influence over their audience. Using an online survey ($N = 474$), this study examined how exposure to streamers' depression disclosures affected the viewer's perceptions toward the streamers and depression. We also examined how parasocial relationships, parasocial interactions, and identification with streamers were associated with 1) the viewers' perceived authenticity and credibility toward the streamers, 2) as well as increases in the viewers' perceived prevalence, risk susceptibility, and risk severity about mental health. The study demonstrates a strong association between streamers' health disclosures and public awareness regarding depression. The study extends previous studies around celebrity influencers as a promising opportunity for reducing social stigma around mental health discussions. The study also advances our theoretical understanding of microcelebrities' social influence in a new media context.

According to the World Health Organization, more than 264 million people experienced depression worldwide in 2017 (World Health Organization [WHO], 2018). The National Institutes of Health estimates that 17.3 million adults (7.1% of the population) in the United States suffered from depression in 2017 (National Institutes of Health [NIH], 2017). Depression is most prevalent among individuals aged 18–25 and can lead to health problems including alcohol and substance abuse, sleep and eating disorders, reduced immune functioning, and increased risk of suicide (Eisenberg et al., 2007). Therefore, it is crucial for health communicators to identify effective strategies to increase people's awareness of depression and treatment-seeking behaviors.

A promising line of research suggests that when celebrities disclose personal health issues, it provides an opportunity to raise awareness among the public and change attitudes toward the illness, as well as increase people's information seeking and treatment behaviors (Dillman Carpentier & Parrott, 2016; Noar et al., 2014). For example, when movie star Angelina Jolie announced that she would be receiving a prophylactic mastectomy to manage breast cancer risks, internet search related to risk assessments increased by 165%, and search for genetics and treatments increased by 812% and 2625%, respectively (Noar et al., 2015). A review of over 30 studies on basketball star Earvin "Magic" Johnson's disclosure about HIV showed that his willingness to talk about his illness increased information-seeking behavior about HIV and AIDS, the public's knowledge, and the number of people getting tested for HIV (Casey et al., 2003).

Health disclosures from celebrities can be a powerful source for health communication because of our deep perceived relationships with celebrities. With prolonged and repeated media

exposure, we might feel emotionally attached to celebrities the same way we treat our close social ties, a phenomenon known as "parasocial relationship" (Horton & Wohl, 1956). Parasocial relationships can provide social support akin to those derived from one's interpersonal relationships, such as feelings of intimacy and passion (Hartmann et al., 2008). Loss of parasocial relationships can also feel like losing an actual friend, causing anxiety and emotional distress (Eyal & Cohen, 2006). Parasocial relationships can heighten the audience's enjoyment of the media and celebrities by creating a sense of intimacy, allowing people to empathize with the celebrities' emotions and identify with their behaviors.

More recently, the growing popularity of online video streaming services like YouTube and Twitch has enabled a new type of celebrity – "microcelebrities" are media users who have gained a large number of followers, sometimes up to millions, because of their content, persona, or lifestyles. A 2014 survey found that American teenagers perceived YouTube microcelebrities to be more influential to them than Hollywood celebrities, mostly because they were viewed as more engaging, relatable, transparent, and "real" (Dewey, 2014). Unlike traditional celebrities, microcelebrities often gain a large follower base and derive their influence through the perceived "authenticity" that they maintain via revealing personal information or their daily activities in their streaming videos (Djafarova & Trofimenko, 2019; Marwick, 2013). The interactive and social affordances of these platforms can also intensify parasocial relationships with microcelebrities as they allow microcelebrities to interact directly with their audiences through synchronous and asynchronous communication (Bond, 2016).

Microcelebrities may offer a unique opportunity for health communication because of their authentic self-presentation and their close relationships with their followers. The first goal of this study is to explore how microcelebrities' self-disclosures about depression can influence viewers' perceived authenticity and credibility of the microcelebrity streamers, and viewers' perceived risk prevalence, risk severity, and efficacy beliefs toward depression. The second goal is to examine how relational factors such as parasocial relationships, parasocial interactions, and identification are associated with the viewers' perceived authenticity and credibility toward the microcelebrities and risk perceptions toward depression. Our study contributes to the literature on microcelebrity influence by showing how health disclosures of streamers can influence their perceived image and their viewers' risk perceptions. Theoretically, our study demonstrated the need to distinguish the unique effects of identification from parasocial relationship and parasocial interactions in celebrity influence.

Literature review

We first discuss the phenomenon of celebrity health disclosures and its influences on audiences. Followed by discussion on the need to separate parasocial relationships and parasocial interactions from identification with celebrities to account for the different paths of influences of celebrity disclosures. Finally, we discuss how microcelebrities, such as video streamers, can influence their viewers' perceptions of mental health.

Celebrity health disclosures

People with mental illness are often depicted in popular media as being socially disconnected, unattractive, unpredictable, or even violent and dangerous (Klin & Lemish, 2008). These negative portrayals of mental illness create misconceptions and stigmas about mental illness that can be harmful. Fear of prejudice and stigma is among the top reasons that people with mental illness delay or do not seek treatment (Feldman & Crandall, 2007). Disclosure of mental illness can strain social relationships and attract unwanted discriminations. As a result, people with mental illness often have low self-esteem and life satisfaction (Sirey et al., 2001).

Celebrity disclosures of personal health issues can have a positive effect on the public's health awareness and behaviors by increasing the visibility of health issues and sparking public dialogs. In recent years, many well-known celebrities have spoken up about their mental illnesses, including Carrie Fisher, Dwayne "The Rock" Johnson, Mariah Carey, Lady Gaga, and Selena Gomez. In other cases, the public learns about mental health issues after the death of celebrities. On the day that actor Robin Williams died, the National Suicide Prevention Lifeline received more than 7,400 phone calls, a 200% increase from their average number of calls (Schonfeld, 2014). A study of young adults found that over half of the participants searched for information about Robin Williams' death, depression, and career on the Internet shortly after his death (Dillman Carpentier & Parrott, 2016). A more recent study that examined the effects of Carrie Fisher's death found that people who developed a stronger parasocial

relationship and experienced grief were more likely to share information about mental illness after her death (Hoffner, 2019). Even for people who were not aware of Carrie Fisher's advocacy work before her death, her death increased their exposure to news about mental illness and increased social sharing. When celebrities speak up publicly about their personal experiences, it can bring light to the struggles of what it is like as a person who suffers from mental illness.

One of the most studied celebrity health disclosures is Earvin "Magic" Johnson's announcement that he was tested HIV positive in 1991. As a legendary basketball star loved by many, by saying that "it can happen to anyone, even me," he reshaped the public's perception of an HIV-carrying person, changing public discussion and policies about HIV and AIDS for many years to come (Casey et al., 2003). The effects of his health disclosure include changes in risk perceptions (Kalichman & Hunter, 1992), increases in knowledge (Wanta & Elliott, 1995), and information seeking and intentions to take HIV testing (Brown & Basil, 1995). These studies demonstrated that celebrity health disclosures could have a powerful impact on public perceptions about health issues and health-seeking behaviors.

Celebrities' health disclosures can have a strong impact because their direct experience with the health issues increases their authenticity and gives them credibility. Authenticity has always been a key factor in our relationship with celebrities. Since most fans are aware that the celebrities they see through the media are front-stage performances carefully managed by an industry, there has always been a kin interest in discerning the "authenticity" of celebrity personas through gossips, tabloids, reality shows, and paparazzi photos (Marwick & boyd, 2011). Trilling (2009) defines authenticity as being true to oneself in practicing one's inner life, including one's passions, anguish, and vulnerabilities. Celebrities' health disclosures can signal authenticity because it reveals a vulnerable side of them that is usually reserved for their backstage. These health disclosures allow fans to view them less as carefully curated media personas and more as an authentic person with relatable emotions and vulnerabilities, allowing fans feel closer to them. As a result, these types of celebrity health disclosures have the potential to increase people's perceived risk susceptibility and perceived risk severity, motivating people to seek out more information and treatment.

Parasocial interactions and parasocial relationships

The effects of celebrity health disclosures can be attributed to people's parasocial interactions and parasocial relationships with celebrities. The term "parasocial interactions (PSI)" was first coined by Horton and Wohl (1956) to describe people's socioemotional response to television characters and the similarities between these mediated relationships to real interpersonal relationships. They argued that despite the mediation, media personas often directly or indirectly address the presence of the audiences through their eye gaze, body movements, and verbal contents. Therefore, the audiences often perceive the media personas as if they were really interacting with them socially. Since the medium limits the range of possible interactions, these perceived interactions with media

personas are considered “parasocial” interactions (Klimmt et al., 2006). With prolonged and repeated experiences of parasocial interactions, viewers can develop long-term “parasocial relationships (PSR)” with the media personas that resemble real social relationships. Over the past five decades, numerous studies have examined the causes and effects of PSI and PSR across radio, television, the Internet, video games, and fictional stories. With its popularity, the concepts and operationalization of PSI and PSR have often been muddled over time (Klimmt et al., 2006). Dibble et al. (2016) reviewed the literature and provided a conceptual clarification: PSI refers to a sense of mutual awareness that is limited to the duration of media consumption. In contrast, PSR refers to an enduring connectedness that extends beyond the media episode and impacts the viewers in similar ways as other social relationships.

Like interpersonal relationships, PSI and PSR are developed through spending more time with the media personas. Media personas offer “a regular and dependable event, to be counted on, planned for, and integrated into the routines of [viewers’] daily life” (Horton & Wohl, 1956, p. 216). PSI and PSR offer a sense of intimacy and companionship that heightens our enjoyment of the media by allowing us to empathize with the personas’ emotions and identify with their behaviors (Hartmann et al., 2008). PSR feels just as real as other social connections because humans are predisposed to seek social connections with others. With regular exposure to celebrities and other media personas, it is difficult for our brains to make the distinction between someone we know through the media and someone we know in real life (Stever, 2011). Empirical evidence shows that people with stronger PSR toward media characters can experience emotional distress and loneliness that are similar to breaking up in a relationship when the television shows are taken off the air (Eyal & Cohen, 2006; Lather & Moyer-Guse, 2011).

The Internet and social media have made it easier than ever for users to develop PSI and PSR with celebrities (Bond, 2016). An individual can go online and search for videos, pictures, and other information about the media personas at any time or location. Live updates and push notifications from social media will also notify individuals about the media persona’s newest posts and status updates. Along with the affordances of interactivity and synchronicity, social media provide a constant sense of parasocial interaction with celebrities.

Identification with celebrities

Celebrities can also influence people through our identification with them. Identification is “the process of conforming to the perceived identity of a mediated persona both during and after media consumption” (Brown, 2015, p. 17). Identification with a celebrity allows viewers to take on their perspectives, internalize their values, attitudes, beliefs, and adopt their behaviors to maintain a desirable connection with the celebrity. In contrast to PSI or PSR, in which the media users perceive themselves as interacting or having a relationship with another person. When an individual identifies with a celebrity, the individual imagines himself or herself as “being” the celebrity, sharing their perspectives, and feeling their emotions (Cohen,

2001). In short, with identification, the individual experiences the events as if he or she is the media persona, whereas PSI or PSR feels like he or she is interacting with the media persona.

PSI and PSR can lead to identification with the media personas, but it is not a requirement. Individuals can form PSI or PSR with personas with whom they do not identify, such as antagonists or characters that they dislike (Dibble & Rosaen, 2011), but individuals are more likely to identify with personas that are similar to them or that they wish to become. Identification with celebrities can influence people’s beliefs and behaviors through vicarious modeling and a sense of empathy. Children and adolescents pretend to be other people to experiment with new perspectives and identities, which are later internalized into shaping their personality (Hoffner, 1996). Identification also facilitates empathy, allowing individuals to feel the emotions of those they identify with (Cohen, 2001). Prior studies have shown that identification with celebrities can predict changes in health perceptions and behaviors. For example, identification with Magic Johnson predicted personal concerns about AIDS and intentions to avoid risky sexual behaviors (Basil, 1996). Identification with actor Robin Williams led to more emotional distress over his death and more information-seeking behaviors about him and depression (Dillman Carpentier & Parrott, 2016).

Microcelebrities, authenticity, and influence

Modern networked technologies have given rise to a new form of celebrities, often known as microcelebrities (Marwick, 2013). Microcelebrities are defined as people who are famous to a niche group in a specific area, usually through the internet. Many YouTube stars, video game streamers, and online commentators have become microcelebrities with large numbers of followers. Microcelebrities can gain their fame through recognition of their accomplishments, or through a series of conscious self-presentations to achieve fame (Marwick, 2013). According to Marwick and boyd (2011), celebrity is not a status but should be conceptualized as an ongoing performative practice that involves constructing a consumable persona for the fans, as well as maintaining a perception of intimacy, authenticity, and access. Compared to traditional celebrities who are characterized by their privilege and distance from the mundane, microcelebrities often utilize the affordances of social media to emphasize their accessibility and “authenticity” (Jerslev, 2016).

For many microcelebrities, the performance of authenticity and intimacy is key to maintaining celebrity appeal and their relationship with their fans (Marwick, 2013). Unlike traditional celebrities such as movie stars and singers, microcelebrities do not have publicists to choreograph and protect their image. As such, the status of a microcelebrity is maintained through carefully constructing their online persona, sharing personal information, and interacting with fans to create a sense of intimacy. The performance of authenticity and intimacy involves disclosing their inner lives, including their passions, struggles, and weaknesses (Trilling, 2009), as well as revealing “backstage” behaviors that are usually reserved for intimate family and friends. Note that the performance of authenticity is not unique to microcelebrities but is part of the appeal that

draws people to traditional celebrities as well. Entertainment news, reality shows, and tabloids are all driven by people's desire to see and decipher the "authentic" side of celebrity lives. The difference is that traditional celebrities do not rely on projecting an authentic image to maintain their fame, whereas microcelebrities rely on the image of authenticity and intimacy for their status. Fans expect microcelebrities to be more authentic because a key part of their appeal is that they are "people like us." The internet culture values transparency and equality, which also heightened fans' expectations that the microcelebrities should be more akin to a friend rather than a media persona created by a professional industry. Therefore, fans often expect to build a more intimate relationship with microcelebrities.

Microcelebrities are aware of their fans' expectation for authenticity and often strategically reveal personal information to strengthen relationships with their fans. When microcelebrities disclose their stigmatized mental illness and their struggles, they expose their vulnerabilities and invite their fans to see them as an authentic person with whom the fans can identify with. These self-disclosures also provide the fans with a privileged feeling of being within an intimate circle who knows about the microcelebrities' vulnerabilities, which further strengthens their relationship. This study focuses on the mental health disclosures of microcelebrity streamers that produce live streaming or prerecorded videos.

Video streaming can be considered a form of mixed media or "social TV" because it combines broadcasting with the interpersonal and group dynamics that are common in text and image-based social media (Wohn et al., 2018). In a typical video stream, viewers watch the streamer's live video and in the same interface, they can view and type in comments that appear alongside the video. Streamers and other users can read and respond to these comments, thus facilitating interaction between streamers and viewers.

Parasocial experiences with microcelebrities have been documented across the spectrum of social media, but the affordances of live streaming may intensify these experiences. Streamers often have a regular schedule and address their viewers directly as fans, friends, or buddies. These regular interactions and personal addresses can facilitate the development of PSR. Live streaming also enables near real-time interaction between streamers and viewers (Haimson & Tang, 2017), as well as interaction among viewers (e.g., Hamilton et al., 2014), which can facilitate engaging interactions that intensifies PSI and the development of PSR.

The interactions between the streamers and their viewers are one of the main motivations for why people watch live streams. Hamilton et al. (2014) found that people like to engage with the live streaming platform Twitch because they like the content and they enjoy participating in the chat. Friedländer (2017) conducted a survey of over 7,000 people looking at multiple live streaming platforms and found that socializing and the need to communicate were among the top six motivations. Cai et al. (2018) studied viewer motivations for watching live streaming shopping (where streamers introduce a product for sale, similar to cable home shopping) and also found that interacting with the streamer as well as other viewers was what made people prefer live-streaming shopping to other types of

online shopping. Since streamers are talking on camera and the viewers are not, the streamers disclose a lot more information than their viewers. As streamers narrate their content, they share details about themselves and this highly personal disclosure often leads to viewers relating more to the streamer (Wohn et al., 2019). This creates a potentially ripe environment for parasocial relationships and identifications.

Anecdotally, there seems to be an increasing number of microcelebrity streamers who are speaking out about their depression and other mental illness on their video streams. Some examples include PewDiePie, the most popular video streamer with more than 100 million subscribers on YouTube, who has openly talked about his experience dealing with depression and anxiety and encouraged his viewers to speak out about mental illness. Video game streamer Kensin, who has over five million subscribers, talked about how streaming exacerbated his mental illness and took a four-month break from streaming. Beauty and lifestyle streamer Zoe Sugg (Zoella) regularly talks about her experience with mental illness and her experience going through therapy with her 11 million subscribers. Previous research has found that parasocial relationships with streamers can increase viewers' willingness to provide emotional, instrumental, and financial support to streamers (Wohn et al., 2018). However, there has been little investigation of how PSI, PSR, and identification with the streamers can affect viewers' reactions to the streamers' disclosures of mental illness.

Hypotheses

The aforementioned models of celebrity influence through PSI, PSR, and identification can provide a framework for examining the effects of streamer health disclosures. Past research indicated that viewers' exposure to streamer health disclosures can have a positive influence on viewers' perceived authenticity and credibility of the streamers since it signals their willingness to expose personal vulnerabilities (Djafarova & Trofimenko, 2019). Microcelebrities' health disclosures may also increase viewers' risk perceptions, including perceived prevalence, risk susceptibility, and risk severity (Brown & Basil, 2010; Dillman Carpentier & Parrott, 2016; Evans et al., 2014). We pose our first hypothesis:

H1. Participants who recall seeing streamer disclosures about depression will report higher perceived a) authenticity and b) credibility of the streamer as well as higher c) perceived prevalence, d) risk susceptibility, e) risk severity of depression, and f) self-efficacy to seek help than participants who do not recall seeing streamers talk about depression.

Prior studies on celebrity influence have identified PSI, PSR, and identification as related but distinct routes in which celebrity health disclosures can influence viewers' perception and behaviors (e.g., Basil, 1996; Brown & Basil, 1995; Casey et al., 2003; Dillman Carpentier & Parrott, 2016; Noar et al., 2014). PSI/PSR toward the streamers can increase the perceived authenticity and credibility of the streamers because mental illness is often associated with stigmas and negative stereotypes. Therefore, individuals who have stronger PSI and PSR with the streamers with

mental illness will be more likely to interpret the disclosure as a sign of authenticity and credibility. We also hypothesize that PSI and PSR will increase risk perceptions and self-efficacy because knowing someone with whom the individuals feel close to that has a mental illness can make the risks more salient.

H2. Parasocial interaction (PSI) with a streamer who disclosed about their depression will be positively associated with a) authenticity, b) credibility of the streamer as well as c) perceived prevalence of the illness, d) risk susceptibility, d) risk severity, and e) self-efficacy to seek help.

H3. Parasocial relationship (PSI) with a streamer who disclosed about their depression will be positively associated with a) authenticity, b) credibility of the streamer as well as c) perceived prevalence of the illness, d) risk susceptibility, d) risk severity, and e) self-efficacy to seek help.

While identification is often associated with PSI and PSR, it affects the viewers' emotions and perceptions through perspective-taking (Cohen, 2001). Individuals who have stronger identification with the streamers will empathize with the streamers more, feeling the tolls of depression as if they were the streamers who are experiencing depression.

H4. Identification with a streamer who disclosed about their depression will be positively associated with a) authenticity, b) credibility of the streamer as well as c) perceived prevalence of the illness, d) risk susceptibility, d) risk severity, and e) self-efficacy to seek help.

Method

Participants

A total of 522 participants were recruited from Amazon's Mechanical Turk (AMT). All participants were residents in the United States. Due to IRB regulations, no participants were rejected, but we removed data of 16 participants with incomplete survey responses and 12 participants who took less than 5 minutes to complete the survey ($M = 912.42$ seconds; $SD = 470.31$ seconds), which leaves us with a sample size of 494. AMT samples are more diverse than convenience samples and comparable to national representative samples from professional/commercial panels (Buhrmester et al., 2011; Difallah et al., 2018). Our participants consisted of more males ($n = 332$, 66.8%) than females ($n = 162$, 32.6%); one participant identified as non-conforming gender and two participants did not answer. The average age was 33.56 ($SD = 8.28$) and ranged from 19 to 69 years old. More than half (66%) of the participants received a bachelor's degree or higher; 17.7% had some college education but no degree, and 16.3% received high school diploma or equivalent.

Procedures

An online survey was administered on AMT. The survey was advertised on AMT as a study about attitudes and perceptions

toward video streamers. In our study, streamers were defined as professionals who produce videos on streaming platforms like Twitch or YouTube and must show their faces and speak to their audience. We did not include streaming services for music, movies, or TV shows in the study. First, we asked our participants to report their general streaming viewing behaviors, including their average time spent on watching per day, how many fan groups they belong to, average money donated to streamers per month, if they participated in any activities held by the fan groups. Then we asked them to identify if they have seen any streamer disclose their anxiety or depression, who the streamer was, number of followers/subscribers, how often the participants watched this specific streamer's videos. We asked the participants to keep this streamer they identified in mind when answering the specific scales related to our hypotheses (see below). Last, the participants reported the demographic questions including age, gender, race, education, employment, and relationship status. Participants received 3 USD as compensation for their voluntary participation.

Measures and scales

The following variables were compiled from previous research and theoretical predictions. Unless otherwise noted, all measures employed five-point Likert scales, with scale points from 1 (strongly disagree) to 5 (strongly agree). When necessary, item wording was slightly modified so that they would be applicable to the study.

Parasocial interaction (PSI)

We used a five-item five-point PSI scale to measure the participants' perceived interactivity with the streamer ($M = 3.03$, $SD = 1.28$, $\alpha = .96$) (Hartmann & Goldhoorn, 2011). We asked the participants the extent to which they agree that 1) the streamer is aware of me, 2) the streamer knew I was there, 3) the streamer knew I paid attention to him/her, 4) the streamer knew that I reacted to him/her, and 5) the streamer reacted to what I said or did.

Parasocial relationships (PSR)

We used a repurposed measure for parasocial relationship in the scenario of streaming viewing (Wohn et al., 2018) adapted from Rubin et al. (1985)'s 15-item five-point scale on television. Items were averaged ($M = 3.86$, $SD = .63$, $\alpha = .90$). The operationalization of parasocial relationships was the viewers' perceived friendship or relationship with the streamer. Example items are "The live stream shows me what the streamers are like" and "The streamers make me feel comfortable, as if I am with friends." A principle component analysis with varimax rotation was conducted to make sure that PSI and PSR were two distinct variables, the result showed that the items loaded into separate factors.

Identification

Identification with the streamer was measured using an adaptive scale from Cohen (2001). The 10-item five-point scale asked participants questions such as "I tend to understand the reasons why the streamer does what he or she does" and

“At key moments in the videos, I felt I knew exactly what the streamer was going through.” ($M = 4.05$, $SD = .60$, $\alpha = .87$).

Source credibility

Following Ohanian (1991), our study measured the perceived attractiveness, trustworthiness, and expertise of the streamer with seven-point semantic differential pairs, ranging from -3 to 3 . Specifically, attractiveness was measured by unattractive-attractive, ugly-beautiful, plain-elegant, and not sexy-sexy ($M = .86$, $SD = 1.34$, $\alpha = .91$). Trustworthiness was measured by undependable-dependable, unreliable-reliable, insincere-sincere, and untrustworthy-trustworthy ($M = 1.82$, $SD = 1.03$, $\alpha = .91$). Expertise was measured by not an expert-expert, inexperienced-experienced, unknowledgeable-knowledgeable, unqualified-qualified, and unskilled-skilled ($M = 1.92$, $SD = .97$, $\alpha = .93$).

Self-efficacy

Self-efficacy toward dealing with depression was measured using three items created following instructions by Bandura (2006). The questions asked participants, “on a scale of 0 to 10, how confident are you in your ability to ... a) make yourself feel good again, b) seek support,” and c) seek professional help if/when you are experiencing depression?” ($M = 7.10$, $SD = 2.20$, $\alpha = .86$).

Risk susceptibility and severity

Sub-scales from the Extended Parallel Process Model, including risk susceptibility (three-item; $M = 3.52$, $SD = 1.19$, $\alpha = .92$) and risk severity (three-item; $M = 4.05$, $SD = .89$, $\alpha = .83$), were used (Witte, 1992). Questions of risk susceptibility include “I am at risk of experiencing depression; It is possible that I will experience depression; I am susceptible to experiencing depression.” Questions of risk severity include, “Depression is harmful; Depression is a serious threat; Depression is a severe threat.”

Authenticity

A nine-item validated scale that includes factors like representativeness, candidness, and manipulation intent, was used to test viewers' perceived authenticity of streamers ($Mx = 3.65$, $SD = .62$, $\alpha = .74$) (Hall, 2009). Sample questions are “The streamer is likely the people you would see walking down the street; I know someone like this streamer.”

We also had three control variables (i.e., covariates) related to psychological traits of the person taking the survey:

Empathetic concern and personal distress

We used two sub-scales under the validated Interpersonal Reactivity Index (IRI), a 28-item, five-point Likert scale that assesses four dimensions of dispositional empathy to measure empathetic concern and personal distress (Davis, 1983). Empathetic concern measures sympathy and concern toward other people's suffering, while personal distress measures how strongly the individual feels for other people's suffering.

Questions of the empathetic concern subscale ($M = 4.04$, $SD = .81$, $\alpha = .85$) include, “When I see someone being taken advantage of, I feel kind of protective toward them; I often have tender, concerned feelings for people less fortunate than me;

I would describe myself as a pretty soft-hearted person; I am often quite touched by things that I see happen.” The personal distress subscale ($M = 3.08$, $SD = 1.19$, $\alpha = .92$) includes questions like “When I see someone who badly needs help in an emergency, I go to pieces; I sometimes feel helpless when I am in the middle of a very emotional situation; In emergency situations, I feel apprehensive and ill-at-ease; Being in a tense emotional situation scares me; I tend to lose control during emergencies.”

Depression

Depression was measured with the shortened 10-item Center for the Epidemiological Studies of Depression Short Form (CES-D-10), $M = 12.14$, $SD = 7.11$, $\alpha = .86$ (Kohout et al., 1993). Participants reported the frequency of several feelings they experienced on a four-point scale ranging from rarely or none of the time (less than 1 day), some or a little of the time (1–2 days), occasionally or a moderate amount of time (3–4 days), or most or all of the time (5–7 days). Sample questions include, “I felt that everything I did was an effort” or “I felt that people dislike me.”

Results

General viewing practices of live streams

Among our participants ($N = 494$), 7.3% reported watching streaming videos less than 10 minutes on an average day; 22.8% watched 10–30 minutes; 29.4% watched 31–60 minutes; 18.8% watched 61–90 minutes; 11.1% watched 91–120 minutes; and 10.7% watched more than 120 minutes. 40.7% of our participants reported having a streaming channel of their own. The average number of streamers our participants followed is 7.58 ($SD = 17.80$); As for the type of streamer the participants watched, 44.7% was gaming; 10.7% was fashion and beauty; 9.5% was IRL (in real life); 7% was food as well as education; 6.6% was about gadgets and technology; 14.4% was identified as others. Around 47.4% of our participants reported seeing a streamer talk about depression. The frequency of watching that streamer's channel is high with a mean of 3.87 ($SD = 1.62$). A total of 196 streamers were mentioned by the participants.

Hypothesis testing

Hypothesis 1 posited that participants with experiences of seeing streamer disclosures about depression would report higher perceived authenticity, perceived prevalence, risk susceptibility, risk severity, and self-efficacy. We conducted a Multivariate Analysis of Covariance (MANCOVA) to examine H1. Whether the participants recalled seeing streamer disclosure was entered as the independent variable. Streaming usage, empathetic concern, personal distress, and depression measures were controlled as covariates. See Table 1 for the results. Compared with those who did not have any experience of seeing a streamer disclose depression issues, participants who had such experience perceived the streamers to be more authentic, and have a higher perceived prevalence of depression, higher risk perceptions (susceptibility and severity), and higher self-efficacy to seek help for depression. The results were consistent with H1.

Table 1. Comparing participants who have seen streamer disclosures and those that have not.

	<i>F</i>	Mean (<i>SD</i>)	<i>p</i>	Partial η^2
Authenticity (H1a)	11.80	Have seen: 3.81 (.59) Have not: 3.51 (.59)	.001	.02
Credibility (H1b)	.01	Have seen: 1.61 (.87) Have not: 1.57 (.79)	.93	.00
Perceived prevalence (H1c)	4.80	Have seen: 58.65 (25.49) Have not: 46.07 (23.32)	.029	.01
Risk susceptibility (H1d)	12.80	Have seen: 3.94 (.91) Have not: 3.14 (1.28)	<.001	.03
Risk severity (H1e)	6.51	Have seen: 4.25 (.74) Have not: 3.86 (.98)	.011	.01
Self-efficacy (H1f)	7.69	Have seen: 7.24 (2.20) Have not: 6.95 (2.19)	.006	.01

H2 through H4 posited that PSI, PSR, and identification would be positively associated with authenticity, credibility, perceived prevalence, risk susceptibility, risk severity, and self-efficacy to seek help. For the analyses, we focused only on participants who had seen streamer disclosures about their depressions and responded to the PSI, PSR, and identification questions based on their perceptions of the streamer who talked about his/her depression ($n = 234$). We conducted separate hierarchical regressions to examine H2–H4. Frequency of watching the streamer, empathetic concern, personal distress, and depression were entered into the first block as control variables, the IVs: PSI, PSR, and identification were entered into the second block.

Authenticity

The results showed that PSI, PSR, and identification were all significantly associated with higher perceived authenticity. See Table 2 for the analysis results. The results suggest that participants who had stronger PSI, PSR, or identification with the streamers also perceived them to be more authentic. H2a, H3a, H4a were all supported.

Credibility

In terms of perceived credibility, see Table 2 for the analysis results. The results showed that PSI and PSR were positively associated with perceived credibility, but identification was not. H2b and H3b were supported, H4b was not. The findings suggest that participants who have parasocial interaction and relationships with the streamer perceived the streamer to be more credible.

Perceived prevalence, risk susceptibility, and severity

None of the relationship variables (PSI, PSR, identification) was significantly associated with the perceived prevalence of

depression. H2c, H3c, and H4c were not supported. The results are in Table 3.

Regarding how participants' relationships with the streamers affect their perceived risk susceptibility and risk severity, the results are in Table 4. PSI was significantly associated with risk susceptibility, but in the opposite direction as predicted. In other words, participants that experienced higher PSI reported lower risk susceptibility. H2d, H3d, and H4d were not supported.

In terms of perceived risk severity, our analysis showed that neither PSI or PSR were associated with risk severity; on the other hand, as predicted by H4e, identification was significantly and positively associated with risk severity. H2e, H3e were not supported, H4e was supported.

Self-efficacy

Finally, we examined how our participants' relationship with the streamers who talked about his/her personal depression affected their self-efficacy in seeking help for depression (See Table 5). Our findings indicated that only PSI, the sense that the streamer was aware of the participants and was interacting with the participants, was significantly associated with higher self-efficacy to seek help for depression. H2f was supported, H3f and H4f were not.

Discussion

The current study has several goals. The first goal was to explore whether streamers' disclosure of personal mental illness is associated with their perceived authenticity and credibility. The second goal was to know whether viewers who have seen streamers' health disclosures about depression had a higher perceived prevalence of depression, risk perceptions, and self-efficacy than those who have not. Third, we further examined how people's relationship (PSI, PSR, and identification) with streamers who disclosed about depression were associated with their perceived authenticity, credibility, risk prevalence, risk perceptions, and self-efficacy.

Authenticity and credibility

Our findings showed that the participants perceived streamers who disclosed their depression as more authentic but not more credible. Mental illness such as depression often carry stigmas that can lead to discrimination and social rejections. Because of the stigmas associated with mental illness, many people who suffer from mental illness are unwilling to disclose their conditions (Feldman & Crandall, 2007; Hoffner & Cohen, 2018). Since disclosing one's mental illness carries potential risks of discrimination for the streamers, when the streamers talk about their experience, it is interpreted as a signal of authenticity. In comparison to traditional celebrities that evoke admiration from a distance, a significant part of the streamers' appeal comes from their authentic image, that they are "people like us." Self-disclosures about their experience with mental illness invite the viewers to identify with them and foster affective relationships. However, despite their higher perceived authenticity, having a mental illness does not make the streamer an expert or a credible source about depression. It is also

Table 2. Regression analysis on authenticity and credibility.

	Authenticity			Credibility		
	<i>B</i> (<i>SE</i>)	β	95% CI	<i>B</i> (<i>SE</i>)	β	95% CI
Frequency	-.04 (.018)	-.12	-.08; -.01*	.01 (.03)	.02	-.04;.07
Empathetic concern	.00 (.05)	.00	-.09;.10	.11 (.07)	.09	-.04;.25
Personal Distress	.08 (.03)	.15	.02;.14 *	.05 (.05)	.06	-.05;.14
Depression	.01 (.01)	.08	.00;.02	.01 (.01)	.10	.00;.03
PSI	.14 (.03)	.31	.09;.20***	.11 (.05)	.16	.02;.20*
PSR	.24 (.08)	.24	.09;.40**	.61 (.12)	.41	.47;.86***
Identification	.18 (.07)	.17	.04;.32*	.15 (.11)	.10	-.07;.38
	$F(7, 218) = 32.28***$, $adj.R^2 = .49, \Delta R^2 = .26$			$F(7, 218) = 26.40***$, $adj.R^2 = .44, \Delta R^2 = .25$		

Table 3. Regression analysis on perceived prevalence.

	Block 1			Block 2		
	<i>B</i> (<i>SE</i>)	β	95% CI	<i>B</i> (<i>SE</i>)	β	95% CI
Frequency	-2.96 (.78)	-.19	-7.92; 25.46	-3.28 (.79)	-.21	-4.84; -1.73***
Empathetic concern	5.10 (1.81)	.14	1.54; 8.66**	2.77 (2.05)	.08	-1.26; 6.81
Personal Distress	7.00 (1.39)	.32	4.25; 9.74***	6.45 (1.41)	.29	3.58; 9.12***
Depression	1.15 (.22)	.32	.72; 1.58***	1.09 (.22)	.31	.65; 1.53***
PSI				1.53 (1.29)	.08	-1.01; 4.08
PSR				1.47 (3.49)	.03	-5.41; 8.36
Identification				4.25 (3.16)	.10	-1.96; 10.47
	$F(4, 221) = 50.20***, adj.R^2 = .48$			$F(7, 218) = 30.72***, adj.R^2 = .50, \Delta R^2 = .02$		

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 4. Regression on risk susceptibility and severity.

	Risk susceptibility			Risk severity		
	<i>B</i> (<i>SE</i>)	β	95% CI	<i>B</i> (<i>SE</i>)	β	95% CI
Frequency	.06 (.03)	.12	.00; .13*	.01 (.03)	.02	-.05; .07
Empathetic concern	.21 (.08)	.17	.05; .38*	.28 (.07)	.27	.14; .43***
Personal Distress	.13 (.06)	.16	.02; .24*	.04 (.05)	.06	-.06; .14
Depression	.06 (.01)	.50	.05; .08***	.02 (.01)	.21	.01; .04**
PSI	-.19 (.05)	-.26	-.29; -.08***	-.07 (.05)	-.12	-.16; .02
PSR	-.00 (.14)	-.00	-.28; .28	-.03 (.13)	-.02	-.27; .22
Identification	.17 (.13)	.11	-.08; .42	.34 (.11)	.26	.12; .56**
	$F(7, 218) = 16.98***, adj.R^2 = .33, \Delta R^2 = .05$			$F(7, 217) = 9.73***, adj.R^2 = .21, \Delta R^2 = .05$		

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 5. Regression analysis on self-efficacy.

	Block 1			Block 2		
	<i>B</i> (<i>SE</i>)	β	95% CI	<i>B</i> (<i>SE</i>)	β	95% CI
Frequency	-.22 (.09)	-.16	-.39; -.04*	-.24 (.08)	-.18	-.40; -.09**
Empathetic concern	.72 (.20)	.23	.32; 1.13***	.41 (.20)	.13	.01; .81*
Personal Distress	.20 (.16)	.10	-.11; .51	-.04 (.14)	-.02	-.32; .23
Depression	-.04 (.03)	-.14	-.09; .01	-.08 (.02)	-.25	-.12; -.03
PSI				.76 (.13)	.44	.51; 1.02***
PSR				.52 (.35)	.14	-.17; 1.21
Identification				.05 (.32)	.01	-.57; .67
	$F(4, 21) = 6.37***, adj.R^2 = .09$			$F(7, 218) = 15.17***, adj.R^2 = .31, \Delta R^2 = .22$		

* $p < .05$, ** $p < .01$, *** $p < .001$.

possible that some viewers will perceive these self-disclosures as strategic presentations to seek attention, which may make the viewers question the streamers' credibility. Prior studies on microcelebrity influence have found that people mainly follow microcelebrities such as streamers because they are attractive, humorous, authentic, and original, not because they are informative or experts (Djafarova & Trofimenko, 2019). Future studies may want to perform a content analysis of live streams to further examine the nature of the content to obtain a deeper understanding of what messages are being communicated and how the content of disclosures affect the viewers' perceived credibility toward streamers.

Risk perception

In addition to viewers' perceptions toward the streamers, it is essential to establish whether video streamers' disclosure about depression can affect viewers' perceptions toward depression. Our findings showed that participants who have seen streamers talk about depression reported a higher perceived prevalence of depression (58.65%), compared with those who have not (46.07%). Note that according to the NIH statistics, about

7.1% of the population in the U.S.A. are considered severely depressed, but the statistics do not account for situational depression, which can be caused by life-changing events. Our findings show that although our participants generally over-estimated the prevalence of depression in society, those who have seen streamers talk about depression had a heightened perceived prevalence of depression. Participants who have seen streamers talk about depression also reported higher risk susceptibility, risk severity, and self-efficacy. Prior studies on celebrity influence on health have mostly only examined people who have seen the celebrity disclosures but did not compare them with people who have not. Our findings show that there is a significant difference among people who have seen streamers' health disclosures compared with those who have not. While it is difficult to ascertain causality through a survey, our results could also suggest that those who have mental health issues are seeking out microcelebrities who are more likely to discuss these topics. This could mean that people are desiring more real-time, authentic interactions with others who have similar conditions, and that these live streams are serving as a means to provide people with the perceived social interactions that they desire. If the causality is in the opposite direction, the findings

suggest that there is potential for streamers to act as health communication advocates to raise people's awareness of mental illness and support self-efficacy to seek help. Several health communication models, including the health belief model (Rosenstock et al., 1988), extended parallel processing model (Witte, 1992), the theory of planned behaviors (Fishbein & Yzer, 2003) have suggested that raising risk perceptions and efficacy beliefs are important for designing effective health campaigns. Our findings provide initial directions for investigating how to make use of these factors in the streaming context for intervention designs and outcome assessments and point to a need for future research that can determine the causal direction of the correlations we found.

Relationship with microcelebrities

Prior studies on celebrity health disclosures have found that parasocial relationships and identification with celebrities as potential routes to celebrity influence (Basil, 1996; Casey et al., 2003; Dillman Carpentier & Parrott, 2016; Evans et al., 2014). Our findings showed that all three relationship factors were positively associated with perceived authenticity, but only PSI and PSR were associated with credibility. This is very much aligned with the conceptual distinction between PSI/PSR and identification. All three factors were positively associated with authenticity because when people experience stronger PSI and PSR, they perceive the media persona as more real. Similarly, stronger identification with a media persona indicates a closer connection between the viewer and the persona with whom the viewer identifies with, allowing the viewer to experience the same emotions, motivations, and behaviors as if they are authentic. However, credibility is a judgment reserved for assessing "others." PSI and PSR were associated with higher credibility because, in these relationships, the media persona is perceived as a separate person from the viewer. In contrast, identification was not associated with credibility because a strong identification is defined as feeling as one with the persona and not a judgment about others.

In terms of perceptions toward depression, our findings indicate that none of the participants' relationships with streamers (PSI, PSR, and identification) was associated with their perceived prevalence of depression. However, PSI, PSR, and identification were associated with different processes that affect the participant's risk perceptions and self-efficacy. One explanation is that the relationship factors reflect how strongly the participants felt toward a single streamer. But one's perceived prevalence is mostly shaped by the number of people whom one knows has the mental illness. Therefore, while participants who have seen streamers talk about depression reported higher perceived prevalence, their relationship with a single streamer was not a significant factor affecting their perceived prevalence.

Our findings indicate that PSI was negatively associated with perceived risk susceptibility but was positively associated with self-efficacy to seek help for depression. Neither PSI nor PSR was associated with perceived risk severity. Identification was the only relational factor that was strongly associated with risk severity. The different influences further support previous studies that suggest PSI, PSR, and identification are related but

conceptually distinct mechanisms for persuasion (Brown, 2015; Brown & Basil, 1995; Cohen, 2001). PSI and PSR are conceptualized as a perception that the media persona is a person with whom the individual interacts regularly and has a relationship. In contrast, identification is conceptualized as taking on the perspective of the media persona, thus merging one's experience with the media persona. With this conceptual distinction in mind, our findings suggest that when the individual treats the streamers as someone with whom they interact (PSI) or has a relationship with (PSR), the depression is perceived as another person (the streamer's) problem. Perhaps through downward social comparison, watching streamers talk about their depression (i.e., PSI) actually reduced the viewer's perceived risk susceptibility but boosted their self-efficacy to seek help for depression. Note that this increased sense of risk susceptibility and self-efficacy was not correlated with stronger PSR, only, PSI. This suggests that the ability to increase risk susceptibility and self-efficacy through our relationship with microcelebrities may be more short-lived and require repeated exposures as PSI is a sense of interaction "during" media exposure, while PSR can last well beyond the media episodes. In comparison to PSI and PSR, when an individual identifies with a streamer who is suffering from depression, the individual is more likely to experience the streamer's suffering as if it was their own suffering and perceive depression as a more severe risk. This finding is distinct from prior studies that have mainly focused on how PSR and identification affected health seeking behaviors (e.g., Dillman Carpentier & Parrott, 2016; Hoffner & Cohen, 2018). Most prior studies in this area did not examine risk perceptions, our findings suggest that depending on our relationship with microcelebrities, sometimes exposure to their health disclosures may actually be associated with a false sense of security, reflected in lower perceived risk susceptibility and higher efficacy.

Limitations

The findings should be interpreted with the following limitations in mind. First, the study is based on a cross-sectional survey. Thus, the associations should not be interpreted as a causal relationship. We controlled for the participants' depression level in the analyses as it is also possible that individuals with higher depression tendencies are more likely to notice streamers who are in similar situations and identify with them. Second, our participants were predominantly male; results related to help seeking behaviors and attitudes toward mental illness should be interpreted with gender differences in mind. Third, we did not specify a specific streamer in this study; this decision has the benefit of incorporating more diverse streamers and allowing the participants to recall their most memorable streamer disclosure. However, since streamers are very diverse, there may be other factors that were not accounted for in this study, such as the streamer's popularity, community size, gender, age, and type of streaming. Last, we did not examine the message in the disclosure videos about depression, there is a large degree of variance in these videos. Some streamers disclosed their depression as a way to raise awareness only a few times, while other streamers

documented their experience dealing with depression across multiple streams through many years. Some streamers only discussed their personal experience with depression, while others provided advice on where to seek help. A future study should examine what is being disclosed in these video streams and investigate their effects on the viewers.

Conclusion

Live video streamers and other microcelebrities are a rising group of influencers that often develop an intimate and authentic relationship with their followers. Marketers and advertisers have experimented with ways to tap into their influence for brand building and to promote purchases (Lou & Yuan, 2019). Our study is one of the first to examine the potential of streamers as health advocates. Our findings contribute to the literature on celebrity influence by showing that health disclosures of streamers can make them appear more authentic, but not more credible. Seeing streamers talk about personal struggles with depression is associated with higher perceived prevalence, risk perceptions, and self-efficacy. This suggests that while streamers may not be perceived as a credible source of knowledge, they may help reduce social stigmas around discussing about mental health. More importantly, our relationship with streamers offers different paths of influence. When individuals perceive the streamers as another person that they are interacting with and have a relationship with, the streamers' disclosure only widens the difference between the viewers and the streamers, resulting in participants feeling "less" susceptible, but more confident in their ability to overcome depression. In other words, if health practitioners seek to highlight the severity of mental illness, they should foster *identification*, which is associated with higher risk severity. Future studies should examine the causal process between our relationships with streamers, their disclosure messages, and our responses to their health disclosures. Our study provides initial evidence that if health communicators can identify the type of relationships between microcelebrities and their followers, the microcelebrities' health disclosures can be a promising opportunity for health awareness and potential interventions to their fans and followers.

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We have no known conflict of interest to disclose.

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