

A DESCRIPTIVE ANALYSIS OF THE MOST VIEWED
YOUTUBE VIDEOS RELATED TO DEPRESSION

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ABSTRACT

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Depression contributes to a host of health problems resulting in disability, pain, and death. An important aspect of preventing and reducing the harmful effects of depression is educating the public about this pervasive mental disorder, including the importance of early detection and effective treatment. During the past 20 years, many people have turned to the Internet in general and social media in particular to learn about health.

Current research has examined YouTube coverage of some mental health topics, but no published research describing YouTube coverage of depression was identified. The purpose of this study was, therefore, to describe the most viewed YouTube videos about depression with respect to source, speaker, format, purpose, number of views, length, upload year, and content. A cross-sectional design was used to examine the 394 most viewed YouTube videos on depression.

Collectively, these 394 videos were viewed 155,349,029 times. Three sources—consumers, internet-based video, and nongovernmental agencies—accounted for approximately 85% of the most frequently viewed videos and garnered 93% of the total views ($n = 144,506,467$). Consumers uploaded almost half of all the most widely viewed videos ($n = 193, 48.98\%$), and these videos had the highest cumulative view count (74,391,500 views).

Content mainly focused on signs and symptoms, which were covered in more than 75% of the videos (n = 300, 76.14%), and promotion of healthful behaviors and protective factors, which was covered in 68.52% (n = 270). Slightly more than one-half of the videos explicitly mentioned risk factors (n = 200), and slightly less than one-half provided general information about depression (n = 189). Between 20% and 35% of the videos included content related to suicide (23.10%), stigma (22.08%), psychotherapy (28.93%), medication (31.22%), and alternative therapies (30.96%). Content related to screening was only included in 9 of the most widely videos (2.28%). While good sleep hygiene was only mentioned in 28 videos (7.11%), collectively, these videos received over 16 million views. Another main finding was that governmental agencies have not produced videos that are among those most widely viewed. Given YouTube's wide reach, they should, however, be using this media channel to help inform the public.

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Chapter I

INTRODUCTION

The World Health Organization (2016) revealed that mental health disorders are the leading cause of disability worldwide. In the U.S., one in five adults, 43.8 million, experience a serious mental illness in a given year (U.S. Department of Health and Human Services, 2015), and one in five adolescents aged 13-18 have, or will have, a mental illness (National Institute of Mental Health [NIMH], 2016b). According to the United States Preventive Services Task Force (2016a), major depressive disorder (MDD) in adolescents is associated with depression in adulthood, other mental disorders, and increased risk for suicide. The United States Preventive Services Task Force (USPSTF) indicated that 19% of adolescents with MDD attempt suicide. Suicide is the third leading cause of death among youth ages 10-24 (NIMH, 2016b). Even more alarming, 90% of people who die by suicide had an underlying mental illness (NIMH, 2016b). The economic burden of depression was estimated to be \$210.5 billion in 2010, including workplace costs and suicide-related costs (Greenberg, Fournier, Sisitsky, Pike, & Kessler, 2015).

Disparities

The Office of Disease Prevention and Health Promotion (2016b) suggests that mental, emotional, and behavioral disorders are common and begin early in life. According to the United States Preventive Services Task Force (2016a), risk factors of

major depressive disorder include being a female, having chronic medical illness, being overweight or obese, childhood abuse or neglect, family conflict, uncertainty about sexual orientation, low socioeconomic status, and poor academic performance. Compared with adolescents who self-identify as being one race, those who are two or more races have the highest prevalence of major depressive episodes (National Institute of Mental Health [NIMH], 2015a).

Low-income and minority youth have equal or higher need for services, but they often receive lower quality and quantity of mental health services (Alegria, Vallas, & Pumariega, 2010). Healthy People 2020 have made reducing these kinds of disparities among Americans an overarching goal. Barriers to accessing health services may include a lack of availability, high costs, lack of insurance, or language barriers (Office of Disease Prevention and Health Promotion, 2016c). The result of these barriers may lead to unmet health needs, delays in receiving care, missed opportunities for preventive services, or hospitalization (Office of Disease Prevention and Health Promotion, 2016c). The Office of Adolescent Health also suggests that stigma prevents adolescents and families from seeking help (U.S. Department of Health and Human Services, 2016c).

Social Media and Scientific Premise for Research Questions

Less threatening information sources that can be accessed anonymously, such as YouTube, are available for people with all levels of literacy and limited access to mental health resources. There are over 5 million results on YouTube regarding depression, and the site has over a billion subscribers (YouTube, 2017). YouTube reaches more 18-49 year-olds than any cable network in the United States (YouTube, 2017). Recently conducted research has found that the use of Social Networking Sites (SNS) is a significant resource in seeking health information (Feng & Xie, 2015).

Mamlin and Tierney (2016) examined information and communication technologies in healthcare. They suggest that:

- (1) Social media will be widely used to disseminate health information and enhance communication between healthcare providers and consumers.
- (2) Social media will increase peer-to-peer support among patients.
- (3) Social media will provide data for public health surveillance. (p. 60)

Sources of YouTube videos regarding mental health topics are mixed, including those uploaded by doctors (Kang, Ha, & Velasco, 2016; Sharma, Lucas, Ford, Meurk, & Gartner, 2016) to being homemade by people with lived experience, also known as user-generated content (Salzmann-Erikson & Hiçdurman, 2016). Research suggests that videos uploaded by governmental agencies were less likely to be among those with the most views (Kang et al., 2016). People with mental illness use YouTube to reveal themselves, experience the universality of the problem, receive support, and fight stigma (Salzmann-Erikson & Hiçdurman, 2016). Further, this kind of communication channel provides opportunities to learn about self-care activities (Salzmann-Erikson & Hiçdurman, 2016) and coping strategies for day-to-day concerns (Naslund, Grande, Aschbrenner, & Elwyn, 2014). A rich dialogue surrounding shared experiences using medications and seeking mental health care was also found (Naslund et al., 2014). The interactions Naslund et al. found on YouTube created a sense of belonging and provided means for coping with serious mental illness. Further, YouTube serves as a space to normalize one's illness and validate shared experiences (Naslund et al., 2014). However, there are also potential harms to YouTube because videos can normalize unhealthy behaviors and encourage youth to participate in dangerous activities (Ahern, Sauer, & Thacker, 2015), or expose viewers to misleading information (Naslund, Aschbrenner, Marsch, & Bartels, 2016; Nour, Nour, Tsatalou, & Barrera, 2016). Nour et al. (2016) found that both accurate and inaccurate videos were similar in view counts (290,048

versus 186,124). Therefore, the public should be cautious when viewing videos, as they may consume inaccurate information.

Education about Depression

No research describing what consumers are viewing on YouTube regarding depression was identified in a search on PubMed as of December 2016. The purpose of this study was, therefore, to describe the source, speaker, format, purpose, number of views, length, upload date, and content of the most widely viewed YouTube videos regarding depression. Criteria for coding content were based on multiple authoritative sources, including national guidelines from the National Institute of Mental Health, the Office of Disease Prevention and Health Promotion, the U.S. Department of Health and Human Services, the United States Preventive Services Task Force, the National Alliance on Mental Illness, Diagnostic criteria for Major Depressive Disorder from the DSM-5, and the Centers for Disease Control and Prevention (CDC).

Research Questions

Research Question 1. What are the sources, upload dates, length (in minutes), speakers, formats, and purposes of the most viewed YouTube videos about depression?

Research Question 2. What is the content covered in the most viewed YouTube videos about depression?

Research Question 3. To what extent does the content covered in the most viewed YouTube videos about depression vary based on the source of upload?

Significance

Healthy People 2020, a set of goals and objectives with 10-year targets designed to guide national health promotion and disease prevention efforts to improve the health of all people in the United States (U.S. Department of Health and Human Services, 2016a), is a planning tool used by the federal government, states, communities, and many other public and private sector partners. The overarching goals of Healthy People 2020 are:

1. Attain high quality, longer lives free of preventable disease, disability, injury, and premature death
2. Achieve health equity, eliminate disparities, and improve the health of all groups
3. Create social and physical environments that promote good health for all
4. Promote quality of life, healthy development, and healthy behaviors across all life stages. (U.S. Department of Health and Human Services, 2016a)

Healthy People 2020 has a topic to improve Mental Health and Mental Disorders (MHMD). It aims to “(1) improve the status of mental health among adults and adolescents, and (2) to expand treatment among adults and adolescents.” Subsequent objectives include improving access to depression screening by primary care providers, reducing the rate of suicide, and reducing the proportion of persons who experience major depressive episodes.

The purpose of this study aligns well with the mission of Healthy People 2020 because the intent is to improve understanding about an important emerging source of communication. Social media can foster positive health behaviors and serve as an effective medium for communicating with hard-to-reach populations. However, little is known about the content, authorship, and production characteristics regarding YouTube videos about depression. Therefore, this study will help health educators and practitioners understand how YouTube is being used to communicate information about depression.

The direct results and short-term goal of this study are to describe the most viewed videos on YouTube related to depression concerning a set of selected characteristics. This study will reveal the extent to which videos cover various content about depression, and whether they are based on scientifically supported guidelines. This is a stepping-stone to a longer-term goal and research agenda intended to find ways to reach large audiences of people with accurate and supportive information related to the prevention and treatment of depression.

Theoretical Context

The context for the study can be conceptualized within the Human Ecology Theory, also known as the Social Ecological model (Bronfenbrenner, 1977). This theory suggests that many different aspects of the social environment affect behaviors, development, and health. Aspects of the social environment form increasingly broad influences on an individual. The microsystem includes family, education, religion, health care, and peers. The exosystem includes industry, social services, neighbors, local politics, and mass media. The study was delimited in scope to focus on only one particular aspect of the exosystem, namely, mass media, and was delimited further by the focus on a single communication channel, YouTube, and how it may contribute to or distract from the prevention and control of depression.

Chapter II

REVIEW OF THE LITERATURE

In this chapter, literature is presented covering two main topics. First, health education about depression is outlined. This includes sections covering risk and protective factors, seriousness of the problem, symptoms and treatments, and promotion of healthful behaviors. The second main section addresses YouTube and mental health.

Health Education for Depression

Depression Overview

The National Institute of Mental Health (NIMH, 2016a) explains that clinical depression is a serious mood disorder. Depression is one of the mental health conditions that contribute to a host of health problems resulting in disability, pain and death (Office of Disease Prevention and Health Promotion [ODPHP], 2016b). The World Health Organization (2016) revealed that mental health disorders are the leading cause of disability worldwide. The ODPHP (2016b) suggests that mental, emotional, and behavioral disorders are common and begin early in life.

Therefore, the ODPHP (2016b) suggests that the greatest opportunity for prevention is among young people. One in five American adults, 43.8 million, experience a serious mental illness in a given year (U.S. Department of Health and Human Services, 2015), and one in five American adolescents aged 13-18 have, or will have, a mental

illness (NIMH, 2016b). The United States Preventive Services Task Force (2016a) suggests that 8% of U.S. adolescents reported having MDD in the past year.

According to the National Institute of Mental Health (2015a), an estimated 3 million adolescents aged 12 to 17 in the United States had at least one major depressive episode in the year 2015. The NIMH also suggests that 50% of all lifetime cases of mental illness begin by age 14 and 75% begin by age 24. According to the United States Preventive Services Task Force (2009), lifetime prevalence among adolescents may be as high as 20% (p. 1226). Sixteen million Americans, or 6.9% of adults, had at least one major depressive episode in the past year (NIMH, 2015a).

Different types of depression include major depressive disorder, persistent depressive disorder, perinatal depression, psychotic depression, seasonal affective disorder, and bipolar disorder (NIMH, 2016a). Major depressive disorder involves symptoms for at least two weeks, while persistent depressive disorder involves symptoms that last for at least two years. A woman with perinatal depression experiences major depression (symptoms persist longer than two weeks) during pregnancy or after delivery (post-partum). Psychotic depression involves some form of psychosis, such as delusions or hallucinations, along with severe depression. A person with seasonal affective disorder has depression during the winter months. Those with bipolar disorder are characterized by episodes of extremely low mood, which meet the criteria for major depression, but also experience extremely high moods, called mania. The material outlined below focuses on major depressive disorder.

Risk factors. *Which subgroups (defined demographically) are at greatest risk?*

According to a 12-month period prevalence estimate of major depressive episode among U.S. adolescents in 2015, the highest prevalence of major depressive episodes is among 15- (16.1%) and 16-year-olds (16%), followed by 17-year-olds (15%), 14-year-olds (11.5%), 13-year-olds (10.1%), and 12-year-olds (5.4%) (NIMH, 2015a). Adolescents who are two or more races have the highest prevalence of major depressive episodes

(15.6%), followed by youth who are White (13.4%), Hispanic (12.6%), Asian (9.7%), and Black (9%). Compared with adolescent males, rates of major depressive episodes among adolescent females are three times greater (5.8% versus 19.5%). The National Institute of Mental Health (2016b) further suggests that 70% of youth in local and state juvenile justice systems have a mental illness.

What is known about host risk factors, including biological factors, physiological factors, and behavioral factors? Causes of depression are associated with a combination of genetic, biological, environmental, and psychological factors (NIMH, 2016a). The NIMH suggests that risk factors include personal or family history of depression, major life changes, trauma, or stress, as well as certain physical illnesses and some medications. Some medications that can make a person feel depressed include beta-blockers (used to treat high blood pressure), corticosteroids (used to treat inflammation of blood vessels and muscles, arthritis, and lupus), benzodiazepine hypnotics (used to treat insomnia and anxiety), Parkinson's drugs, hormone-altering drugs, stimulants, and anticonvulsants (Neel, 2012).

According to the United States Preventive Services Task Force (2016b), risk factors of major depressive disorder include being a female, being uneducated, and having chronic medical illness. Medical conditions such as chronic pain, anxiety, attention-deficit hyperactivity disorder (ADHD), and sleep disturbances are associated with developing depression (National Alliance on Mental Illness, 2016). Diabetes, cancer, heart disease, and Parkinson's disease can co-occur with depression (NIMH, 2015a).

Psychosocial risk factors include childhood abuse or neglect, family conflict, uncertainty about sexual orientation, low socioeconomic status, and poor academic performance (United States Preventive Services Task Force, 2016a). Further research also supports that depression is most common among adolescents who have a family

history of depression, adolescents who are living in poverty, and adolescents with poor problem-solving skills (O'Connell, Boat, & Warner, 2009).

Protective factors. According to the U.S. Department of Health and Human Services (2009), protective factors can be from the biological, psychological, family, or community level. Protective factors are associated with a lower likelihood of developing a certain problem, in this case depression. On an individual level, protective factors include positive physical and academic achievement/intellectual development, emotional self-regulation, high self-esteem, and good coping and problem-solving skills. Being engaged in school, with peers, in athletics, employment, religion, and culture are also protective factors. On the family level, protective factors include family structure, support, and clear expectations for behaviors and values. On the school, neighborhood, and community level, protective factors include the presence of mentors and support, opportunities for engagement, positive norms, and physical and psychological safety (U.S. Department of Health and Human Services, 2009).

Schools. According to the NIMH (2016b), 50% of high school students with a mental illness will drop out of school. Students spend most of their time in schools; therefore, schools need to be a healthy environment for youth to develop well. Many adolescents are growing up in school environments that are not fully advancing their mental, physical, and social capacity (Basch, 2010). According to the U.S. government,

Schools play an increasingly critical role in supporting these students and providing a safe, non-stigmatizing, and supportive natural environment in which children, youth, and families have access to prevention, early intervention, and treatment through school-based mental health programs. (Youth.gov, 2016)

Seriousness of the problem. *How severe are the health consequences?* Major depressive disorder in adolescence is associated with depression in adulthood, other mental disorders, and increased risk for suicide (United States Preventive Services Task Force, 2016a). Youth suicide is a serious public health issue in the United States, and

depression can lead to suicide. The United States Preventive Services Task Force indicated that 19% of adolescents with MDD attempt suicide. Over 800,000 people die worldwide due to suicide every year (WHO, 2016). Suicide is the third leading cause of death among youth ages 10-24 (NIMH, 2016b). More alarming, 90% of people who die by suicide had an underlying mental illness. The United States Preventive Services Task Force (2016a) also suggests that MDD is associated with a variety of manifestations of morbidity and mortality, which in adolescents include decreased school performance, poor social functioning, early pregnancy, increased physical illness, and substance abuse.

What are the economic losses to the community and the individual? Depression affects more than just the person with the disease. It affects their relationships and their involvement within the community. Including workplace costs and suicide-related costs, the economic burden of depression was estimated to be \$210.5 billion in 2010 (Greenberg et al., 2015). Being physically present at work, but functioning sub-optimally (absenteeism and presenteeism), has cost the U.S. approximately \$36.6 billion per year (Lépine & Briley, 2011). Moreover, “depression is associated with lower workplace productivity and more absenteeism, which result in lower income and higher unemployment” (CDC, 2016), causing a cycle of poverty and financial pressure on society.

Symptoms and Treatment

People with depression have a higher risk for other medical conditions, and people with medical conditions have a higher risk for developing depression (NIMH, 2016a). A depression episode can occur only one time in a person’s life, but more frequently episodes recur (NIMH, 2016a). According to the NIMH (2016a), depression can co-occur with other serious mental illnesses, and often make conditions worse. To be diagnosed with depression, people must experience the following symptoms for two or more weeks. Diagnostic criteria for Major Depressive Disorder from the DSM-5 (CDC, 2016) include:

- Feelings of sadness, hopelessness, depressed mood
- Loss of interest or pleasure in activities that used to be enjoyable
- Change in weight or appetite (either increase or decrease)
- Change in activity: psychomotor agitation (being more active than usual) or psychomotor retardation (being less active than usual)
- Insomnia (difficulty sleeping) or sleeping too much
- Feeling tired or not having any energy
- Feelings of guilt or worthlessness
- Difficulties concentrating and paying attention
- Thoughts of death or suicide

According to the National Institute of Mental Health (2016a) adolescents experience changes in functioning, such as:

- Problems with sleep
- Self-image
- Concentration
- Eating
- Energy

The USPSTF (2016b) recommends that systems should be in place to accurately diagnose, treat, and follow up with persons with depression. The USPSTF recommendation for depression screening is that the Patient Health Questionnaire and the Beck Depression Inventory should be used. The USPSTF suggests that there is small to no harm in screening for depression.

Antidepressants. Depression is commonly treated with medications (antidepressants, mood stabilizers, and stimulants), psychotherapy (talk therapy), or a combination of the two (NIMH, 2016a). The most common class of medications used to treat depression is antidepressants (NIMH, 2016a). Although medication is not necessary for every case of depression, the U.S. Food and Drug Administration (FDA, 2017) has

approved some medications for treatment of depression. These medications change brain chemicals and regulate mood. Some examples include selective serotonin reuptake inhibitors (SSRIs) and serotonin norepinephrine reuptake inhibitors (SNRIs). Side effects are common and include nausea, weight gain, sleep disturbances, sexual problem, and diarrhea (FDA, 2017).

Therapy. There are several types of psychotherapy that can help people with depression, according to the NIMH (2016a). Evidenced-based treatments recommended by the NIMH include cognitive-behavioral therapy (CBT), interpersonal therapy (IPT), and problem-solving therapy. Brain stimulation therapies are also available if medication and psychotherapy do not reduce depression symptoms. Electroconvulsive therapy (ECT) can be an effective treatment for people with depression, although it may cause side effects.

Complementary and integrative medicine. According to the National Center for Complementary and Integrative Health (NCCIH, 2015), omega 3-fatty acid supplements may provide small improvements of depression along with conventional treatments. The NCCIH (2013) also suggests that St. John's Wort has shown improvements in a limited number of patients at a level similar to antidepressants. When used with standard treatment, mind body practices may be promising for treatment of depression among adults (NCCIH, 2016). For example, music therapy may improve mood, and massage therapy may help reduce depression symptoms. Finally, the NCCIH (2016) suggests that relaxation training may be beneficial for reducing symptoms of depression, including meditation, yoga, tai chi, guided imagery, biofeedback, self-hypnosis, and deep breathing.

Access to treatment and health disparities. Many individuals with depression do not have access to treatment or do not take advantage of services, and, if not treated, depression is likely to become a chronic disease (CDC, 2016). Depression can be treated,

and the earlier treatment can begin, the more effective it is likely to be (NIMH, 2016a). Therefore, it is imperative that intervention begins early in life.

Health disparities, as defined by Healthy People 2020, affect groups of people who have systematically faced greater adversity based on their “racial or ethnic group; religion; socioeconomic status; gender; age; mental health; cognitive, sensory, or physical disability; sexual orientation or gender identity; geographic location; or other characteristics historically linked to discrimination or exclusion.” They go on to suggest that health disparities are closely linked to social, economic, and environmental disadvantages.

As mentioned above, reducing disparities among Americans is an overarching goal of Healthy People 2020. Health disparities are prevalent with regard to where and when adolescents receive mental health treatments. Barriers to accessing health services may include a lack of availability, high costs, lack of insurance, or language barriers (ODPHP, 2016c). The result may be unmet health needs, delays in receiving care, missed opportunities for preventive services, or hospitalization (ODPHP, 2016c).

The USPSTF (2016a) recommends screening of adolescents (12-18 years of age) for major depressive disorder (MDD), and to ensure accurate diagnosis, psychotherapy, and follow-up. Adolescents of color are not accessing resources in traditional healthcare settings as much as their White peers (Cummings et al., 2014). Moreover, poor and minority youth often receive lower quality and quantity of mental health services (Alegria et al., 2010).

Promotion of Healthy Behaviors

According to Basch (2011), “the majority of school-aged youth do not meet recommended levels of daily physical activity” (p. 651). Although physical activity helps to reduce depression and increase mood (Bartholomew, Morrison, & Ciccolo, 2005), students with depression spend less time exercising (Field, Diego, & Sanders, 2001).

Further, students with depression spend less time on homework and have lower self-reported grade point averages compared to students without depression (Field et al., 2001).

The NIMH (2016a) suggests that it is beneficial to confide in a trusted friend or family member about one's depression. Romer and Bock (2008) evaluated stereotypes around young people and depression to fill the gap in literature regarding ways in which communication can both combat stigma and combat the perception that treatment is ineffective. Romer and Bock surveyed youth nationally to better understand how the stigma of mental illness was affected after learning about an individual with major depression who had been successfully treated compared with one who was not treated. Romer and Beck used the National Annenberg Survey of Youth (NASY) data collection from 2004. The NASY is a random digit dialing method national telephone survey of 14 to 22-year-olds. Respondents were asked a series of questions to measure judgments about people with depression, perceptions about treatment efficacy, and experiences with depression symptoms, based on the Youth Risk Behavior Survey. A logistic regression analysis was used to measure violence, suicidality, and school performance. Romer and Bock found that, compared to an untreated person, young people evaluated a treated person to be less violent, suicidal, and better able to do well in school. Therefore, Romer and Bock suggested that messages should use people who have been successfully treated to reduce mental illness stigma among young people and encourage youth to seek treatment.

YouTube and Mental Health

A search in PubMed for "YouTube and Mental Health" generated 19 results on September 19, 2016. Of these 19 articles, 7 were analyzed based on relevance to this topic. One additional article was included because it was found on PubMed in a search

for “Health Communication and YouTube” and was directly related to YouTube and Mental Health. The following articles include quantitative and qualitative descriptive analyses of YouTube videos regarding mental health and other social media platforms, research on YouTube effects on adolescents, perception and use of new technology among young adults with a mental illness, and how YouTube can foster health promotion and peer-to-peer connection.

Nour et al. (2016) filled the gap in literature regarding how schizophrenia was depicted on YouTube and the context of diagnosis. The videos were assessed to determine if they could be used to educate medical students about acute schizophrenia. Researchers used Google Trends to identify search terms related to schizophrenia. The first 200 videos of each YouTube search (10 pages) were assessed, generating a sample of 4,200 videos. However, most were not included because the videos either did not show a patient with schizophrenia or contained duplicate content. Other inclusion criteria were videos had to be in English, longer than 10 seconds, and could not be videos of children. Two consultant psychiatrists rated YouTube videos independently 22 days apart on diagnostic accuracy, psychopathological content, and educational utility. These raters were blinded to the video title, description, viewer comments, upload date, viewer ratings, and video author.

Psychopathological content was assessed on 13 symptoms, which were relevant to acute psychosis:

persecutory delusions, grandiose delusions, nihilistic delusions, passivity phenomena, auditory-verbal hallucinations, visual hallucinations, formal thought disorder, flow-of-thought abnormality, mood disturbance [a domain encompassing one or more features, including anxiety, irritability, hostility, elation, and depression], inappropriate affect, bizarre behavior, negative symptoms, and cognitive symptoms). (Nour et al., 2016, p. 3)

These content codes were based on the Positive and Negative Syndrome Scale (PANSS) for schizophrenia, which is a standard tool used in research for assessment of psychotic symptoms in schizophrenia. If at least one of the coders rated a symptom or sign present,

then it was counted. Independent-samples, two-tailed t-tests, and Fisher's exact test were used to measure differences between groups (a group with schizophrenia diagnosis by both raters versus a group with a different diagnosis by both raters). Statistical significance was found if the p-value was less than .05 after Bonferroni correction was performed on the sample. The Bonferroni correction was used because several tests were being performed simultaneously on a single data set. Original video features were analyzed, including video duration, view counts, whether the video was made for medical education purposes, and the number of viewers who rated the video positively or negatively based on the rating system on YouTube (thumbs up or thumbs down). Interrater and intrarater reliability was assessed and deemed substantial using Cohen's kappa, and all statistical analysis was conducted using MatLab ($k = .77$ for educational-utility and $k = .76$ for diagnosis).

Nour et al. (2016) found that only 21% of eligible videos accurately represented acute schizophrenia—meaning most YouTube videos inaccurately represent acute schizophrenia, such as depicting it as a condition of negative symptoms. Less than half of the videos were found to be appropriate for educational purposes. Further, Nour et al. found that both accurate and inaccurate videos were similar in view counts (290,048 versus 186,124, respectively). Therefore, the public should be cautious when viewing videos labeled as showing schizophrenia as they may consume inaccurate information.

Sharma et al. (2016) examined YouTube videos regarding smoking cessation that were targeting people living with mental illness. Key words such as 'schizophrenia,' 'depression,' and 'psychosis' were searched in YouTube with the filter 'relevance.' The first 50 videos from each search term were selected, watched, and considered for the sample based on inclusion criteria. Videos were included that either dealt with smoking cessation or the reduction of mental illness. Researchers used a snowball method to capture other relevant videos that appeared in the 'up next' list. The sample grew to 626 videos, and the final sample consisted of 40 videos. Assessment criteria included:

Quit smoking recommendations (cold turkey, nicotine replacement therapy, counseling and group therapy, prescription medications, quit smoking helpline, exercise); multiple recommendations could be included; Seek assistance from health care provider (no advice); Recommendations specific to people with mental illness (higher doses of NRT, adjustment to mental health medication); Harm reduction recommendations (cutting down, long-term use of NRT, using electronic cigarettes); Themes of videos (discussing the problem, institutional programmes and policies, quit smoking advice and its aspects, discussing new research); Format (talk by professional, documentary, personal experiences, quit diary, informative presentation, news clip, animation); Featured people with mental illness (yes, no); Target audience (people with mental illness, health professionals, both). (p. 635)

Descriptive statistics were calculated. According to Sharma et al. (2016), videos regarding relevant smoking and mental illness were typically 4 minutes in length, and the most common recommendation was nicotine replacement therapy, followed by counseling and group therapy. The source of videos was mostly professionals. Many videos, however, did not offer advice to quit smoking. Only a few videos gave advice for people with mental illness to quit smoking. Sharma et al. suggest that more easy-to-understand videos for people with mental illness need to be uploaded regarding smoking cessation.

Kang et al. (2016) suggest that although Attention Deficit Hyperactivity Disorder (ADHD) is one of the most common childhood mental disorders, there is limited research regarding media coverage. In this study, Kang et al. analyzed how YouTube framed ADHD. The ways YouTube videos were objectifying ADHD fell into four categories based on prior research of information framing: “(1) issues about ADHD, (2) interview sources, (3) different aspects of ADHD videos, (4) how issues, sources and aspects interact with one another” (p. 446). These four categories were the topics of the research questions: “What issues regarding ADHD have been highlighted on YouTube over time? What sources of information about ADHD have been highlighted on YouTube over time? How do issues about ADHD covered on YouTube relate to episodic-thematic aspects?”

How do sources about ADHD covered on YouTube relate to episodic-thematic aspects?” (p. 446).

The two key words used to search on YouTube were “Attention Deficit Hyperactivity Disorder” and “ADHD.” The searches were both filtered by “view count” in order to see videos with the highest number of views. Two trained coders removed irrelevant and redundant videos, producing a sample of 807 videos. The URLs were recorded, and analysis was conducted March through July of 2014. However, when the videos were to be coded, some videos did not work. Therefore, the final sample included 685 videos. Content categories included type of media format, issues, sources, and episodic-thematic frames. Items were coded dichotomously as either being present or not. A constant comparative method was applied to coding, meaning new categories were added to the coding sheet if found by comparison. “The types of media format were categorized into (a) TV news coverage, (b) public service announcement (PSA), (c) excerpt from TV documentary, (d) excerpt from TV entertainment, (e) user-generated content, (f) podcast, and (g) others” (pp. 447-448). PSAs were videos by government or nonprofit organizations, and user-generated content referred to videos created by people in first person narrative, third person narrative, skit, or home video. Guided by previous research on mental disorders, issues that were coded included “drug, boy, girl, adult, child, race, treatment, fact, risk, cause, genius, symptom, prevention, parenting, vaccine, addiction, personal story, legal case, community, government policy, celebrity, research, accident, therapy, education, diagnosis, and other.” Video sources were coded as doctor, patient, family, supporter, government, company representative, other, and no source. The episodic frame was coded as personal cause, personal problem, or personal solution. The thematic frame was coded as public cause, public problem, or public solution. A third coder randomly selected 10% of each coder’s data and conducted the same data coding. Minor discrepancies were found in coding ADHD issues. Reliability was tested

using Cohen's Kappa and found to be .87 for issues, .93 for sources, and .83 for episodic/thematic frames.

Kang et al. (2016) found that upload dates for the videos ranged from 2006 to 2014, with the highest viewership being 2,897,546. The average number of likes was 89.14, and the number of dislikes ranged from 0 to 497. To measure distribution of data over time, crosstab tables were used. To measure significance for issues, sources, and aspects, a Chi square test was used. To measure correlations among categorical variables, Cramer's V test was used.

According to Kang et al. (2016), the top three issues on YouTube were first symptoms, child, and treatment, respectively. The ADHD issues with the least attention were race, followed by legal case and vaccine. The top three sources were doctors, patients, and supporters, respectively. ADHD causes were more frequently found to be in episodic frames, while ADHD problems were more frequently found to be in thematic frames. ADHD solutions were frequently framed in thematic frames. Kang et al. found that videos emphasized both personal and public solutions on issues of drugs, prevention, community, government policy, and education. Treatment videos included both medicated and un-medicated forms, such as breathing, exercises, meditation, and yoga. Kang et al. discuss that government videos were hardly viewed and suggest that public sector should use YouTube to inform people about ADHD with credible information.

Salzmann-Erikson and Hiçdurmaz (2016) described how social media was used to convey authentic narratives of individuals suffering from post-traumatic stress. Social media platforms included in this study were YouTube, blogs, and forum discussions. Salzmann-Erikson and Hiçdurmaz hypothesized that this analysis will show insight about the life conditions of people suffering with PTSD, and how they seek support via computer-mediated communication. The researchers used the netnographic qualitative research method, LiLEDDA, which is specific for conducting qualitative research online. Search terms "post-traumatic stress disorder" and "PTSD" were used in both search

engines Google and YouTube. Inclusion criteria were “(a) the material should originate from a publicly available venue, as the sample should not require any registration, login, or password to access and (b) the material should contain a first-hand experience from an individual with the experience of post-traumatic stress” (p. 2). Exclusion criteria were “(a) professionals who lectured about PTSD; (b) children; (c) cloaked video recordings; (d) second-hand experiences/narratives that were not self-reports, that is relatives; (e) advertisements; (f) professional actors; and (g) directed role-plays” (p. 2). There were 16 YouTube videos analyzed, 8 blogs, and 9 threads in social forum. Guided by the LiLEDDA method, researchers copied and pasted text-based webpages into a Word document, and URLs into an Excel document. Codes and sub-codes were used to find key concepts.

Salzmann-Erikson and Hiçdurmaz (2016) found that the average YouTube video was “homemade” and did not convey “staged, directed or professional recordings.” They suggested that videos were used to expose their “naked story” and inform others. Videos start with an introduction and then a confession of having diagnosis of PTSD. They found that almost half of the videos mentioned use of therapy or treatment such as psychotherapy, medication, eye movement desensitization, and reprocessing therapy. Further, they found that videos commonly consisted of people’s restrictions in life due to PTSD, and strategies for everyday living (coping). Their main conclusions were that people with PTSD use these communication channels to reveal themselves, experience the universality of the problem, receive support, and fight stigma. Further, they suggest that communication channels provide opportunities for self-care activities.

Naslund et al. (2014) explored the harms and benefits of informal peer-to-peer relationships, specifically on YouTube to see if it is a promising strategy for mental health recovery and overcoming limitations of illness. The investigation on YouTube consisted of videos, comments, and expression of peer support. An ethnography framework informed the qualitative approach by observing online interactions on

YouTube without interfering in natural conversations. Key words, including *mental illness*, *schizophrenia*, *schizoaffective disorder*, or *bipolar disorder* were used in the YouTube search engine, and the first 100 videos per each search were screened. Inclusion criteria were defined as: “posted by an individual, had no advertising, were in the first person, and included our search terms” (p. 3). Additional inclusion criteria were added later to include only videos with over 5,000 views, videos that were uploaded by someone who self-identified as having a serious mental illness, schizophrenia, schizoaffective disorder, or bipolar disorder. Videos that involved public or private institutions, or agencies were not included in the sample. Comments of each video were exported to a PDF document for thematic analysis into ATLAS.ti software Version 7.0. Naslund et al. used an open coding approach, as they developed codes as they naturally occurred, informed by grounded theory. Themes were deemed meaningful that were repeated across multiple comments. The final sample of videos was selected based on original inclusion criteria, as well as if they were uploaded by an individual, without advertising, or in the first person. Nineteen videos and their 3,044 comments were analyzed. All videos were uploaded by unique individuals, 8 of whom self-identified as being diagnosed with bipolar disorder, 7 with schizoaffective disorder, and 4 with schizophrenia. “Common topics included managing illness symptoms, challenges and benefits of seeking treatment, coping strategies for day-to-day concerns, efforts to reach out and help others with similar conditions, and personal stories about life goals, interests and future ambitions” (pp. 3-4).

The videos had an average of 19,786 views and had been on YouTube between 87 and 1,798 days. “The four themes representing aspects of naturally occurring peer support on YouTube were (1) minimizing a sense of isolation and providing hope, (2) finding support through peer exchange and reciprocity, (3) coping with the day to day challenges of severe mental illness, and (4) learning from shared experiences of medication use and seeking mental health care” (Naslund et al., 2014, p. 4). A rich

dialogue surrounding shared experiences using medications and seeking mental health care was found. Further, personal health information was shared, and viewers responded positively. The interactions Naslund et al. found on YouTube created a sense of belonging and provided means for coping with serious mental illness. Finally, the authors found that YouTube serves as an environment to “normalize one’s illness and assert their voice and identity by validating shared experiences with peers” (p. 6).

Ahern et al. (2015) discussed the dangerous trends found on YouTube and how they directly relate to youth. The purpose of the paper was to inform psychiatric-mental health nurses, educators, health care providers, and parents on this issue. Ahern et al. began by looking at youth trends on risk taking by synthesizing previous research on the issue. Their research suggests that youth seek risk-taking experiences, which, mixed with a virtual world of peer pressure, generate further reckless behavior. Ahern et al. suggest there are dangers in YouTube for children and adolescents due to a need for acceptance and entertainment. Ahern et al. focused on substance abuse and self-harm in their study. They found a trend in the research suggesting that smoking was eroticized on YouTube, and smoking was portrayed as a positive thing. Alcohol was also portrayed on YouTube predominantly with liquor. Viewers of these videos found intoxication to be “attractive” and “humorous.” Other trends of substance abuse found in this research included salvia divinorum being sensationalized and encouraged, and challenges to ingest harmful amounts of cinnamon. Ahern et al. found that YouTube normalizes self-harm dares such as the choking game, cutting, and lighting oneself on fire. Ahern et al. suggest that YouTube is sought after because it is perceived as “educational, entertaining and supportive”; however, the videos can be dangerous in that they normalize risky behaviors for some youth.

Lal et al. (2015) aimed to assess the preferences of receiving mental health information, services, and support among young adults with first-episode psychosis. This study filled the gap in literature regarding how receptive young people are to receiving

mental health care via new technologies. Participants were recruited from two specialized early intervention programs and were screened to meet specific criteria including: between the ages of 18 and 35, diagnosed with a psychotic disorder, within 5 years of treatment, clinically stable, and able to speak in English or French. Exclusion criteria included being hospitalized during recruitment, unable to converse, or intoxicated during recruitment. A total of 67 participants were involved in the cross-sectional, descriptive survey design. The survey questions assessed “(1) demographics; (2) access and use of technology and social media; and (3) preferences regarding the use of technology for various types of mental health services, information, and supports.” Numerical codes were placed into the SPSS database, and descriptive statistics were generated. Of the 67 participants, 76% were men, 64% were White, and the mean age demographic was 25 years old.

Participants preferred YouTube (85%) as the social media platform to receive mental health information and support. The top reasons for using technology were:

(1) information on medication and side effects; (2) information and support related to education, career, and employment; (3) decision-making tools regarding treatment and recovery; (4) reminders for appointments through text messaging; (5) information about mental health, psychosis, and recovery in general; (6) information about physical health; (7) contact with mental health care providers; (8) scheduling appointments; (9) information about program events; and (10) education on coping skills. More than half (66%, 44/67) agreed or strongly agreed with using technology to facilitate social contact with other young people receiving services for FEP, and a little more than half of the participants (52%, 35/67) agreed or strongly agreed with receiving counseling or therapy online. (Lal et al., 2015, p. 4)

In descending order, the barriers participants faced when accessing mental health information and support online were lack of knowledge on how to search the Internet, the way in which information was presented, no interest, lack of time, and cost of Internet access. Nearly half of the participants preferred receiving mental health information online via a combination of text, video, graphics, and audio. Moreover, young people

with first-episode psychosis prefer using the Internet, particularly YouTube, for receiving mental health information, services, and support.

Naslund et al. (2016) offer perspective of how online peer-to-peer connections may be beneficial to increase the well-being of people with mental illness, as well as combat stigma and increase access to interventions. In this commentary, Naslund et al. explain peer-to-peer support as “unsolicited communication among self-forming online communities of patients and individuals” (p. 114). Naslund et al. consider the benefits and risks of social connections and the role of social media among people with serious mental illness. Naslund et al. suggest that potential risks associated with interacting with peers online include “exposure to misleading information, facing hostile or derogatory comments from others, or feeling more uncertain about one’s health condition” (p. 114). Based on the above, Naslund et al. propose areas where online peer-to-peer connections may have a profound impact on individuals with serious mental illness. The conceptual model created by Naslund et al. was informed by existing literature. They suggest that there will be symptoms of mental illness, social isolation, fear of reaching out, and stigma, which leads to the decision to visit an online peer network. This then brings about potential to challenge stigma, increase consumer activation, and access interventions for mental and physical well-being.

Summary

YouTube videos have mixed sources ranging from being uploaded by doctors to being homemade by people with lived experience, also known as user-generated content. Research suggests that governmental videos were less likely to be among those with the most views (Kang et al., 2016). The research outlined above showed that videos on YouTube do not accurately depict mental illnesses, and education purposes are generally not well served. Videos were similar in view count regardless of being accurate or

inaccurate. Treatment videos included both medicated and un-medicated forms, such as breathing, exercises, meditation, and yoga. Recommendations are given on YouTube videos to promote healthy behavior; however, many studies have not coded whether these recommendations are based on national standards. Research also suggests that videos need to be easier to understand for people with mental illness.

Young adults receiving mental health care prefer YouTube as social media platform of choice for receiving mental health information and support (Lal et al., 2015). Research commonly found that people with mental illnesses use YouTube to reveal themselves, experience the universality of the problem, to receive support, and to fight stigma. Further, communication channels provide opportunities for self-care activities. A rich dialogue surrounding shared experiences using medications and seeking mental health care was also found. YouTube created a sense of belonging and provided means for coping with serious mental illness. YouTube serves as a space to normalize one's illness and validate shared experiences. With that being said, there are harms to YouTube because videos can normalize unhealthy behaviors and encourage youth to participate in dangerous activities.

Limitations

YouTube reaches people around the world, and more studies should include languages other than English to learn how mental health is being discussed abroad. A limitation of the papers reviewed collectively includes that they were only in English. However, only English language analyses were included in the literature review. There seems to be a gap in literature comparing how mental health is discussed in the U.S. versus abroad over social media. There also is a gap in the literature regarding some mental health issues, such as depression.

Chapter III

METHODS

Design

The purpose of this study was to analyze the most viewed videos on YouTube related to depression with respect to source, speaker, format, purpose, content, number of views, length, and year uploaded. A cross-sectional design was used, as observational data were collected at one point in time. The videos that are most widely viewed are changing constantly; thus, the cross-sectional approach will be an inherent limitation. All videos on depression were identified on one day, and all of the URLs for those videos were copied and saved in a separate file. Each of these videos was then viewed during the ensuing weeks to complete the manual coding described below.

Search Strategy and Study Sample

The search term “depression” was used for this study. Prior to searching YouTube, the history from the computer being used was cleared. The results from the search were filtered by “view count” to identify those with the most views. Inclusion criteria required that only videos in English were included in this sample. Videos that were not related to the mental health concept of depression were excluded (e.g., videos about the Great Depression, Tropical Depression, or videos that have the word *depression* in the title but were not related to mental health). While 500 of the most viewed videos were selected

initially, after exclusions the final sample comprised 394 videos, all of which were manually coded by the researcher.

Manual Coding Specifications

Video information was coded relevant to source, speaker, format, purpose, content, number of views, length, and year uploaded. The details of coding specifications for each category are described below, and the instrument is shown in Appendix A.

Upload Source

The categories for source included the following: Consumers; Providers with medical or mental health credentials; Governmental Agencies; Network Television News; Network Television Entertainment; Cable Television News; Cable Television Entertainment; Internet-based News; Celebrity; University; Religious Organization or Ministry; or Other sources.

“Consumer videos” included individuals who were not professionals (a) videos posted by people with lived experience, or (b) people without lived experience, but sharing information about depression, or (c) people without lived experience but who know someone personally with depression. A consumer video was defined as being posted by an individual with no apparent professional credentials in medicine, mental health, or higher education and no established organizational affiliation.

“Provider videos” were defined as being posted by either an individual with professional credentials or established organizational affiliations: (a) mental health professional, (b) nurse, (c) physician/medical doctor, or (d) academic professional/professor.

“Government organization” was defined as any video uploaded by a government agency. This should be apparent from the “tag” associated with the respective video (.gov).

“Nongovernmental agency video” was defined as any video uploaded by a nongovernmental agency. This should be apparent from the “tag” associated with the respective video (.org).

“Network Television News video” was defined as any video uploaded by a news-based major television network station.

“Network Television Entertainment video” was defined as any video uploaded by a major television network station focused on entertainment versus news.

“Cable Television News video” was defined as any video uploaded by a cable network news company.

“Cable Television Entertainment video” was defined as any video uploaded by a cable network company that is focused on entertainment versus news.

“Internet-based video” was defined as a video uploaded by an internet-based news site or a source that was not identifiable by a person or organization.

“Celebrity” was defined as a video uploaded by a celebrity.

“University” was defined as a video uploaded by a university.

“Religious Organization or Ministry” was defined as a video uploaded by a religious-based ministry, an organization such as a church, or a pastor of a church who identified as being the representative.

“Other video” was used to classify any video that did not fit into the coding scheme outlined above.

Speaker

The categories for speaker included the same categories as outlined above.

Format

The categories for format included the following: Skit; Home video; Talk by professional; Interview, Animation; Still images; or Other formats.

“Skit” was defined as any video that was a humorous story or dramatic performance. “Home video” was defined as any video that was recorded by the person who uploaded it or not by a professional/consumer uploaded, and may be blog like in nature. “Professional talk” was defined as any video that was a recording of a person giving a professional presentation such as a Ted Talk or classroom presentation. “Interview” was defined as any video with a formal or informal interview between two or more people. “Animation” was defined as any video with cartoons, or whiteboard video animations. “Still images” was defined as any video with only still images/photographs. “Music Video” was defined as a videotaped song, such as a compilation of different music songs, or a person writing their own song about depression. “Movie” was defined as a video that is a short film, documentary, movie, or movie trailer. “News” was defined as a video with intent to deliver news.

Purpose

The categories for Purpose included the following: Advocacy; Educational; Exhibitionism; Blog; Intervention; Other.

“Advocacy” videos were defined as those asking for public support for or the promotion of particular topics about depression.

“Educational” videos were defined as those bringing awareness to or providing information about depression.

“Exhibitionism” videos were defined as extravagant in nature to attract attention.

“Support” videos were defined as having intent to give to support to those with mental illness.

“Intervention” videos were defined as those that promoted behavior that improves mental health.

Content

The categories for content included the following: Provision of general information; Signs and symptoms; Suicide; Risk factors; Stigma; Treatment (Screening, Psychotherapy, Medication, Alternative therapies, Electroconvulsive therapy); Promotion of healthy behaviors and Protective Factors; and Typology of Depression. As mentioned above, these categories and the material under each was based on several authoritative sources, including national guidelines from the Agency for Healthcare Research and Quality, the National Institute of Mental Health, the Office of Disease Prevention and Health Promotion, the U.S. Department of Health and Human Services, the United States Preventive Services Task Force, National Alliance on Mental Illness, Diagnostic criteria for Major Depressive Disorder from the DSM-5, and the Centers for Disease Control and Prevention.

“Provision of general information” included: describing depression as a serious mood disorder; depression is one of the mental health conditions that contributes to a host of health problems resulting in disability, pain, and death; mental health disorders are the leading cause of disability in the United States and Canada, accounting for 25% of all years of life lost to disability and premature mortality; mental, emotional, and behavioral disorders are common and begin early in life; one in five American adults experience a serious mental illness in their life; and one in five people aged 13-18 have, or will have, a mental illness; 8% of U.S. adolescents reported having Major Depressive Disorder (MDD) in the past year; an estimated 3 million adolescents aged 12 to 17 in the United States had at least one major depressive episode in the year 2015; 50% of all lifetime cases of mental illness begin by age 14, and 75% begin by age 24; lifetime prevalence among adolescents may be as high as 20%; depression can be a chemical imbalance; depression is chronic and likely to reoccur; depression is treatable.

“Signs and symptoms” was defined as: feelings of sadness, hopelessness, depressed mood; loss of interest or pleasure in activities that used to be enjoyable; change in weight

or appetite (either increase or decrease); psychomotor agitation (being more active than usual) or psychomotor retardation (being less active than usual); insomnia (difficulty sleeping) or sleeping too much; feeling tired; feelings of guilt, shame or worthlessness; difficulties concentrating and paying attention; thoughts of death or suicide, irritability, or other.

“Suicide mention” was defined as: the person in the video talking about wanting to commit suicide; the person talking about someone they know who wanted to commit suicide; the person losing someone to suicide; 19% of adolescents with MDD attempt suicide; over 800,000 people die worldwide due to suicide every year; 90% of people who die by suicide had an underlying mental illness.

“Risk factors mentioned” included: personal or family history of depression; major life changes, trauma, or stress, as well as certain physical illnesses and some kinds of medication; being a female; having chronic medical illness; being overweight or obese; childhood abuse or neglect; family conflict; uncertainty about sexual orientation; low socioeconomic status and poor academic performance; adolescents who are two or more races; drinking alcohol; using drugs; struggling with identity.

“Stigma” was defined as: a person being ashamed or afraid to talk about their problems; expressing the feeling of disgrace; mentioning the word stigma; judgment (feeling judged or afraid of being judged); combating stigma (asking to normalize depression or talk more about depression).

“Treatment” included coverage of topics such as the following.

- “Screening” was defined as Patient Health Questionnaire for Adolescents (PHQ-A) and the primary care version of the Beck Depression Inventory (BDI), or the general mention of getting a screening.
- “Psychotherapy” was defined as a person mentioning currently going to receive talk therapy, having already received talk therapy or recommending others to

have psychotherapy (which type of recommendation will be recorded: CBT, IPT or problem solving therapy).

- “Medication” was defined as any video suggesting the use or promotion of medication, such as antidepressants that are serotonin reuptake inhibitors (Fluoxetine, Citalopram, Sertraline, Paroxetine and Escitalopram); antidepressants that are serotonin and norepinephrine reuptake inhibitors (venlafaxine and duloxetine); a person talking about being on medication; a person having previously taken medication; people opposed to medication.
- “Alternative therapies” was defined as: omega 3-fatty acid supplements; Vitamin D; St. John’s Wort; mind body practices; music therapy; massage therapy; meditation; yoga; tai chi; guided imagery; biofeedback; self-hypnosis; deep breathing; journaling; other.
- “Electroconvulsive therapy” was defined as videos discussing the topic of ECT.

“Promotion of healthy behaviors and Protective Factors” was defined as:

exercising; good sleep hygiene; good nutrition; decreased use of tobacco, alcohol and other damaging substances; academic achievement/intellectual development; high self-esteem; emotional self-regulation; good coping skills and problem solving skills; engagement in school; engagement with peers and/or community; engagement in athletics and/or creativity; engagement in employment; engagement in religion or spirituality; engagement in culture; other.

“Typology of Depression” was defined as Major depressive disorder; Postpartum depression; Seasonal affective disorder; Bipolar disorder; ADHD; PTSD; Other.

Pilot Study and Coding Reliability

With close supervision by a content specialist, the PI and a master’s student ran a pilot study. Both individuals coded the same set of 30 depression videos that were from

the least viewed videos about depression. They met after coding and went over each video to discuss differences in coding. They made changes to the instrument based on their findings.

Inter-rater Reliability for Pilot Study

Inter-rater reliability was tested using a Kappa test on a new set of 30 videos from the least viewed videos on depression. The entire instrument comprised 245 variables. The Kappa test was then run for every code unit that had at least one YES=1 code by any coder. There were 114 code units tested using Kappa. Of these 114 codes, the Kappa was 0.86018 or 86.02% agreement. A qualitative process was used between the two coders to adjust the instrument to ensure that it captured the videos properly (see Appendix B).

Intra-rater Reliability for Main Study

The PI randomly selected videos by re-watching every 20th video in the sample of ~ 400. Thus a total of 20 videos were re-watched, and a Kappa test was run using STATA. The average Kappa was 90.5%.

Data Collection

The PI coded all videos between the months of March and April 2017. Videos were watched in groups of 10. The 10 most viewed videos were watched first, followed by the 10 least viewed videos, followed by the next 10 most and least viewed videos, and so forth. This protocol helped prevent systematic bias in coding that may have been associated with the order of videos. For example, the researcher may have gotten fatigued or better at coding and going in order may have made the last videos coded differently.

Statistical Analysis

All data analysis was conducted using STATA. Research questions 1 and 2 were analyzed using descriptive statistics, including frequencies and percentages. Research question 3 involved examining whether the content covered in the videos varied by the source of upload. This was assessed using Chi Squared analysis. The number of tests conducted for this analysis limited the inferences that can be drawn, but given the lack of published literature on this topic, the intent was to generate rather than test hypotheses.

Chapter IV

RESULTS

There were 559 videos generated after searching for “depression” in the search engine on YouTube and filtering videos from most viewed to least viewed. All of the videos were extracted on February 27 and 28, 2017, and their URL, title, and number of views were documented and saved in an Excel spreadsheet. Videos were then screened for inclusion criteria. A total of 165 videos were excluded for various reasons, including not in English (n = 23), about the Great Depression (n = 64), music videos (n = 11), deemed irrelevant (n = 16), had fewer than 200 views (n = 18), were duplicates (n = 5), or miscellaneous other reasons (n = 28). The remaining 394 videos comprised the final sample. The videos varied in their view count from a low of 233 to a high of 7,397,987. Collectively, these 394 videos were viewed 155,349,029 times.

Research Question 1

Table 1 shows frequencies and percentages, total view count, and cumulative view count percent for the videos categorized by source of upload, speaker, format, and purpose/orientation. The 394 videos varied in their length from the longest video being 8 hours, 2 minutes and 26 seconds to the shortest video being 31 seconds. The median duration of videos was 16 minutes long. The most videos were uploaded in 2014 (N = 80, 20.30%), followed by 2015 (71, 18.02%), 2016 (N = 69, 17.51%), and 2013 (N = 55, 13.96%) (see Appendix C).

Table 1. Frequency, Percent, View Count, and Cumulative View % by Source, Speaker, Format, and Purpose

Upload Source	N (%)	View Count	Cum. View (%)
U1. Consumer	193 (48.98%)	74,391,500	47.88%
U1A. Person with lived experience?	113 (28.68%)	29,794,716	19.17%
U1B. Person without lived experience but sharing information about depression?	73 (18.53%)	39,275,734	25.28%
U1C. Person without lived experience but sharing information based on knowing someone personally with depression?	7 (1.78%)	5,321,050	3.42%
U2. Professional/Provider videos?	21 (5.33%)	3,360,139	2.16%
U2A. Mental Health Professional	11 (2.79%)	3,103,284	1.99%
U2B. Nurse	0	0	0
U2C. Physician / Medical Doctor	4 (1.02%)	64,446	0.04%
U2D. Academic Professional/Professor	0	0	0
U2E. Social Worker	0	0	0
U2F. Other?	6 (1.52%)	192,409	0.12%
U3. Government videos?	3 (0.76%)	376,931	0.02%
U4. Nongovernmental organization	41 (10.41%)	22,440,591	14.44%
U5. Network television news?	3 (0.76%)	275,490	0.17%
U6. Network television entertainment?	2 (0.51%)	1,224,839	0.78%
U7. Cable television news?	3 (0.76%)	176,706	0.11%
U8. Cable television entertainment?	1 (0.25%)	1,134,170	0.73%
U9. Internet-based video?	99 (25.13%)	47,674,376	30.68%
U10. Celebrity?	1 (0.25%)	179,482	0.11%
U11. University?	9 (2.28%)	1,599,601	1.02%
U12. Religious Organization or Ministry?	9 (2.28%)	1,818,513	1.17%
U13. Other?	13 (3.30%)	966,864	0.62%

Table 1 (continued)

Speaker/Protagonist	N (%)	View Count	Cum. View (%)
S1. Consumer	287 (72.84%)	130,400,000	83.92%
S1A. Person with lived experience?	212 (53.81%)	80,029,078	51.51%
S1B. Person without lived experience but sharing information about depression?	65 (16.50%)	45,503,757	29.29%
S1C. Person without lived experience but sharing information based on knowing someone personally with depression?	15 (3.81%)	6,660,115	4.28%
S2. Professional/Provider videos?	75 (19.04%)	11,476,715	7.38%
S2A. Mental Health Professional	30 (7.61%)	6,615,547	4.25%
S2B. Nurse	3 (0.76%)	506,441	0.32%
S2C. Physician / Medical Doctor	22 (5.58%)	1,364,636	0.87%
S2D. Academic Professional/Professor	16 (4.06%)	3,702,941	2.38%
S2E. Social Worker	0	0	0
S2F. Other?	12 (3.05%)	751,014	0.48%
S3. Government organization?	0	0	0
S4. Nongovernmental organization	3 (0.76%)	2,964,370	1.90%
S5. Network television news?	1 (0.25%)	352	0.000002%
S6. Network television entertainment	0	0	0
S7. Cable television news?	0	0	0
S8. Cable television entertainment?	0	0	0
S9. Internet-based video?	26 (6.60%)	7,318,383	4.71%
S10. Celebrity?	16 (4.06%)	6,668,832	4.29%
S11. University?	0	0	0
S12. Religious Organization or Ministry?	10 (2.54%)	1,794,411	1.15%
S13. Other?	6 (1.52%)	1,750,256	1.12%

Table 1 (continued)

Format	N (%)	View Count	Cum. View (%)
F1. Skit?	42 (10.66%)	30,194,073	19.43%
F1A. Humorous	0	0	0
F1B. Dramatic	42 (10.66%)	30,194,073	19.43%
F2. Homemade video?	160 (40.61%)	36,999,757	23.81%
F3. Talk by professional?	47 (11.93%)	12,144,709	7.81%
F4. Interview?	27 (6.85%)	7,794,672	5.01%
F5. Animation?	19 (4.82%)	16,800,275	10.81%
F5A. Cartoons	14 (3.55%)	11,161,374	7.18%
F5B. Whiteboard Animation	5 (1.27%)	5,638,901	3.62%
F6. Still images?	57 (14.47%)	36,403,494	23.44%
F7. Music Video?	8 (2.03%)	2,909,542	1.87%
F8. Movie?	14 (3.55%)	5,355,561	3.44%
F9. News?	9 (2.28%)	462,013	0.29%
F10. Video Game?	4 (1.02%)	1,001,872	0.64%
F11. Other?	9 (2.28%)	5,320,992	3.42%
Purpose/Orientation	N (%)	View Count	Cum. View (%)
P1. Advocacy?	7 (1.78%)	6,842,211	4.40%
P2. Educational?	156 (39.59%)	55,915,954	35.99%
P3. Exhibitionism?	5 (1.27%)	3,757,254	2.41%
P4. Support/Blog?	207 (52.54%)	64,725,218	41.66%
P5. Intervention?	30 (7.61%)	31,601,321	20.34%
P6. Advertising?	5 (1.27%)	293,136	0.18%
P7. Other?	4 (1.02%)	140,070	0.09%

Three sources—consumers, internet-based video, and nongovernmental agencies—accounted for approximately 85% of the most frequently viewed videos and garnered 93% of the total views (n = 144,506,467). Consumers uploaded almost half of all the most widely viewed videos (n = 193, 48.98%). Within this category, a person with lived experience uploaded the most (113, 28.68%), followed by a person without lived experience but sharing information about depression (73, 18.53%). Internet-based videos were the next most uploaded source (n = 99, 25.13%). Nongovernmental organizations uploaded just over 10% (n = 41, 10.41%). The other sources examined accounted for less than 10% collectively, including governmental organizations (n = 3, 0.76%).

Videos uploaded by consumers also had the highest cumulative view count (74,391,500 views). Although people with lived experience accounted for almost 30% of the videos, they garnered less than 20% of the total views (n = 29,794,716). In contrast, videos uploaded by a person without lived experience but sharing information about depression accounted for less than 20% of the total videos but garnered over one quarter of the total views (n = 39,275,734). Internet-based videos accounted for just over 25% of the most frequently viewed videos, and these videos garnered over 30% of the total views (n = 47,674,376).

Consumers were also the most likely to be a protagonist, or main speaker (n = 287, 72.84%). Within this category, a person with lived experience was most frequent (212, 53.81%), followed by people without lived experience but sharing information about depression (65, 16.50%) and mental health professionals (30, 7.61%). Professionals/providers accounted for less than 20% of the videos (n = 75). These two kinds of protagonists were featured in over 90% of the videos and total cumulative views. None of the videos featured governmental officials providing information about depression.

Homemade videos comprised just over 40% of the total (n = 160), followed by still images (57, 14.47%), professional talks (47, 11.93%), and skits (n = 42, 10.66%). While homemade videos represented over 40% of the videos, they garnered less than 25% of the

total views. Similarly, talks by professionals represented almost 12% of the videos but garnered less than 8% of the total views. In contrast, while still images represented less than 15% of the videos, they garnered almost 25% of the total views. Approximately one of 10 videos used a skit format, but these sources garnered almost 20% of the total views.

Just over half of the videos had a purpose to offer support for those with depression (207, 52.54%), while slightly less than 40% (n = 156, 39.59%) were educational in nature. The videos with the most views were those with a purpose to offer support or were blog-like (64,725,218), followed by educational videos (55,915,954). Interestingly, while only 30 videos focused on intervention (7.61%), these had over 20% of the total views (31,601,321).

Research Question 2

Descriptive statistics for the content covered in YouTube videos are shown in Table 2. The topic that was most likely to be covered was typology of depression, which was evident in almost all of the videos (n = 387, 98.22%). Other popular topics were signs and symptoms, which was covered in more than 75% of the videos (n = 300, 76.14%), and promotion of healthful behaviors and protective factors, which was covered in 68.52% (n = 270). Slightly more than half of the videos explicitly mentioned risk factors (n = 200), and slightly less than half provided general information about depression (n = 189). Between 20% and 35% of the videos included content related to suicide (23.10%), stigma (22.08%), psychotherapy (28.93%), medication (31.22%), and alternative therapies (30.96%). Content related to screening was only included in 9 of the most widely viewed videos (2.28%).

Table 2. Frequency, Percent, View Count, and Cumulative View by Content

Content	N (%)	View Count	Cumulative View %
C1. Provision of general information	189(47.97%)	58,732,689	37.80%
C2. Signs and symptoms	300(76.14%)	103,900,000	66.89%
C3. Suicide mention	91(23.10%)	30,081,575	19.36%
C4. Risk factors explicitly mentioned	200(50.76%)	86,315,528	55.56%
C5. Stigma	87(22.08%)	37,141,247	23.90%
C6. Screening	9(2.28%)	1,269,149	0.81%
C7. Psychotherapy	114(28.93%)	34,462,459	22.18%
C8. Medication	123(31.22%)	44,518,682	28.65%
C9. Alternative Therapies	122(30.96%)	54,935,508	35.36%
C10. Promotion of healthy behaviors and Protective Factors	270(68.52%)	107,600,000	69.29%
C11. Electroconvulsive Therapy	12(3.05%)	4,393,498	2.82%
C12. Typology of Depression	394(100%)	155,300,000	100%

A more detailed description of content covered in the videos is presented in Table 3. Within the category of provision of general information, the topics most likely to be covered included describing depression as a mood disorder ($n = 77$), that it is common ($n = 55$), caused by a chemical imbalance ($n = 67$), and is treatable ($n = 45$). A variety of relevant information was rarely covered, such as consequences, disability, and early onset and prevalence among adolescents.

Although the majority of the videos ($n = 300$, 76.14%) included content about signs and symptoms, there was considerable variation regarding which signs and symptoms were covered. Feelings of sadness, hopelessness, and depressed mood were the signs and/or symptoms most likely to be covered ($n = 222$) and was mentioned in more than half the videos (56.35%). The second most frequently mentioned sign/symptom was “thought of death or suicide,” which was mentioned in more than one-third of the videos ($n = 138$, 35.03%). Other sign/symptoms mentioned in at least 205 of the videos were “loss of interest or pleasure in activities that used to be enjoyable” and “feelings of guilt

Table 3. Frequency, Percent, View Count, and Cumulative View % by Content Subcategories

Content	N (%)	View Count	Cumulative View Count (%)
C1. Provision of general information	189 (47.97%)	58,732,689	37.80%
C1A. Describing depression as a serious mood disorder?	77 (19.54%)	24,953,616	16.06%
C1B. Depression is one of the mental health conditions that contributes to a host of health problems resulting in disability, pain or death?	27 (6.85%)	15,400,468	9.91%
C1C. Mental health disorders are the leading cause of disability in the United States and/or Canada?	10 (2.54%)	6,248,323	4.02%
C1D. Mental health disorders account for 25 percent of all years of life lost to disability and premature mortality?	1 (0.25%)	5,548	0.003%
C1E. Mental, emotional and behavioral disorders are common?	55 (13.96%)	27,798,333	17.89%
C1F. Mental, emotional and behavioral disorders begin early in life?	1 (0.25%)	45,901	0.02%
C1G. One in five American adults experience a serious mental illness in a given year?	14 (3.55%)	5,139,275	3.30%
C1H. One in five people aged 13-18 have, or will have, a mental illness?	6 (1.52%)	275,827	0.17%
C1I. 8% of U.S. adolescents reported having MDD in the past year?	2 (0.51%)	70,490	0.04%
C1J. 50% of all lifetime cases of mental illness begin by age 14?	2 (.051%)	92,289	0.05%
C1K. 75% of all lifetime cases of mental illness cases begin by age 24?	1 (0.25%)	79,648	0.05%

Table 3 (continued)

Content	N (%)	View Count	Cumulative View Count (%)
C1L. Lifetime prevalence among adolescents may be as high as 20 percent?	2 (0.51%)	133,497	0.08%
C1M. Depression is a chemical imbalance.	67 (17.01%)	26,842,874	17.27%
C1N. Depression is chronic and likely to reoccur.	28 (7.11%)	7,298,623	4.69%
C1O. Depression is treatable.	45 (11.42%)	25,786,562	16.59%
C1P. Other?			
C1P.1. Depression effects millions of people (Provision of general information)	89 (22.59%)	29,090,387	18.72%
C1P.2. Mentioning you're not alone	24 (6.09%)	17,115,255	11.02%
	37 (9.39%)	7,577,031	4.88%
C2. Signs and symptoms	300 (76.14%)	103,900,000	66.89%
C2A. Feelings of sadness, hopelessness, depressed mood?	222 (56.35%)	84,592,082	54.45%
C2B. Loss of interest or pleasure in activities that used to be enjoyable?	84 (21.32%)	31,883,735	20.52%
C2C. Change in weight or appetite (increase)?	38 (9.64%)	8,243,488	5.30%
C2D. Change in weight or appetite (decrease)?	56 (14.21%)	24,694,204	15.89%
C2E. Psychomotor agitation (being more active than usual)	7 (1.78%)	2,895,189	1.86%
C2F. Psychomotor retardation (being less active than usual)?	46 (11.68%)	19,073,804	12.27%
C2G. Insomnia (difficulty sleeping / sleeping too little)	72 (18.27%)	21,763,665	14.00%

Table 3 (continued)

Content	N (%)	View Count	Cumulative View Count (%)
C2H. Sleeping too much?	49 (12.44%)	10,532,509	6.77%
C2I. Feeling tired?	59 (14.97%)	22,112,537	14.12%
C2J. Feelings of guilt, shame or worthlessness?	84 (21.32%)	22,856,401	14.71%
C2K. Difficulties concentrating or paying attention?	44 (11.17%)	15,906,092	10.23%
C2L. Thoughts of death or suicide?	138 (35.03%)	45,543,091	29.31%
C2M. Irritability?	45 (11.42%)	15,084,808	9.71%
C2N. Lonely or isolated?	116 (29.44%)	50,438,732	32.46%
C2O. Aches or pains, headaches, cramps, or digestive problems?	38 (9.64%)	7,923,589	5.10%
C2P. Changes in alcohol consumption?	34 (8.63%)	12,603,306	8.11%
C2Q. Changes in drug use (such as marijuana, cocaine, heroin)?	25 (6.35%)	12,501,491	8.04%
C2R. Nonsuicidal self-injury, or self-harming the body (such as cutting or burning)?	37 (9.39%)	11,831,020	7.61%
C2S. Other?	91 (23.10%)	20,654,395	13.29%
C3. Suicide mention	91 (23.10%)	30,081,575	19.36%
C3A. The person is talking about currently wanting to commit suicide?	15 (3.81%)	6,426,629	4.13%
C3B. The person is talking about how they previously attempted to commit suicide?	25 (6.35%)	4,890,769	3.14%

Table 3 (continued)

Content	N (%)	View Count	Cumulative View Count (%)
C3C. The person is talking about someone they know who wanted to commit suicide?	13 (3.30%)	6,238,656	4.01%
C3D. The person is talking about losing someone to suicide?	31 (7.87%)	7,626,390	4.90%
C3E. 19% of adolescents with MDD attempt suicide?	3 (0.76%)	1,290,776	0.83%
C3F. Over 800,000 people die worldwide due to suicide every year?	3 (0.76%)	1,022,914	0.65%
C3G. 90% of people who die by suicide had an underlying mental illness?	4 (1.02%)	417,806	0.26%
C3H. Each year 44,193 Americans die by suicide?	4 (1.02%)	274,064	0.24%
C3I. Men die by suicide 3.5 times more often than women?	1 (0.25%)	24,400	0.01%
C3J. Suicide costs the U.S. \$44 billion annually?	0	0	0
C3K. Other?	25 (6.35%)	9,015,353	5.80%
C4. Risk factors explicitly mentioned	200 (50.76%)	86,315,528	55.56%
C4A. Personal history of depression?	18 (4.57%)	5,867,120	3.77%
C4B. Family history of depression?	34 (8.63%)	16,613,469	10.69%
C4C. Major life changes? If yes, which ones?	52 (13.20%)	13,007,455	8.37%
C4D. Trauma?*	62 (15.74%)	293,113,965	18.86%
C4D1. Loss of a loved one?	43 (10.91%)	16,336,780	10.51%
C4D2. Natural Disaster?	2 (0.51%)	249,682	0.16%
C4D3. Other?	3 (0.76%)	409,078	0.26%

Table 3 (continued)

Content	N (%)	View Count	Cumulative View Count (%)
C4E. Stress? If yes, which ones?	37 (9.39%)	15,510,120	9.98%
C4F. Mental or Physical illnesses? If yes, which ones?	113 (28.68%)	53,499,555	34.43%
C4F.1. Anxiety (risk factor)	92 (23.35%)	44,684,607	28.76%
C4G. Some medication's side effects? If yes, which ones?	9 (2.28%)	4,178,244	2.68%
C4H. Being a female?	7 (1.78%)	2,366,806	1.52%
C4I. Being overweight or obese?	5 (1.27%)	1,433,590	0.92%
C4J. Abuse or neglect?	31 (7.87%)	12,485,775	8.03%
C4K. Family conflict?	14 (3.55%)	1,425,747	0.91%
C4L. Uncertainty about sexual orientation?	2 (0.51%)	298,118	0.19%
C4M. Low socioeconomic status?	11 (2.79%)	4,733,923	3.04%
C4N. Poor academic performance?	7 (1.78%)	1,006,621	0.64%
C4O. Adolescents who are two or more races?	0	0	0
C4P. Bullying?	24 (6.09%)	5,326,249	3.42%
C4Q. Drinking alcohol excessively?	13 (3.30%)	2,161,681	1.39%
C4R. Using drugs? (such as prescription, marijuana, cocaine etc.)	8 (2.03%)	709,436	0.45%
C4S. Struggling with identity	8 (2.03%)	1,069,805	0.68%
C4T. Low self-esteem	21 (5.33%)	6,916,015	4.45%
C4U. Other?	20 (5.08%)	7,349,048	4.73%

Table 3 (continued)

Content	N (%)	View Count	Cumulative View Count (%)
C5. Stigma	87 (22.08%)	37,141,247	23.90%
C5A. A person being ashamed to talk about their problems?	29 (7.36%)	12,944,161	8.33%
C5B. A person being afraid to talk about their problems?	16 (4.06%)	10,416,921	6.70%
C5C. Expressing the feeling of disgrace?	2 (0.51%)	2,474,281	1.59%
C5D. Mentioning the word stigma?	41 (10.41%)	15,726,933	10.12%
C5E. Judgment (feeling judged or afraid of being judged)?	19 (4.82%)	10,141,857	6.52%
C5F. Combating stigma (asking to normalize depression or talk more about depression)?	66 (16.75%)	32,739,213	21.07%
C5G. Other?	3 (0.76%)	1,596,777	1.02%
C6. Screening	9 (2.28%)	1,269,149	0.81%
C6A. Patient Health Questionnaire for Adolescents (PHQ-A)?	0	0	0
C6B. Beck Depression Inventory (BDI)?	2 (0.51%)	280,467	0.18%
C6C. The general mention of getting a screening?	3 (0.76%)	243,829	0.15%
C6D. Other screening mentioned?	5 (1.27%)	765,103	0.49%
C7. Psychotherapy	114 (28.93%)	34,462,459	22.18%
C7A. A person mentioning currently going to receive talk therapy?	9 (2.28%)	3,648,693	2.34%
C7A1. If so, positive?	8 (2.03%)	1,370,443	0.88%
C7A2. If so, negative?	0	0	0

Table 3 (continued)

Content	N (%)	View Count	Cumulative View Count (%)
C7B. A person has already received talk therapy?	45 (11.42%)	14,302,768	9.20%
C7B1. If so, positive?	34 (8.63%)	11,543,260	7.43%
C7B2. If so, negative?	8 (2.03%)	591,170	0.38%
C7B3. Are they successfully treated?	29 (7.36%)	5,328,938	3.43%
C7C. A person knows someone who received talk therapy?	6 (1.52%)	2,906,984	1.87%
C7C1. If so, positive?	2 (0.51%)	204,978	0.13%
C7C2. If so, negative?	1 (0.25%)	293,324	0.18%
C7D. Recommending that others have psychotherapy?	85 (21.57%)	26,875,869	17.30%
C7D1. If so, Cognitive behavioral therapy?	21 (5.33%)	1,705,355	1.09%
C7D2. If so, Interpersonal therapy?	3 (0.76%)	198,258	0.12%
C7D3. If so, Problem solving therapy?	1 (0.25%)	20,250	0.01%
C7E. Explicitly stating not supporting psychotherapy for depression?	2 (0.51%)	154,794	0.09%
C7F. Other?	6 (1.52%)	165,838	0.10%
C8. Medication	123 (31.22%)	44,518,682	28.65%
C8A. Suggesting the use or promotion of medication?	66 (16.75%)	28,005,141	18.02%
C8B. Antidepressants that are serotonin reuptake inhibitors	26 (6.60%)	8,848,786	5.69%
C8B1. Fluoxetine?	14 (3.55%)	1,504,693	0.96%
C8B1. Fluoxetine?	1 (0.25%)	34,388	0.02%
C8B2. Positive?	6 (1.52%)	284,058	0.18%
C8B3. Negative?			
C8B4. Citalopram?	0	0	0
C8B7. Sertraline?	0	0	0
C8B10. Paroxetine?	0	0	0

Table 3 (continued)

Content	N (%)	View Count	Cumulative View Count (%)
C8B13. Escitalopram?	0	0	0
C8C. Antidepressants that are serotonin and norepinephrine reuptake inhibitors	7 (1.78%)	554,434	0.35%
C8C1. Venlafaxine?	0	0	0
C8C4. Duloxetine?	0	0	0
C8D. A person currently on medication?	17 (4.31%)	5,761,134	3.70
C8D1. If so, positive?	11 (2.79%)	4,158,454	2.67
C8D2. If so, negative?	0	0	0
C8E. A person was previously on medication?	30 (7.61%)	8,748,387	5.63%
C8E1. If so, positive?	16 (4.06%)	2,899,378	1.86%
C8E2. If so, negative?	10 (2.54%)	354,006	0.22%
C8E3. Are they successfully treated?	14 (3.55%)	4,327,046	2.78%
C8F. Explicitly stating not supporting medication for depression?	15 (3.81%)	1,196,560	0.77%
C8G. Talking about side effects of medication?	30 (7.61%)	8,489,606	5.46%
C8H. Other medication mentioned?	42 (10.66%)	9,770,055	6.28%
C9. Alternative Therapies	122 (30.96%)	54,935,508	35.36%
C9A. Omega 3-fatty acid supplements?	15 (3.81%)	2,540,202	1.63%
C9A1. Positive?	14 (3.55%)	1,955,527	1.25%
C9A2. Negative?	0	0	0
C9B. St. John's Wort?	1 (0.25%)	19,491	0.01%
C9B1. Positive?	1 (0.25%)	19,491	0.01%
C9B2. Negative?	0	0	0
C9C. Yoga	11 (2.79%)	2,482,190	1.59%
C9C1. Positive?	10 (2.54%)	1,982,691	1.27%
C9C2. Negative?	1 (0.25%)	499,499	0.32%

Table 3 (continued)

Content	N (%)	View Count	Cumulative View Count (%)
C9D. Music therapy?	18 (4.57%)	13,391,679	8.62%
C9D1. Positive?	18 (4.57%)	13,391,679	8.62%
C9D2. Negative?	0	0	0
C9E. Massage therapy?	2 (0.51%)	106,345	0.06%
C9E1. Positive?	2 (0.51%)	106,345	0.06%
C9E2. Negative?	0	0	0
C9F. Tai chi?	1 (0.25%)	74,890	0.04%
C9F1. Positive?	1 (0.25%)	74,890	0.04%
C9F2. Negative?	0	0	0
C9G. Guided imagery?	0	0	0
C9H. Biofeedback?	0	0	0
C9I. Hypnosis?	8 (2.03%)	11,572,016	7.44%
C9I1. Positive?	7 (1.78%)	11,527,416	7.42%
C9I2. Negative?	1 (0.25%)	44,600	0.02%
C9J. Deep breathing?	16 (4.06%)	9,645,549	6.01%
C9J1. Positive?	16 (4.06%)	9,345,549	6.01%
C9J2. Negative?	0	0	0
C9L. Meditation?	42 (10.66%)	19,376,230	12.47%
C9L1. Positive?	41 (10.41%)	17,387,131	11.19%
C9L2. Negative?	2 (0.51%)	90,049	0.05%
C9M. Mindfulness	16 (4.06%)	21,761,724	14.00%
C9M1. Positive?	16 (4.06%)	21,761,724	14.00%
C9M2. Negative?	0	0	0
C9N. Other?	55 (13.96%)	10,199,892	6.56%

Table 3 (continued)

Content	N (%)	View Count	Cumulative View Count (%)
C10. Promotion of healthy behaviors and Protective Risk Factors	270 (68.52%)	107,600,000	69.29%
C10A. Exercising?	73 (18.53%)	19,140,969	12.32%
C10B. Good sleep hygiene?	28 (7.11%)	16,610,467	10.69%
C10C. Good nutrition?	39 (9.90%)	3,249,441	2.09%
C10D. Decreased use of tobacco?	2 (0.51%)	24,787	0.01%
C10E. Decrease sugar intake?	8 (2.03%)	450,776	0.02%
C10F. Recommending another to get help or talk to someone?	134 (34.01%)	48,438,145	31.18%
C10G. Decreased use of alcohol?	12 (3.05%)	2,565,994	1.65%
C10H. Decreased use of other damaging substances?	6 (1.52%)	2,774,157	1.78%
C10I. Academic achievement/intellectual development?	4 (1.02%)	189,815	0.12%
C10J. High Self-esteem?	13 (3.30%)	5,540,819	3.56%
C10K. Emotional self-regulation?	41 (10.41%)	18,690,698	12.03%
C10L. Good coping skills?	9 (2.28%)	4,771,676	3.07%
C10M. Engagement in school?	2 (0.51%)	25,516	0.01%
C10N. Engagement with peers?	60 (15.23%)	10,538,414	6.78%
C10O. Engagement in community?	7 (1.78%)	2,319,758	1.49%
C10P. Engagement in athletics?	5 (1.27%)	148,162	0.09%
C10Q. Engagement in creative outlets?	49 (12.44%)	23,739,807	15.28%
C10R. Engagement in employment?	3 (0.76%)	636,105	0.40%

Table 3 (continued)

Content	N (%)	View Count	Cumulative View Count (%)
C10S. Engagement in religion or spirituality?	42 (10.66%)	11,309,874	7.28%
C10T. Engagement in culture?	0	0	0
C10U. Other?	86 (21.83%)	30,944,761	19.91%
C11. Electroconvulsive Therapy	12 (3.05%)	4,393,498	2.82%
C11A. Positive?	10 (2.54%)	5,167,139	3.32%
C11B. Negative?	3 (0.76%)	118,035	0.07%
C12. Typology of Depression	394 (100%)	155,300,000	100%
C12A. Major depressive disorder?	387 (98.22%)	154,202,998	99.26%
C12B. Postpartum depression?	9 (2.28%)	1,750,327	1.12%
C12C. Seasonal affective disorder?	10 (2.54%)	2,937,305	1.89%
C12D. Bipolar disorder?	21 (5.33%)	5,246,579	3.37%
C12E. Other?	3 (0.76%)	1,215,493	0.78%

Note: *Data do not equal 100% because type of trauma was not specified.

shame or worthlessness” (n = 84, 21.32% for both), and “lonely or isolated” (n = 116, 29.44%). Signs/symptoms least likely to be mentioned (included in fewer than 10% of the videos) were change in weight or appetite; psychomotor agitation; aches, or pains, headaches, cramps, or digestive problems; changes in alcohol consumption, or changes in drug use. Mentions of suicide other than as a sign/symptom were included in almost one-quarter of the videos, but none of the suicide subcategories examined was covered in more than 10% of the videos.

Risk factors for depression were explicitly mentioned in more than half of the videos (n = 200, 50.76%). Other mental or physical illness was the most commonly mentioned risk factor (n = 113); anxiety was mentioned in almost a quarter of the videos (92, 23.35%), followed by trauma (n = 62), which was predominantly about loss of a loved one (n = 43). Additional risk factors mentioned include major life changes (n = 52)

followed by family history of depression (n = 34), abuse or neglect (n = 31), bullying (n = 24), and low self-esteem (n = 21). None of the other risk factors coded were mentioned in more than 10 of the videos.

The topic of stigma was mentioned in over 22% of the videos. The most frequently mentioned subcategory under stigma was feeling judged or afraid of being judged (n = 66). None of the other sub-categories coded under stigma were mentioned frequently.

Psychotherapy was covered in almost 30% of the videos (n = 114). Recommendation that others receive psychotherapy was the most frequently covered sub-category (n = 85). None of the other subcategories were mentioned frequently.

Medication was mentioned in more than 30% of the videos (n = 123). Suggesting the use of medication was included in 66 of the videos (16.75%). None of the other sub-categories coded occurred frequently. Alternative therapies were also mentioned in more than 30% of the videos (n = 122), but here, too, none of the other sub-categories coded occurred frequently.

Promoting healthy behaviors and protective factors was a topic included in the majority of videos (n = 270, 68.52%), and, collectively, these videos garnered over 100 million views. The subcategory most frequently observed was recommending that the individual seek assistance or talk with someone (n = 134), followed by exercising (n = 73), engaging with peers (n = 60), creative outlets (n = 49), religion or spirituality (n = 42), and emotional self-regulation (n = 41). While good sleep hygiene was only mentioned in 28 videos (7.11%), collectively, these videos received over 16 million views.

Research Question 3

Table 4 shows how content may vary based on who uploaded the video. Among the 12 major categories examined and coded, there were no significant differences on content covered between the three main sources (i.e., consumers, NGOs or Internet-based) regarding signs and symptoms; suicide mentioned; risk factors mentioned explicitly; alternative therapies, or typology of depression. In contrast, there were differences observed for provision of general information, stigma, screening, medication, promotion of healthy behaviors and protective factors, and electroconvulsive therapy.

Almost 70% of the videos uploaded by an NGO provided general information about depression, while this was true for slightly over half of the Internet-based sources (52.53%), and about 40% of those uploaded by consumers (40.93%). While there was no overall difference in the coverage of signs and symptoms as a general category, there were some differences for specific signs and symptoms. In all three cases where differences were observed, namely, change in weight or appetite, feeling tired, or thoughts of death or suicide, videos uploaded by NGOs had the highest percentages of coverage, with similar levels of coverage for videos uploaded by consumers and Internet-based sources.

Stigma was mentioned in 81 videos from the three sources examined in Table 3. This topic was covered in more than one-third of the 41 videos uploaded by NGOs ($n = 15$), just over one-quarter of the 193 videos uploaded by consumers ($n = 49$), and less than 20% of the 99 videos uploaded by Internet-based sources ($n = 17$). Differences were also observed with respect to combating stigma, which was covered in 64 of the videos uploaded by the three sources, with the same pattern as the general category.

Table 4. Depression Content Covered by Selected Sources (n = 333)

CONTENT COVERED	U1 CONSUMERS n = 193	U4 NGO n = 41	U9 INT. BASED n = 99	Chi Square
C1. Provision of general information (n = 159)	79 (40.93%)	28 (68.29%)	52 (52.53%)	11.44**
C1A. Describing depression as a serious mood disorder? (n = 65)	37 (19.17%)	10 (24.39%)	18 (18.18%)	.75
C1E. Mental, emotional and behavioral disorders are common? (n = 55)	28 (14.51%)	8 (19.51%)	13 (13.13%)	.96
C1M. Depression is a chemical imbalance. (n = 52)	23 (11.92%)	7 (17.07%)	22 (22.22%)	5.35
C1O. Depression is treatable. (n = 36)	17 (8.81%)	8 (19.51%)	11 (11.11%)	4.03
C2. Signs and symptoms (n = 257)	151 (58.75%)	36 (14.01%)	70 (27.24%)	5.11
C2A. Feelings of sadness, hopelessness, depressed mood? (n = 191)	111 (57.51%)	26 (63.41%)	54 (54.55%)	.94
C2B. Loss of interest or pleasure in activities that used to be enjoyable? (n = 69)	34 (17.62%)	13 (31.71%)	22 (22.22%)	4.28
C2D. Change in weight or appetite (decrease)? (n = 49)	25 (12.95%)	12 (29.27%)	12 (12.12%)	7.93*
C2I. Feeling tired? (n = 54)	25 (12.95%)	12 (29.27%)	17 (17.17%)	6.72*
C2L. Thoughts of death or suicide? (n = 121)	65 (33.68%)	22 (53.66%)	34 (34.34%)	6.08*
C2N. Lonely or isolated? (n = 104)	65 (33.68%)	14 (34.15%)	25 (25.25%)	2.35
C3. Suicide mention (n = 81)	50 (25.91%)	11 (26.83%)	20 (20.30%)	1.32
C4. Risk factors explicitly mentioned (n = 172)	105 (54.40%)	23 (56.10%)	44 (44.44%)	2.97
C4D. Trauma? (n = 52)	29 (15.03%)	10 (24.39%)	13 (13.13%)	2.91
C4F. Mental or Physical illnesses? (n = 99)	64 (33.16%)	14 (34.15%)	21 (21.21%)	4.91
C4F_Anxiety (n = 82)	56 (29.02%)	9 (21.95%)	17 (17.17%)	5.13
C5. Stigma (n = 81)	49 (25.39%)	15 (36.59%)	17 (17.17%)	6.22*
C5F. Combating stigma (asking to normalize depression or talk more about depression)? (n = 64)	39 (20.21%)	13 (31.71%)	12 (12.12%)	7.45*

Table 4 (continued)

CONTENT COVERED	U1 CONSUMERS n = 193	U4 NGO n = 41	U9 INT. BASED n = 99	Chi Square
C7. Psychotherapy (n = 94)	50 (25.91%)	20 (48.78%)	24 (24.24%)	9.84**
C7D. Recommending that others have psychotherapy? (n = 67)	32 (16.58%)	14 (34.15%)	21 (21.21%)	6.60*
C8. Medication (n = 99)	51 (26.42%)	20 (48.78%)	28 (28.28%)	8.23*
C8A. Suggesting the use or promotion of medication? (n = 53)	25 (12.95%)	12 (29.27%)	16 (16.16%)	6.73*
C9. Alternative Therapies (n = 98)	57 (29.53%)	15 (36.59%)	26 (26.26%)	1.49
C9L. Meditation? (n = 38)	22 (11.40%)	7 (17.07%)	9 (9.09%)	1.83
C9M. Mindfulness (n = 16)	8 (4.15%)	5 (12.20%)	3 (3.03%)	5.76
C10. Promotion of healthy behaviors and Protective Factors (n = 230)	146 (75.65%)	33 (80.49%)	51 (51.52%)	20.69***
C10A. Exercising? (n = 64)	40 (20.73%)	12 (29.27%)	12 (12.12%)	6.16*
C10B. Good sleep hygiene? (n = 22)	15 (7.77%)	3 (7.32%)	4 (4.04%)	1.52*
C10F. Recommending another to get help or talk to someone? (n = 123)	79 (40.93%)	18 (43.90%)	26 (26.26%)	7.02*
C10K. Emotional self-regulation? (n = 33)	24 (12.44%)	4 (9.76%)	5 (5.05%)	4.00
C10Q. Engagement in creative outlets? (n = 43)	29 (15.03%)	8 (19.51%)	6 (6.06%)	6.49*
C11. Electroconvulsive Therapy (n = 7)	1 (0.52%)	3 (7.32%)	3 (3.03%)	8.19*
C12. Typology of Depression (n = 333)	193 (100%)	41 (100%)	99 (100%)	1
Not Alone.	25 (12.95%)	4 (9.76%)	4 (4.04%)	5.82

Note: *p<.05; **p<.01; ***p<.001

¹There was no p value or Chi square because there was no variability.

Compared with videos uploaded by consumers (n = 50, 25.91% of 193) and Internet-based sources (n = 24, 24.24% of 99), approximately twice as many videos uploaded by NGOs included content about psychotherapy (n = 20, 48.78% of 41). The observed differences were not as great regarding recommendations that others receive psychotherapy. Nevertheless, compared with consumer videos, those uploaded by NGOs were about twice as likely to make such recommendations (16.58% versus 34.15%). A similar pattern was observed for suggestions to use medication.

Videos uploaded by NGOs were also more likely than those uploaded by consumers or Internet-based sources to include content relevant to medication.

Chapter V

DISCUSSION, CONCLUSIONS, AND IMPLICATIONS

Less threatening information sources that can be accessed anonymously, such as YouTube, are available for people with all levels of literacy and limited access to mental health resources. Researchers have studied some mental health topics on YouTube, such as schizophrenia (Nour et al., 2016), ADHD (Kang et al., 2016), PTSD (Salzmann-Erikson & Hiçdurmaz, 2016), first-episode psychosis (Lal et al., 2015), smoking cessation videos targeting people living with mental illness (Sharma et al., 2016), and the harms and benefits of informal peer-to-peer relationships on YouTube related to people with mental illness (Naslund et al., 2014, 2016). However, there is no research describing what consumers are viewing on YouTube regarding depression. Therefore, there is a need to understand the sources of YouTube videos on depression and the nature and scope of information being shared about this pervasive important public health problem. The purpose of this study was to analyze the most viewed videos on YouTube regarding depression with respect to source, speaker, format, purpose, number of views, length, upload year, and content. A cross-sectional design was used. Data were collected at one point in time, and descriptive statistics and a Chi Squared analysis were used to examine the variables.

Main Conclusions

Source and Speaker

Consumers are the main source of the most widely viewed YouTube videos regarding depression. Further, these videos uploaded by consumers, and videos with consumers as the main speakers, are the most viewed videos on YouTube; they are reaching the largest audience. The data also show that governmental agencies of the U.S. Public Health Service, charged with the responsibility of preventing disease and promoting health, have not produced videos that are among those most widely viewed.

Format and Purpose

YouTube videos about depression are mostly homemade, meaning they are uploaded by a layperson in an unprofessional setting, such as their house or car. YouTube is being used for people to share their testimony or offer support to people going through similar struggles. These results show that professional production formats are not necessarily needed to garner many views.

Content

The content of videos about depression focused heavily on the signs and symptoms of depression, while many others focused on ways to prevent and treat depression. The most commonly mentioned protective factor was talking with someone about depression. Screening is rarely mentioned among the most widely used videos, even though screening for depression is recommended by the U.S. Preventive Services Task Force (2016).

Discussion

Upload Source and Speaker

Videos that were uploaded and presented by consumers had the highest frequency and views, unlike the study by Kang et al. (2016) regarding ADHD, which found doctors to be the most frequent upload source. Similar to other research, governmental videos were less likely to be among those with the most views (Kang et al., 2016).

Research suggests that it does matter who is uploading the videos and who is in the video. Videos with celebrities tend to have more views because of their fan base. Videos that are uploaded by people on YouTube who have a large following were also widely viewed, even though the source may not be a celebrity outside the YouTube world. There are people on YouTube who have a far-reaching audience, and when they upload videos about depression they are likely to get viewed more times than a video uploaded by a person who doesn't have a following.

For example, only one video in the sample was uploaded by cable television entertainment, but this video had over a million views (1,134,170). The video was uploaded by MTV, which is an American cable and satellite television channel. This video source has 1.9 million subscribers. The video was an interview with a celebrity singer, Kendrick Lamar, who opened up about his depression and suicidal thoughts while recording his album, 'To Pimp A Butterfly.' Rob Markman, the hip-hop journalist who interviewed Kendrick Lamar, was also a friend of the celebrity. The video was 10:39 minutes long.

Among consumers, there were only seven videos uploaded by a person without lived experience but sharing information based on knowing someone personally with depression. The same woman uploaded the top two videos in this subcategory. She had 155,000 individuals who subscribed to her page. Her video with the most views

(5,422,168) was a dramatic skit. Another woman, with 639,000 subscribers, uploaded the third most widely viewed video in this subcategory.

Format and Purpose

This study revealed that many of the most widely used videos were using YouTube as a blog-like platform. Prior research has found that people with mental illnesses use YouTube to reveal themselves, experience the universality of the problem, receive support, and fight stigma (Salzmann-Erikson & Hiçdurmaz, 2016). Naslund et al. (2014) found that YouTube was used to create a sense of belonging and provided means for coping with serious mental illness.

The second most frequent purpose of the YouTube videos in the sample was education. Many videos discussed the signs and symptoms of depression, presented ways to prevent or treat depression, or provided prevalence statistics. Although there were many videos with educational material; almost all lacked specifications about adolescent depression.

Content

The main content covered in these videos was about signs and symptoms, risk factors, and protective factors. Although mental health practitioners were rarely speaking in videos, laypeople on YouTube were recommending psychotherapy for treatment. This finding is consistent with those of Sharma et al. (2016). Unfortunately, no videos talked about or encouraged adolescents to get screened for depression, and few videos discussed the disparities surrounding depression (those with low economic status, abuse, or neglect, adolescents who are two or more races, etc.).

In this study, change in sleep quality was coded as a sign and symptom of depression (Table 3, C2G and C2H) as well as a potential protective factor for depression (Table 3, C10B). It is evident that there was some recognition within the most widely viewed YouTube videos about the importance of sleep in relation to depression. For

example in the larger category of signs and symptoms, the topic of insomnia (C2G) was mentioned in almost one in five of the videos ($n = 72$) and garnered 14% of the total cumulative views (> 21 million), and the topic of sleeping too much (C2H) was mentioned in more than 12% ($n = 49$), but only garnered $\sim 7\%$ of cumulative views (> 10 million). Good sleep hygiene as a protective factor was mentioned in more than 7% ($n = 28$), and garnered $> 10\%$ of cumulative views (> 16 million).

Nongovernmental organization (NGO) sources were likely to discuss content related to depression, including provision of general information, signs and symptoms (changes in weight, feeling tired, and thoughts of death and suicide), stigma, screenings, psychotherapy, medication, promotion of healthy behaviors (exercising, recommending others to get help, and engagement in creative outlets), and electroconvulsive therapy. Moreover, a considerable degree of the health education about depression is coming from NGOs.

There are certain types of videos that tended to attract the most views; those that used a story telling approach versus a didactic approach. Government and nongovernment agencies responsible for increasing awareness and interest among the public about depression should consider this when producing videos. Many of the videos that received the most views did not have high production quality, but were more “homemade.” This may indicate that viewers prefer watching a truthful story from a person with lived experience.

There were, however, a lot of contradictory messages in the most widely viewed YouTube videos. Some video presenters suggested that depression is a chemical imbalance, while others suggested that it is not. Other video presenters suggested that depression is not real, while other video presenters suggested that depression should not define a person. Some people suggested that a person should not identify with depression, while other videos suggested that depression needs to be claimed and people should not feel ashamed of acknowledging they suffer from depression. There was a lot of

conflicting advice about embracing depression versus not, and the majority of this advice was coming from consumers.

As stated earlier, clinical depression is a serious mood disorder (NIMH, 2016). An estimated 16 million Americans, or 6.9% of adults, had at least one major depressive episode in the past year (NIMH, 2015a). Causes of depression are associated with a combination of genetic, biological, environmental, and psychological factors (NIMH, 2016). The NIMH (2016) suggests that risk factors include, but are not limited to, personal or family history of depression, major life changes, trauma or stress, as well as certain physical illnesses and some medications.

While analyzing the videos, the researcher discovered that YouTube is generally a safe place for people to be vulnerable. Many speakers acknowledged never before sharing their story about depression to their family and friends, yet they went ahead to share their story to millions of strangers. The platform may allow people to express themselves in a way they would not feel comfortable doing in person. Many people seemed to want viewers to know that they are not alone. Due to the lonely nature of depression, YouTube may be a safe haven for those who are suffering or know someone who is suffering. This is evident, as the videos in the study sample were viewed over 155 million times.

Although most of the videos were not harmful, some of the videos contained harmful information for viewers. A few videos were skit formats and a person acted out committing suicide. They acted out the process leading up to the act, informing the viewers of why they were ending the video this way. Although these videos were fakes, they show people committing suicide and this could teach someone how to do it and normalize the behavior.

Further harmful information shared over YouTube included “false treatments.” Examples include crystal healing and meridian tapping. These were coded in the alternative therapies section of the instrument under “other.” These treatment approaches

are not supported by evidence and may delay a person from receiving care who may urgently need it.

Limitations and Delimitations

Like all studies, the results must be interpreted in light of the limitations. At least six limitations of this study may affect the results. First, the study design was cross-sectional. The number of videos and viewership on YouTube are changing constantly. The snapshot in time provided here may change over a relatively short period of time. This is particularly true if one or more videos on this topic were to “go viral,” which could attract a lot of attention to the topic.

A second potential limitation is that a single individual coded all of the videos, and the coder was not blind to the number of views received by the respective videos. There is a chance that coding changed over time or that the results would have been affected by interpretations of the primary coder. This concern is somewhat mitigated by the fact that inter- and intra-rater reliability was demonstrated to be high.

A third possible limitation is that sampling relied on the YouTube filter function, “most viewed,” to select the study sample. It is possible that not all videos on depression were included in the original filter from most viewed to least viewed. Nevertheless, the sample provides a selection of videos on this topic that was very widely viewed.

A fourth limitation relates to sections of the instrument. For example, in coding typology of depression, the researcher coded all videos about depression, but that did not necessarily mean the video had someone with major depressive disorder. People use depression as a synonym with sadness, while it is a clinical mental illness. Therefore, coding depression in typology may not be accurate if people are not clinically diagnosed with depression but claiming to be depressed.

A fifth limitation focuses on the outcome measure, namely, number of views. We cannot distinguish views from viewers. Also, we have no idea where the people viewing these videos are located.

A sixth limitation is that a higher number of views was received by the categories that were defined more broadly and a lower number was received by the categories that were defined more narrowly. This result may be due, in part, to the ways in which the categories were defined. There should have been a general larger section titled treatment.

Delimitations also warrant consideration when interpreting the results. The instrument used for coding the videos was not exhaustive. For example, one video was a short film (dramatic skit) that portrayed a woman posting a life on social media that was better than her real life. The video demonstrated how social media can be very anti-social and fake, and how alone this actress felt. The researcher also did not attempt to capture the tone of the videos—for example, if they were funny, sad, inspirational, or how they make the viewer feel. This would have been subjective, but nonetheless it does portray how social media can be used to educate and influence a viewer.

Implications for Practice

Many consumers and NGOs on YouTube are encouraging others to seek help. Professionals/providers, as well as the government, need to do a better job of uploading and presenting scientifically supported videos about depression on YouTube that are accessible and acceptable to consumers. In these videos and messages, the government and professionals should be informing people with mental illness of the proper ways in which they can treat their depression. Providers can use YouTube to properly explain the side effects and benefits of medications. They can debunk myths and open the conversation outside of the traditional office. Further, the government and YouTube need

to work together to remove videos that contain harmful and incorrect information about depression.

According to Dr. Stephen Ilardi (2009), Professor of Clinical Psychology and the author of *The Depression Cure: The 6-Step Program to Beat Depression Without Drugs*, solving the depression epidemic takes therapeutic lifestyle changes. His TED talk video was very insightful about the holistic lifestyle changes that can be made to help treat depression (<https://www.youtube.com/watch?v=ZNQiFsQwr1k>). Further, Dr. Ilardi has found favorable results in large treatment studies. Although current and future practitioners should learn about and incorporate the above model to depression treatment, given the complexity of the disorder and the kinds of treatment that may be needed by specific individuals, it's important to recognize that there is no "one size fits all" solution.

Additionally, the government should strategically partner with celebrities to be protagonist speakers in these videos and welcome people who have large followings on YouTube. There are 'popular' people on each respective social media channel (in the make up industry, clothing, gaming, etc.), and if these celebrities with large followings are the ones sharing the video, it will likely reach a larger audience. Further, videos need to be educational and encouraging for adolescents who may be facing health disparities. Some adolescents may not have access to quality mental health education and services, yet they may watch a video on YouTube that has their favorite artist who speaks about depression. That video may be the only exposure they have, and it should inform them of the signs and symptoms of depression, the proper ways to treat depression, and where to seek help.

While some videos demonstrated the harmful effects of social media, YouTube was also used to share messages and stories in a way that combated the negative effects social media can have. Many people suggested that sharing their stories on YouTube helped them escape their problems. Some people stated that they felt more comfortable sharing their depression secrets on YouTube with strangers than with the people closest

to them, such as family and friends. Many people were looking for advice on treating their depression by asking people to comment on their video. Other people were sharing their story for the purpose of helping someone know they are not alone. Practitioners could help those they serve by understanding more about how to use this communication medium in this regard.

Depression is a complex disorder that has different causes, and it can present itself among people differently. To make the health issue even more complex there are problems with diagnosis. There are disparities nationally and globally with under diagnosis because people who need help are not receiving it. However there is also a problem with over diagnosis, where people experiencing normal sadness and grief associated with loss may be mislabeled as being clinically depressed. Further, assessment for depression is complex and requires an evaluation by a specially trained clinician and primary care physicians who do not have such training are nevertheless sometimes conducting assessments and prescribing medication and other treatments.

The theoretical context of this study was in the Social Ecological Model, and the focus was on the exosystem. More specifically, YouTube was analyzed under the mass media category as a source that influences individual health. Although these videos have the reach of millions of people, the power they have on an individual can be very significant. The Social Ecological Model relates to the complexity of the mental health issue at hand, and the vast factors that can determine behaviors or bring upon a depression episode. The main content covered in these videos was about signs and symptoms, risk factors, and protective factors, highlighting that the YouTube platform is mainly being used positively for health promotion with respect to the theory-based framework.

Recommendations for Future Research

The research on depression videos on YouTube should be continued because this sample was collected in early 2017, and more videos have continued to come out since. Further strategic searches can also take place regarding depression videos on YouTube by searching specific channels that have specific audiences. For example, MTV may have a large adolescent population of viewers, and it has videos about depression spoken in first person from a celebrity. Future research can examine MTV and other specific sources. This will expand the knowledge about videos targeting adolescent depression and population preferences for mental health promotion and treatment.

A more in-depth analysis can take place by analyzing videos with a qualitative methodology, and by analyzing the comments section to understand the conversation and feedback of videos. This is important because people with depression may be having serious conversations in the comments section, such as about medication or suicide. This consumer-to-consumer conversation would be important for practitioners to understand because it would expose health education beyond the care of professionals.

Future research should identify and describe videos specifically around suicide. Among the most widely viewed videos, the topic of suicide was not mentioned in approximately 80%. Further, videos with live suicide can be dangerous in that they normalize the behavior and should be flagged and immediately removed from the web. None were found in this sample, although there were scripted videos that did show someone pretending to commit suicide. This is important because videos that have people committing suicide may influence someone or teach someone how to commit suicide. Some videos may be harmful to people who are suicidal, or harmful because they have dangerous treatment suggestions. Health practitioners and the government should come up with guidelines of what is harmful to be viewed on YouTube and support YouTube to monitor videos based on scientifically supported evidence.

Many ads on YouTube that were seen when coding depression videos seemed to focus on antidepressant advertisements. Therefore, it would be useful to code the advertisements of antidepressants because if a person is searching YouTube for videos about depression and being exposed to content about medications, it would be beneficial for providers to know which companies are reaching viewers and what information they are sharing. Moreover, there should be a study examining advertisements that “pop up” when searching depression or suicide. Additional research on YouTube focusing on antidepressants also seems warranted.

Summary

The key takeaway from this study is that consumers are uploading and speaking in YouTube videos about depression, and these videos are the most viewed. In total, there were over 150 million views in this sample of depression videos on YouTube. The majority of these YouTube videos about depression are homemade. The content of the videos about depression focused heavily on the signs and symptoms and the healthy ways to prevent and treat depression. Content specifically uploaded by consumers include recommending another to get help. Content specifically uploaded by nongovernmental organizations were more likely than other sources to cover general information about depression, several signs and symptoms of depression, stigma, psychotherapy, and medication for depression treatment. Another main finding was that governmental agencies and mental health professionals have not produced videos that are among those most widely viewed. However, they should be using this platform to reach people who may face limited mental health resources, stigma, and at-risk populations.

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U11. University?	1=Yes 0=No
U12. Religious Organization or Ministry?	1=Yes 0=No
U13. Other?	1=Y Other:___ 0=No

SPEAKER / PROTAGONIST	
S1. Consumer	
S1A. Person with lived experience?	1=Yes 0=No
S1B. Person without lived experience but sharing information about depression?	1=Yes 0=No
S1C. Person without lived experience but sharing information based on knowing someone personally with depression?	1=Yes 0=No
S2. Professional/Provider videos?	1=Yes 0=No
S2A. Mental Health Professional	1=Yes 0=No
S2B. Nurse	1=Yes 0=No
S2C. Physician / Medical Doctor	1=Yes 0=No
S2D. Academic Professional/Professor	1=Yes 0=No
S2E. Social Worker	1=Yes 0=No
S2F. Other?	1=Yes 0=No
S3. Government organization?	1=Yes 0=No
S4. Nongovernmental organization	1=Yes 0=No
S5. Network television news?	1=Yes 0=No
S6. Network television entertainment	1=Yes 0=No
S7. Cable television news?	1=Yes 0=No
S8. Cable television entertainment?	1=Yes 0=No
S9. Internet-based video?	1=Yes 0=No
S10. Celebrity?	1=Yes 0=No
S11. University?	1=Yes 0=No
S12. Religious Organization or Ministry?	1=Yes 0=No
S13. Other?	1=Y Other:_____ 0=No

FORMAT	
F1. Skit? F1A. Humorous F1B. Dramatic	1=Yes 0=No 1=Yes 0=No
F2. Homemade video?	1=Yes 0=No
F3. Talk by professional?	1=Yes 0=No
F4. Interview	1=Yes 0=No
F5. Animation? F5A. Cartoons F5B. Whiteboard Animation	1=Yes 0=No 1=Yes 0=No
F6. Still images?	1=Yes 0=No
F7. Music Video?	1=Yes 0=No
F8. Movie?	1=Yes 0=No
F9. News?	1=Yes 0=No
F10. Video Game?	1=Yes 0=No
F11. Other?	1=Y Other: _____ 0=No

PURPOSE/ORIENTATION	
P1. Advocacy?	1=Yes 0=No
P2. Educational?	1=Yes 0=No
P3. Exhibitionism?	1=Yes 0=No
P4. Support/Blog?	1=Yes 0=No
P5. Intervention?	1=Yes 0=No
P6. Advertising?	1=Yes 0=No
P7. Other?	1=Yes 0=No

CONTENT	
C1. Provision of general information	
C1A. Describing depression as a serious mood disorder?	1=Yes 0=No
C1B. Depression is one of the mental health conditions that contributes to a host of health problems resulting in disability, pain or death?	1=Yes 0=No
C1C. Mental health disorders are the leading cause of disability in the United States and/or Canada?	1=Yes 0=No
C1D. Mental health disorders account for 25 percent of all years of life lost to disability and premature mortality?	1=Yes 0=No
C1E. Mental, emotional and behavioral disorders are common?	1=Yes 0=No
C1F. Mental, emotional and behavioral disorders begin early in life?	1=Yes 0=No
C1G. One in five American adults experience a serious mental illness in a given year?	1=Yes 0=No
C1H. One in five people aged 13-18 have, or will have, a mental illness?	1=Yes 0=No
C1I. 8% of U.S. adolescents reported having MDD in the past year?	1=Yes 0=No
C1J. 50% of all lifetime cases of mental illness begin by age 14?	1=Yes 0=No
C1K. 75% of all lifetime cases of mental illness cases begin by age 24?	1=Yes 0=No
C1L. Lifetime prevalence among adolescents may be as high as 20 percent?	1=Y Other:____ 0=No
C1M. Depression is a chemical imbalance.	
C1N. Depression is chronic and likely to reoccur.	
C1O. Depression is treatable.	
C1P. Other?	

C3B. The person is talking about how they previously attempted to commit suicide?	1=Yes 0=No
C3C. The person is talking about someone they know who wanted to commit suicide?	1=Yes 0=No
C3D. The person is talking about losing someone to suicide?	1=Yes 0=No
C3E. 19% of adolescents with MDD attempt suicide?	1=Yes 0=No
C3F. Over 800,000 people die worldwide due to suicide every year?	1=Yes 0=No
C3G. 90% of people who die by suicide had an underlying mental illness?	1=Yes 0=No
C3H. Each year 44,193 Americans die by suicide?	1=Y Other: _____
C3I. Men die by suicide 3.5 times more often than women?	0=No
C3J. Suicide costs the U.S. \$44 billion annually?	
C3K. Other?	
C4. Risk factors explicitly mentioned	
C4A. Personal history of depression?	1=Yes 0=No
C4B. Family history of depression?	1=Yes 0=No
C4C. Major life changes? If yes, which ones?	1=Yes 0=No
C4D. Trauma?	1=Yes 0=No
C4D1. Loss of a loved one?	1=Yes 0=No
C4D2. Natural Disaster?	1=Yes 0=No
C4D3. Other?	1=Yes 0=No
C4E. Stress? If yes, which ones?	1=Yes 0=No
C4F. Physical illnesses? If yes, which ones?	1=Yes 0=No
C4G. Some medication's side effects?	1=Yes 0=No

C5G. Other?	0=No
C6. Screening	
C6A. Patient Health Questionnaire for Adolescents (PHQ-A)?	1=Yes 0=No
C6B. Beck Depression Inventory (BDI)?	1=Yes 0=No
C6C. The general mention of getting a screening?	1=Yes 0=No
C6D. Other screening mentioned?	1=Y Other:_____ 0=No
C7. Psychotherapy	
C7A. A person mentioning currently going to receive talk therapy?	1=Yes 0=No
C7A1. If so, positive?	1=Yes 0=No
C7A2. If so, negative?	1=Yes 0=No
C7B. A person has already received talk therapy?	1=Yes 0=No
C7B1. If so, positive?	1=Yes 0=No
C7B2. If so, negative?	1=Yes 0=No
C7B3. Are they successfully treated?	1=Yes 0=No
C7C. A person knows someone who received talk therapy?	1=Yes 0=No
C7C1. If so, positive?	1=Yes 0=No
C7C2. If so, negative?	1=Yes 0=No
C7D. Recommending that others have psychotherapy?	1=Yes 0=No
C7D1. If so, Cognitive behavioral therapy?	1=Yes 0=No
C7D2. If so, Interpersonal therapy?	1=Yes 0=No
C7D3. If so, Problem solving therapy?	1=Yes 0=No
C7E. Explicitly stating not supporting psychotherapy for depression?	1=Y Other:_____ 0=No
C7F. Other?	
C8. Medication	
C8A. Suggesting the use or promotion of medication?	1=Yes 0=No
C8B. Antidepressants that are serotonin reuptake inhibitors	1=Yes 0=No
C8B1. Fluoxetine?	1=Yes 0=No
C8B2. Positive?	1=Yes 0=No

C8B3. Negative?	1=Yes 0=No
C8B4. Citalopram?	1=Yes 0=No
C8B5. Positive?	1=Yes 0=No
C8B6. Negative?	1=Yes 0=No
C8B7. Sertraline?	1=Yes 0=No
C8B8. Positive?	1=Yes 0=No
C8B9. Negative?	1=Yes 0=No
C8B10. Paroxetine?	1=Yes 0=No
C8B11. Positive?	1=Yes 0=No
C8B12. Negative?	1=Yes 0=No
C8B13. Escitalopram?	1=Yes 0=No
C8B14. Positive?	1=Yes 0=No
C8B15. Negative?	1=Yes 0=No
C8C. Antidepressants that are serotonin and norepinephrine reuptake inhibitors	1=Yes 0=No
C8C1. Venlafaxine?	1=Yes 0=No
C8C2. Positive?	1=Yes 0=No
C8C3. Negative?	1=Yes 0=No
C8C4. Duloxetine?	1=Yes 0=No
C8C5. Positive?	1=Yes 0=No
C8C6. Negative?	1=Yes 0=No
C8D. A person currently on medication?	1=Yes 0=No
C8D1. If so, positive?	1=Yes 0=No
C8D2. If so, negative?	1=Yes 0=No
C8E. A person was previously on medication?	1=Yes 0=No
C8E1. If so, positive?	1=Yes 0=No
C8E2. If so, negative?	1=Yes 0=No
C8E3. Are they successfully treated?	1=Yes 0=No
C8F. Explicitly stating not supporting medication for depression?	1=Yes 0=No
C8G. Talking about side effects of medication?	1=Y Other: _____ 0=No
C8H. Other medication mentioned?	

C9. Alternative Therapies	
C9A. Omega 3-fatty acid supplements?	1=Yes 0=No
C9A1. Positive?	1=Yes 0=No
C9A2. Negative?	1=Yes 0=No
C9B. St. John's Wort?	1=Yes 0=No
C9B1. Positive?	1=Yes 0=No
C9B2. Negative?	1=Yes 0=No
C9C. Yoga	1=Yes 0=No
C9C1. Positive?	1=Yes 0=No
C9C2. Negative?	1=Yes 0=No
C9D. Music therapy?	1=Yes 0=No
C9D1. Positive?	1=Yes 0=No
C9D2. Negative?	1=Yes 0=No
C9E. Massage therapy?	1=Yes 0=No
C9E1. Positive?	1=Yes 0=No
C9E2. Negative?	1=Yes 0=No
C9F. Tai chi?	1=Yes 0=No
C9F1. Positive?	1=Yes 0=No
C9F2. Negative?	1=Yes 0=No
C9G. Guided imagery?	1=Yes 0=No
C9G1. Positive?	1=Yes 0=No
C9G2. Negative?	1=Yes 0=No
C9H. Biofeedback?	1=Yes 0=No
C9H1. Positive?	1=Yes 0=No
C9H2. Negative?	1=Yes 0=No
C9I. Hypnosis?	1=Yes 0=No
C9I1. Positive?	1=Yes 0=No
C9I2. Negative?	1=Yes 0=No
C9J. Deep breathing?	1=Yes 0=No
C9J1. Positive?	1=Yes 0=No
C9J2. Negative?	1=Yes 0=No
C9K. Vitamin D?	1=Yes 0=No
C9K1. Positive?	1=Yes 0=No
C9K2. Negative?	1=Yes 0=No

C9L. Meditation? C9L1. Positive? C9L2. Negative?	1=Yes 0=No 1=Yes 0=No 1=Yes 0=No
C9M. Mindfulness C9M1. Positive? C9M2. Negative?	1=Yes 0=No 1=Yes 0=No 1=Yes 0=No
C9N. Other?	1=Y Other:_____ 0=No
C10. Promotion of healthy behaviors and Protective Factors	
C10A. Exercising?	1=Yes 0=No
C10B. Good sleep hygiene?	1=Yes 0=No
C10C. Good nutrition?	1=Yes 0=No
C10D. Decreased use of tobacco?	1=Yes 0=No
C10E. Decrease sugar intake?	1=Yes 0=No
C10F. Recommending another to get help or talk to someone?	1=Yes 0=No
C10G. Decreased use of alcohol?	1=Yes 0=No
C10H. Decreased use of other damaging substances?	1=Yes 0=No
C10I. Academic achievement/intellectual development?	1=Yes 0=No
C10J. High Self-esteem?	1=Yes 0=No
C10K. Emotional self-regulation?	1=Yes 0=No
C10L. Good coping skills?	1=Yes 0=No
C10M. Engagement in school?	1=Yes 0=No
C10N. Engagement with peers?	1=Yes 0=No
C10O. Engagement in community?	1=Yes 0=No
C10P. Engagement in athletics?	1=Yes 0=No
C10Q. Engagement in creative outlets?	1=Yes 0=No

C10R. Engagement in employment?	1=Yes 0=No
C10S. Engagement in religion or spirituality?	1=Yes 0=No
C10T. Engagement in culture?	1=Yes 0=No
C10U. Other?	1=Y Other:_____ 0=No
C11. Electroconvulsive Therapy	1=Yes 0=No
C11A. Positive?	1=Yes 0=No
C11B. Negative?	1=Yes 0=No
C12. Typology of Depression	
C12A. Major depressive disorder?	1=Yes 0=No
C12B. Postpartum depression?	1=Yes 0=No
C12C. Seasonal affective disorder?	1=Yes 0=No
C12D. Bipolar disorder?	1=Yes 0=No
C12E. Other?	1=Y Other:_____ 0=No

Notes about video:

Appendix B

Instrument Changes Post Pilot Test

Source/Uploaded by:

Add University

Format:

Remove F2

F3 - Talk by professional / professional talk / professional presentation

Add Music video

Add Movie trailer

Add News

Home Video/Blog – clarify home video does not need to be recorded in home

Purpose/Orientation:

Add Support

Remove P4 Blog

Content:

Add Chemical imbalance

Add Chronic

Add Treatable

Add Lonely

Remove C2E

Remove C2I

C2K add the word Shame

Suicide:

C3A add “currently” for present tense

C4C - Major life changes = ex: job loss, break up

C4F - Physical illness = mental or physical illness ex: anxiety

C5D - Stigma or taboo

C12A - Change Major depressive disorder to simply "depression"

Risk Factors:

C4F. Change physical illness to mental and physical illness

Add Alcohol

Add Drugs

Add Addiction

Add Struggled with identity

Stigma:

Add Combating stigma (defined as – a call to normalize depression and talk more about depression)

Add Judgment (defined as person feeling judged by others)

Psychotherapy:

Add person not supporting psychotherapy - Claiming it doesn't work

Medication:

Add person not supporting medication - Claiming it doesn't work

Add Was on medication – positive or negative

If so, successfully treated?

Alternative Therapy:

Add Vitamin D

Journaling/writing

Condense Mind Body to include meditation and yoga and mindfulness

Add other supplements

Protective Factors:

C10K Athletics and/or creativity outlets

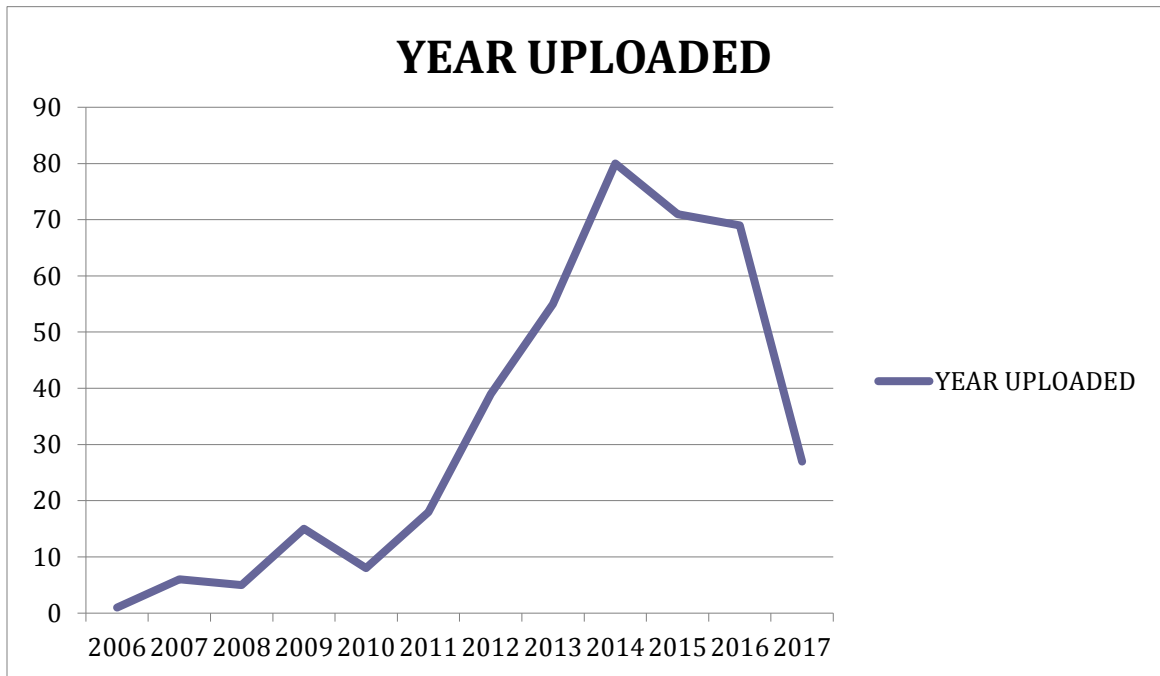
C10J Peers and/or community engagement

All variables were coded yes if the video was talking about or demonstrating through acting the codes out.

Appendix C

Video Upload Year and Length

year	Freq.	Percent	Cum.
2006	1	0.25	0.25
2007	6	1.52	1.78
2008	5	1.27	3.05
2009	15	3.81	6.85
2010	8	2.03	8.88
2011	18	4.57	13.45
2012	39	9.90	23.35
2013	55	13.96	37.31
2014	80	20.30	57.61
2015	71	18.02	75.63
2016	69	17.51	93.15
2017	27	6.85	100.00
Total	394	100.00	



tot_time_min					

	Percentiles	Smallest			
1%	.85		.5166667		
5%	1.433333	.5166667			
10%	2.25	.75		Obs	394
25%	3.766667	.85		Sum of Wgt.	394
50%	6.666667			Mean	16.60025
		Largest		Std. Dev.	33.07685
75%	16.43333	140.5833			
90%	38.5	150.0833	Variance	1094.078	
95%	60	180.6333	Skewness	8.269457	
99%	140.5833	482.4333	Kurtosis	104.5333	