Attitudes towards schizophrenia on YouTube: A content analysis of Finnish and Greek videos

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Objective: To investigate attitudes towards schizophrenia and people with schizophrenia presented in YouTube videos.

Methods: We searched YouTube using the search terms “schizophrenia” and “psychosis” in Finnish and Greek language on April 3rd, 2013. The first 20 videos from each search (N = 80) were retrieved. Deductive content analysis was first applied for coding and data interpretation and it was followed by descriptive statistical analysis.

Results: A total of 52 videos were analyzed (65%). The majority of the videos were in the “Music” category (50%, n = 26). Most of the videos (83%, n = 43) tended to present schizophrenia in a negative way, while less than a fifth (17%, n = 9) presented schizophrenia in a positive or neutral way. Specifically, the most common negative attitude towards schizophrenia was dangerousness (29%, n = 15), while the most often identified positive attitude was objective, medically appropriate beliefs (21%, n = 11). All attitudes identified were similarly present in the Finnish and Greek videos, without any statistically significant difference.

Conclusions: Negative presentations of schizophrenia are most likely to be accessed when searching YouTube for schizophrenia in Finnish and Greek language. More research is needed to investigate to what extent, if any, YouTube viewers’ attitudes are affected by the videos they watch.

Keywords Online videos, YouTube, social media, mental disorders, content analysis

INTRODUCTION

YouTube is the third most popular website globally (1). To anyone with an Internet connection it provides free and easy access to millions of videos (2) and on any topic, including healthcare (3). Considering that the number of online health-seekers is constantly increasing (4), we could assume that videos could be a useful and widely used channel to provide health information on a popular website (3). On the other hand, if the content of the information presented is not valid and reliable, it could mislead video viewers and...
potentially sustain the stigma related to a disorder (5). It is therefore important to know how YouTube videos present mental disorders, thus cultivating perceptions about a highly stigmatizing disorder to its viewers (6).

A considerable amount of research has explored the presentation of mental disorders in traditional mass media, such as television and films (7–10), or newspapers and magazines (6,11–15). Despite the Internet being one of the seven forms of mass media (16) little is known about how mental health disorders are presented online or about the quality of the information provided. Recent studies have investigated YouTube videos disseminating information about various health issues, for example, smoking (17), fat stigmatization (18), prostate cancer (19), self-injury (20), acute myocardial infarction (3), anorexia (21), dental fear (22), seizures and epilepsy (23), or physical examination of cardiovascular and respiratory systems (24). Investigating how mental disorders are presented in the most popular video-sharing website is crucial, since they may promote negative attitudes towards mental disorders. Negative beliefs about mental illness (stereotypes) and agreement with these beliefs lead to negative reactions (prejudice) (25). It has been shown that these negative beliefs may make people internalize viewpoints which reflect devaluation and discrimination (26) towards those diagnosed with a mental illness, which is further linked to mental illness stigma (27).

Stereotypes and prejudice towards mental illness and people with mental illness result from misconceptions about the disorder and can lead to stigmatization of this population group (28). The presence of stigma may discourage people with the diagnosis from seeking treatment (29), impair the effectiveness of treatment (30), inhibit integration into society (31), while adding an economic burden through lost productivity and unemployment (32). Stigma related to schizophrenia is a worldwide phenomenon (33). Among the European member states public attitudes towards people with mental illness may be very diverse (34). Specifically in Greece, the general public has stigmatizing attitudes towards people with schizophrenia (35,36), while in Finland stigma is prevalent but in a better situation (37). Finland and Greece represent two European extremes in people’s beliefs about the degree of devaluation and discrimination towards people with mental disorders (34) and about the integration of their primary care services (38).

Fighting against the stigma of mental disorders is a global issue (39), especially for schizophrenia, which is among the most stigmatizing medical conditions (40). Since the mass media has a role in forming public opinion (41), and public opinion is connected to stigmatization (42), public attitudes may be an important target for anti-stigma interventions (42). YouTube could potentially be a tool for disseminating reliable and anti-stigmatizing information about mental illness, since videos are a viable option for health education, especially among populations with low literacy levels (43). However, misleading health-related videos are evident in YouTube videos (21).

Considering YouTube’s popularity and the vast number of videos available (21), we can assume that it is very likely for every Internet user, including someone with a mental health condition, to search for mental health information on YouTube. Accordingly, preliminary data is available to show that people search YouTube for mental health information (44). To the best of our knowledge, no study has examined the presentation of schizophrenia in
YouTube videos. The topic is significant because the study could raise awareness about the importance of regulating the content of YouTube, since it could potentially influence viewers’ perceptions of highly stigmatizing disorders (5,18), such as schizophrenia. In this paper we will investigate the presence of two stigma components: stereotypes (negative beliefs about a group), and prejudice (agreement with negative beliefs that result in negative emotional reactions) (28).

Thus, the overall purpose of this study was to visit, identify and describe the YouTube videos which are most likely to be watched when someone is searching for videos related to schizophrenia. The ultimate aim was to identify and highlight the attitudes presented towards schizophrenia or people with schizophrenia in YouTube videos in Finnish and Greek language. In this study we defined negative attitudes as: negative beliefs about people with mental illness and/or endorsement of these beliefs resulting in emotional reactions, while positive attitudes were those which presented positive expectations regarding people with mental illness (25). In this article the following research questions will be answered: (1) What kind of attitudes towards schizophrenia or people with schizophrenia are presented in Finnish and Greek YouTube videos? (2) How do Finnish and Greek YouTube videos tend to present schizophrenia or people with schizophrenia? (3) Is there any difference in attitudes towards schizophrenia or in the general presentation of the disorder between Finnish and Greek YouTube videos?

METHODS

Design
Cross-sectional study design using a non-probability purposive sample (45) was used in this study. Deductive content analysis was applied in data coding. Deductive content analysis was selected because we aimed to create a coding tool with categories based on existing theories (46).

Data collection
The data collection was made from YouTube (http://www.youtube.com) without creating a user account. As of April 2013, YouTube has been the third most popular website globally, and specifically in Finland and in Greece (47). These countries were targeted as mental illness stigma, is evident in both (35–37), but they have been found to represent two European extremes in people’s beliefs about the degree of devaluation and discrimination towards people with mental disorders (34).

On April 3rd, 2013, YouTube was searched to identify videos (ignoring video Ads) describing schizophrenia (Figure 1). The default search parameters were preserved, with selected language as English and not Finnish/Greek, since it only changes the interface without influencing the search (48). The “country” option, which affects which country or region’s content (videos and channels) the user would like to view, was switched to “Finland” (when Finnish terms were searched for) or “Greece” (when Greek terms were searched for). The search terms “schizophrenia,” and then “psychosis” were typed in Finnish (“skitsofrenia,” “psykoosi”) and in Greek (“σχизοφρένεια,” “ψυχοσοφία”) language (Figure 1). These terms were selected because they both reflect medical
definitions of schizophrenia but are nonetheless simple, requiring no medical expertise and thus preferred among online health seekers (49).

The first 20 results for each search in Finnish and Greek language were collected, since a typical Internet user is unlikely to click on more than the twenty first search results (50). All screened results were saved in PDF format (Portable Document Format), and their videos were downloaded. All videos in Finnish/Greek language, or in a language other than Finnish/Greek including subtitles in Finnish/Greek were included likewise those from which a connotation to schizophrenia/psychosis was present and a judgment on the attitudes of mental illness could be determined. If there was a playlist among the results, only its first video was included. Videos excluded were those which had already been analyzed and which appeared more than one time (duplicate), the videos which were not in the user’s native language (Finnish/Greek), channels (if among search results), those unavailable or incomprehensible (their content was not available or could not be understood), or incidental. Those videos were classed as incidental which were produced in the results simply because they belonged in a playlist called “schizophrenia”/“psychosis,” or because, e.g. the music band’s name was “schizophrenia”/“psychosis” without appearing to present a connotation whatsoever to the disorder or those diagnosed. As videos convey a rich semantic presentation through synchronized aural (audio), visual and textual presentations over a period of time (51), duplicates were considered to be only the videos which were absolutely identical (same aural, visual and textual content) with a previously analyzed one.

A total of 80 videos were retrieved with the search terms “schizophrenia,” and “psychosis” (40 in each language) by CA. After screening, 28 videos were excluded (35%), which left us with 52 videos for further analysis (n = 24, 60% of the Finnish videos; n = 28, 70% of the Greek videos) (Figure 1).

Instruments for data coding
To the best of our knowledge, there are no tools evaluating YouTube videos as regards attitudes towards schizophrenia, or mental illness in general (52).
Therefore, a coding tool was developed based on Corrigan’s matrix (25) of how individuals might stigmatize or think optimistically about people with mental illness, and on the adapted categorization by Park et al. (53) of negative and positive/neutral viewpoints on schizophrenia. The focus of the content analysis was both on the manifest and the latent content (54) of the videos. This was decided because we aimed not only to identify the obvious attitudes towards schizophrenia presented in each video component, but also to try to identify potential underlying meanings within each video (54).

First, basic information was collected on all videos, such as: video category, year of video upload, upload source (health professional or organization, commercial or civilian), number of views, number of likes, number of dislikes, number of favorites, viewers’ top location, viewers’ gender, viewers’ age group, and number of comments.

Second, coding was extended to identify attitudes (25) towards mental illness or people with mental illness within each video according to previous studies (25,53) (Table 1). There were two categories of attitudes: (1) positive/neutral (recovery, real life goals, empowerment, objective, other positive), and (2) negative (dangerousness, unpredictability, incompetence, childlike, blame, contagion, fear, anger, pity, disgust, other negative attitudes) (Table 1). One video might present various types of attitudes (for example, not only positive/neutral, but also negative). The “Other” classification was added to both categories (positive/neutral, and negative), in case an attitude was identified but could not be classified to the aforementioned groups. Where a video was found to present “Other” positive/neutral or negative attitudes (scored “1”), there was the possibility that more than one attitude were present and these were all documented.

In the analysis of the YouTube videos presence or absence of an attitude was scored with either “yes” (1) or “no” (0). The presence or absence of attitudes was noted for all three video components (aural, visual, textual or combinations of these). In addition, the exact time that a specific attitude first occurred in a video, was also recorded (hour:minute:second).

Third, coding was further applied to classify the selected videos into two categories: positive/neutral, or negative (yes = 1, no = 0), according to how each video generally tended to present mental illness or people with mental illness, based on the manifest and the latent content. Positive/neutral were the videos which tended to present schizophrenia in a positive or neutral way, e.g. focusing on the recovery of people with schizophrenia, presenting the disorder in an objective way (25,53), or presenting the difficulties caused by the disorder without, however, making misleading claims or focusing solely on negative characteristics. Negative were the videos which tended to refer to schizophrenia or people with schizophrenia by presenting only negative beliefs or endorsing negative beliefs resulting in emotional reactions (prejudice) (25), e.g. presenting a serial killer while the video was entitled “schizophrenia,” or using the terms “schizophrenia”/“psychosis” as a metaphor for something negative e.g. when a video presented a love song comparing obsessive love with schizophrenia.

The coding was conducted independently by two researchers (CA for the Greek data; SS for the Finnish data). The data analysis protocol was provided and training about data coding was offered before the data analysis process.
Table 1. Description of positive/neutral, and negative attitudes towards schizophrenia (adapted from Corrigan (25) and Park et al (53)).

| Positive/Neutral | Negative beliefs about mental illness or people with mental illness (stereotypes): |
|------------------|-------------------------------------------------------------------------------------|
| Positive expectations regarding people with mental illness: | Dangerousness: because of their mental illness, people are likely to become violent. |
| – Recovery: belief that recovery from a mental illness is possible. | Unpredictability: their violence is exacerbated by never being able to tell how a person with mental illness will react. |
| – Real life goals: people with mental illness can have real life goals like everyone else, e.g. college, employment, marriage, etc. | Incompetence: people with mental illness are unable to live independently or manage anything but the simplest of jobs. |
| – Empowerment: people with mental illness have an active role in the decisions made about their healthcare and/or lives. | Childlike: people with mental illness need an authoritarian figure to make decisions for them just like a parent to a child. |
| – Objective: medically appropriate beliefs and/or natural emotional reactions, where there is no intention to associate the disorder or person with adverse events e.g. “if you take your medication you can have a functional life.” | Blame: people with mental illness choose to be sick due to lack of moral backbone. |
| – Other positive beliefs/expectations: e.g. “solidarity for people with mental disorders.” | Contagion: people who associate with the mentally ill will develop the same kind of symptoms and disabilities. Endorsement of negative beliefs and/or presence of negative attitudes (Prejudice): |
| | – Fear: because they are potentially violent; people with mental illness are frightening. |
| | – Anger: people with mental illness escape many of the responsibilities of adult life and deserve public anger. |
| | – Pity: people with mental illness are pitiful. |
| | – Disgust: at a gut level, people with mental illness are repulsive. |
| | – Other negative beliefs or attitudes present: e.g. split personality, obsession, impolite, etc. |

(five weeks all together). During training, coders discussed the items of the tool and how they perceived each one. They both tested their rating after watching and assessing an English language video (since they were native Greek or Finnish language speakers and communicated in English), to ensure their common understanding of the coding tool and analysis process. In case of any disagreement, the opinion of a third person (MV) was ensured. This study was approved by the University of Turku Ethics Committee.
Data quality analysis

The steps of the data analysis were the following. First, the basic information from all videos (Finnish and Greek) was collected by the first author. Second, the identification of positive/neutral and negative attitudes towards mental illness or people with mental illness identified in each video was applied by a single rater for each language (CA for the Greek, SS for the Finnish data) in an Excel table. Third, after both raters had watched each video and read its accompanying title, they decided whether the video tended to present schizophrenia or people with schizophrenia in a positive/neutral or negative way and justified their judgements in an Excel table (Supplemental file). The criteria for this judgement were both the manifest and the latent content of the videos. After the whole process the data were transferred to SPSS v. 21.0 (IBM Corporation, Somers, NY).

After deductive data categorization, the data was analyzed with descriptive statistics to describe individual characteristics of each variable (frequencies, median, min, max, quartile first, quartile third, range). Differences between Finnish and Greek data were compared with cross tabulation and Fisher’s Exact tests, where $p < 0.05$ was taken to be statistically significant. The data were analyzed with SPSS. Wilcoxon rank sum test was used to compare the numbers of views, likes, dislikes, favorites, and comments, between the Finnish and Greek videos.

The inter-rater reliability between the raters of each language was evaluated (one Greek native, one Finnish native). The raters were given instructions on how to score each item of the protocol. Additionally, they read official guidelines concerning schizophrenia (55), to ensure a shared understanding of objective beliefs about the disorder’s symptoms and treatment. At the end of the analysis process, the Finnish data and scoring were presented to the Greek rater and vice-versa. This process was enhanced by having available the specific video component (aural, visual, textual) in which an attitude was identified, and the exact time recorded (see second step in data analysis). If there was still any disagreement, it was resolved through discussion between the raters (and the third person if needed) and by giving a rationale for each coding.

As a final step, intra-rater reliability/stability of the content analysis (56) was examined by reanalysing 50% of the included data (12 Finnish/14 Greek language videos) and calculating the number of recoded items (cells). For the Finnish data, out of the 204 cells one mistake was found, while for the Greek data and the 238 cells two mistakes were found, which yielded good agreement percent between the original and re-rated data (99.5% for Finnish, 99.2% for Greek).

RESULTS

Description of the YouTube videos’ general information

Out of the total of 52 videos, with overall duration of 4 h and 51 min, the most typical video category was music ($n = 26$, 50%), followed by education ($n = 11$, 21%) (Table 2). Most videos were uploaded in 2011 ($n = 16$, 31%), and the fewest in 2013 (as of April 3rd, $n = 6$, 11%). Most viewers appeared to be male ($n = 21$, 58%), between ages 45-65 ($n = 16$, 44%) (Table 2). Viewers’ ages for the
Greek videos appeared to be higher than for the Finnish videos and statistically significant ($p = 0.002$) (Table 2). The upload source of most of the videos was civilian ($n = 41$; Finnish = 20, Greek = 21), followed by commercial ($n = 8$; Finnish = 4, Greek = 4), and health professional/organization ($n = 3$; Finnish = 0, Greek = 3).

The range of views was from 31 to 136 128, median 1518 (Table 3). On average there were 4 “Likes,” 0 “Dislikes,” while the median for Favorites was 2. In this part of the analysis, no statistically significant differences were found between the Finnish and Greek videos.

### Attitudes towards schizophrenia in Finnish and Greek YouTube videos

For all the included videos, the attitudes towards schizophrenia were identified. A significant number of Finnish ($n = 16$, 67%) and Greek videos ($n = 25$, 89%) were found to present other positive/neutral and/or negative attitudes which were not listed in the coding tool. Positive or neutral attitudes were identified in 18 videos, while 4 videos presented “Other” positive attitudes. The most frequent positive/neutral attitudes were those which described the disorder in a neutral, objective, medical-oriented way ($f = 11$), and/or presented the possibility of recovery ($f = 4$) (Table 4). A considerable number of positive/neutral attitudes found in YouTube videos belonged in the “Other” positive/neutral group (8%) (Table 4). These “Other” positive/neutral attitudes were, for example in Finnish videos: solidarity towards people with schizophrenia ($f = 1$), they are capable of joking about their illness (sense of humour) ($f = 1$); while in Greek videos: solidarity towards people with schizophrenia ($f = 1$), they may be noteworthy ($f = 1$) and functional ($f = 1$).

#### Table 2. General information on the videos included ($N = 52$).

| General information | Total | Finnish | Greek | $p$ Value* |
|---------------------|-------|---------|-------|------------|
| Video categories    |       |         |       |            |
| Education           | 11 (21)| 5 (21)  | 6 (21) | 0.99       |
| Music               | 26 (50)| 12 (50)| 14 (50)|            |
| Film and animation/Comedy | 5 (10) | 2 (8)  | 3 (11) |            |
| People and blogs/News & Politics | 5 (10) | 2 (8)  | 3 (11) |            |
| Entertainment/Gaming/Sport | 5 (10) | 3 (13)| 2 (7)  |            |
| Year of upload      |       |         |       | 0.24       |
| 2013 (until 3 April)| 6 (12) | 1 (4)  | 5 (18) |            |
| 2012                | 12 (23)| 7 (29) | 5 (18) |            |
| 2011                | 16 (31)| 6 (25) | 10 (36)|            |
| 2010                | 10 (19)| 7 (29) | 3 (11) |            |
| 2009                | 8 (15) | 3 (13) | 5 (18) |            |
| Gender              |       |         |       | 0.50       |
| Female              | 15 (42)| 6 (33)| 9 (50) |            |
| Male                | 21 (58)| 12 (67)| 9 (50) |            |
| Age group           |       |         |       | 0.002      |
| 13–24               | 12 (33)| 6 (33)| 6 (33) |            |
| 25–44               | 8 (22) | 8 (44)| 0 (0)  |            |
| 45–64               | 16 (44)| 4 (22)| 12 (67)|            |

*Fisher’s Exact Test.
Negative attitudes were identified in 31 videos, while 39 videos presented “Other” negative attitudes (Table 5). The most frequent negative attitude was dangerousness ($f = 15$), followed by unpredictability ($f = 4$) and blame ($f = 4$) (Table 4). Four negative attitudes (contagion, anger, pity and disgust) were not identified in the Finnish and Greek videos. In addition, a serious number of “Other” negative attitudes was identified, either using the term schizophrenia/psychosis to denote something else than the disorder or presenting inaccurate information about people with mental illness (Table 5). The term was used in Finnish data mostly to describe the disorder’s illusions ($f = 3$) and to suggest deceitfulness ($f = 3$); while in Greek data mostly to describe obsessive love ($f = 7$). Inaccurate information about people with mental illness in Finnish videos mostly implied suicidal/self-destructive ($f = 4$) behaviors or thoughts;
while Greek videos often presented people with mental illness to be in a distorted world or being irrational ($f = 6$) (Table 5).

Attitudes could be detected in any of the video components (aural, visual and textual). Dangerousness was identified, for example, in the aural component of a video presenting e.g. screams, or recounting of a violent situation; in visual components when e.g. a person grabs a girl and kills her, human-like animations stabbing each other on the head, a war scene with a dead person lying next to guns, or when a hammer is used to smash an egg and blood is pouring out; in textual components, e.g. a video including “schizophrenia” in its title, starts stating: “The following movie is based on real events” while it presents a killer and an ex-convict. Incompetence was identified when, e.g. a person with schizophrenia is presented not taking care of his general health (aural during speech) “I want everything ready, I do whatever I want because I have schizophrenia” (aural in song lyrics), a person with psychosis was telling that he could not brush his teeth (aural), a person with schizophrenia was wandering alone at home and not knowing what to do (visual).

**Table 5.** Other positive and negative attitudes towards schizophrenia in videos.

| Other attitudes                                | Total N | Total F | Finnish f | Greek f |
|------------------------------------------------|---------|---------|-----------|---------|
| Other positive                                 | 4       |         |           |         |
| Solidarity towards people with schizophrenia  |         | 2       | 1         | 1       |
| Can be noteworthy                              |         | 1       | 0         | 1       |
| Can be functional                              |         | 1       | 0         | 1       |
| Can joke their illness (sense of humour)       |         | 1       | 1         | 0       |
| Other negative                                 | 39      |         |           |         |
| Term “schizophrenia/psychosis” is used to denote: |         |         |           |         |
| Focus on disorder’s illusions                  |         | 3       | 3         | 0       |
| Deceitfulness                                  |         | 3       | 3         | 0       |
| Obsessive love                                 |         | 7       | 0         | 7       |
| Multiple personalities                         |         | 1       | 0         | 1       |
| Sarcasm (use of irony)                         |         | 4       | 1         | 3       |
| Chaos                                          |         | 3       | 2         | 1       |
| People with mental illness are/have:           |         |         |           |         |
| Contradictory feelings                         |         | 2       | 0         | 2       |
| Touchy/Short-tempered                          |         | 2       | 0         | 2       |
| Suicidal/Self-destructive                      |         | 6       | 4         | 2       |
| Confused/Restless                              |         | 5       | 2         | 3       |
| In a distorted world/Irrational                |         | 6       | 0         | 6       |
| Rude/Impolite                                  |         | 2       | 1         | 1       |
| Worthless                                      |         | 2       | 1         | 1       |

Presentation of schizophrenia in Finnish and Greek YouTube videos

The majority of the videos tended to be negative towards schizophrenia or people with schizophrenia ($n = 43, 83\%$). Negative videos were, for example, entitled “schizophrenia” or “psychosis” and used the term to denote, for example, obsessive love (song lyrics: “I have a psychosis for you and my heart is yours”), sarcasm (a video presented the symptoms of schizophrenia in text, while in parallel gave sarcastic examples not related to the disorder),
unpredictability (song lyrics: “I was also born in the time of schizophrenia, once it flies, then it walks”), something is non-existent while focusing on illusions (song lyrics: “love is like psychotic illusions, it does not exist”). Negative videos were also found in the education category, where not all videos seemed to have an educational purpose. For example, one video including “schizophrenia” in its title used the term as a metaphor for the multiple personalities/faces people in our society have. Another video, again having the term “schizophrenia” in its title, initially claimed that its goal was to educate viewers about the disorder, but in fact it presented sarcastic examples not related to the disorder.

Nine videos (17%) tended to present schizophrenia in a positive or neutral way. Seven out of nine videos showed health professionals who shared their expertise about mental disorders, e.g. a video entitled “What is schizophrenia” presented a doctor who was talking about the disorder. One video which was a television documentary entitled “Mental collapse” and showed a person diagnosed with the disorder talking about his experience. Additionally, one animated video presented how symptoms of schizophrenia may affect a person’s life and how the disorder progresses (Supplemental file).

**Differences between Finnish and Greek videos**

The Finnish and Greek videos were compared in order to identify potential significant statistical differences, first, in the identified attitudes towards the disorder or those diagnosed, and second, in the general presentation of schizophrenia. More specifically, and regarding the attitudes identified in the Finnish and Greek videos (Table 4), no statistically significant difference was found. The presence of dangerousness was the more diverse attitude, but still not statistically significant (17% versus 39%, $p = 0.12$; Table 4). Dangerousness was apparent in the Finnish videos as: recounting of a violent situation (aural), hammer smashes egg and blood coming out (visual); while in the Greek videos as: broken screen (visual), stabings (visual), screams (aural), dead bodies (visual), guns (visual), “I am schizo, I hit from below” (aural/song lyrics), dragging someone by the feet (visual). In the Finnish videos the most prevalent attitude was neutral/objective ($n = 5$, Table 4), dangerousness ($n = 4$, Table 4), and suicidal ($f = 4$, Table 5). In the Greek videos the most prevalent attitude was dangerousness ($n = 11$, Table 4) when the term was used to denote obsessive love ($f = 7$, Table 5), neutral/objective ($n = 6$, Table 4), and people with mental illness belong in a distorted world/irrational ($f = 6$, Table 5). The classifications found in the “Other” positive/neutral and negative categories, were not compared since the purpose of this part was to describe what potential additional attitudes were identifiable which the instrument failed to detect.

Second, when the general presentation of schizophrenia was compared, the Finnish videos tended to be mostly negative ($n = 19$, 79%), like the Greek videos ($n = 24$, 86%) and no statistically significant difference was found ($p = 0.72$). About a fifth of the Finnish videos ($n = 5$, 21%) tended to present schizophrenia in a positive or neutral way, likewise the Greek videos ($n = 4$, 14%). Among the Finnish videos entitled (or including in the title) the terms “schizophrenia” or “psychosis” it was common to present suicidal thoughts or actions e.g. “Life is a misery way too long, and it is not going to change.”
“When I am dead I am not rancorous anymore” (song lyrics). Nearly as common in Finnish videos was aggressiveness, e.g. a singer shouts “Group graves!” and “Violence!” Greek videos entitled (or including in the title) the terms “Schizophrenia” or “Psychosis” presented mainly music videos whose lyrics used the term to refer to obsessive love, e.g. “I want to be all the women you have or you will ever kiss. Some call it schizophrenia,” “You are my psychosis, my madness and my logic.”

**DISCUSSION**

**Main findings**

In this study we searched YouTube and examined the first located videos related to schizophrenia/psychosis. Only a few of the videos included in our study presented positive/neutral attitudes towards the disorder, which indicates the limited resources for those who potentially search YouTube for health information related to schizophrenia. The vast majority of the Finnish and Greek language videos included tended to present negative attitudes towards schizophrenia or people with schizophrenia. Considering YouTube’s popularity, included in the countries of interest here, it has the potential to influence the public’s perceptions of schizophrenia, as other forms of media have done before (57,58). This concurs with earlier studies conducted in Finland (37,40) and Greece (35,59) which showed that a considerable proportion of the public has negative perceptions of and attitudes towards people with mental illness. Our finding is also important because YouTube hosts a significant number of videos entitled “schizophrenia”/“psychosis” in Finnish and Greek language, and the total number of views of the videos assessed was 467,753.

Dangerousness appeared very frequently in both languages, meaning that people with schizophrenia are assumed to be dangerous. For many years, this negative characteristic has been evident in various countries and in different forms of media, like newspapers (53), magazines (6,15), and television (7–9). It appears that online videos also follow this negative representation of mental illness which could sustain stigma against schizophrenia (25,35). As YouTube was created in 2005 as a video-sharing platform, not specifically as an online health information provider, less than one fifth (17%) of the 52 videos assessed tended to be positive/neutral towards schizophrenia. This means that the main purpose of the videos reviewed was not to educate viewers about the disorder. Nevertheless, eleven videos were under the education category, but as stated earlier, their educational purpose is questionable. For example, a Greek video, although clearly stating that its goal was to “familiarize viewers with schizophrenia” and to “approach the patients from a more human perspective,” basically used the term in a sarcastic manner.

In 2010 the GAMIAN study (34) showed that the level of stigma that Finnish people with a mental illness feel towards themselves (internalized stigma) is the lowest in Europe while Greek people, in contrast, were at the opposite extreme. As a result, we assumed that Finnish and Greek YouTube videos might present schizophrenia/psychosis in different ways. Although no significant difference was found in the general presentation of schizophrenia in either language, the presentation of dangerousness was more apparent in the Greek-language videos. This suggests that Greek viewers are more
frequently exposed to the assumption that people with schizophrenia are
dangerous. However, both Finnish and Greek YouTube viewers are equally
exposed to negative attitudes towards schizophrenia. Future studies need to
investigate whether and to what extent YouTube videos affect viewers’
perceptions about mental illness.

Limitations
There were several limitations in this study. First, this cross-sectional study
was based on current availability of information about schizophrenia on
YouTube. It only represents the first 20 videos of each search available until
April 3rd, 2013, thus a sampling error cannot be excluded. Only the first 20
video results were included because it is generally uncommon for users to look
further. Second, every minute 100 h of video are uploaded to YouTube (60),
thus the same search could generate different video results at a future
search. In addition, if the search is made from different users or at different
times, it might produce different results, for example some videos might move
up or down the search chain. The Internet is a dynamic tool, therefore,
multiple searches could present a more accurate view of the nature of the
YouTube videos about the specific topic. Third, some may question whether our
search results were biased since the search was made via an institutional
computer, thus probable presence of firewall could restrict the generated
results. However, according to the IT Services of our University the institu-
tion’s firewall cannot affect the YouTube search results. Fourth, the location of
the search (Finland) may impact the search results causing replicability
limitations. Nevertheless, as reported on YouTube’s website, the location of the
search in not among the factors affecting the search ranging (61). Fifth,
although the year of the video upload was known, it is unclear when it was
filmed, thus, we cannot assess how current are the messages presented in the
video and if they reflect attitudes towards schizophrenia during this time
frame. Sixth, the reproducibility of the content analysis (56) was not examined,
since data was not scored by a second rater, which limited the study by not
being able to identify possible rater biases (62). Nonetheless, stability of the
content analysis was calculated. Seventh, the collected data regarding age,
gender, and top country, may be inaccurate, since when a YouTube profile is
created this information is not validated and may therefore be incorrect.
Finally, we developed and used a coding tool, first, to categorize the included
videos either positive/neutral, or negative, and second, to identify the attitudes
displayed towards schizophrenia in each video. The coding tool failed to
identify a significant number of “Other” attitudes (either positive/neutral or
negative). This suggests that future studies are needed to create a coding tool
which will assess every possible positive/neutral, and negative attitude
towards mental illness. Although we attempted to assess videos from various,
distinct categories with the same instrument, we do not propose a universal
quality standard for all YouTube videos.

The impact of the study
There is not enough evidence on how mental disorders are presented on video-
sharing websites, and specifically on the most popular one, YouTube. Thus,
with this descriptive study, we wanted to take an initial step in describing the
content viewers see when they search for schizophrenia or psychosis videos on YouTube. Knowing, what viewers potentially find and see in YouTube videos is important since video is a viable option for health education, especially among low-literacy populations (43).

A possible impact of this study could be the users’ adoption of a more cautious video content upload and retrieval when it comes to searches containing health-related terms. First, recently uploaded videos which include health terms or tags could be evaluated by certified volunteers as administrators (63) who could delete the videos if needed. YouTube provides the option to “flag” the video, in order to be reviewed by YouTube personnel and removes it if found inappropriate (64). Yet we wonder how easy is for the average YouTube user to recognize that a video disseminates false information or negative attitudes towards mental illness and flag it as inappropriate. Maybe all videos under the “Education” category should be reviewed and confirmed by YouTube personnel before uploading. In addition, verified educational videos could use tags of standardized terminologies to enhance the retrieval of health-related videos (65). Second, YouTube’s ranking search algorithm could be modified to generate first the medically oriented videos from trustworthy sources, every time a health term is searched. Third, health professionals and related organizations could be motivated to create and upload informative, medically oriented videos about mental health disorders. However, academic and medical centers which block YouTube access to their personnel, could allow them to use it for educational purposes (66). The upload source of the assessed videos, was mainly civilians and only three videos (all belonged in the Greek data and were three separate segments of a single television broadcast episode) were uploaded by one health professional (a psychologist). Having a few or even none videos uploaded by health professionals/organizations, might be the reason why schizophrenia was presented mainly in a negative way. Videos created and uploaded by health professionals/organizations might have a positive impact in minimizing the stigmatizing beliefs towards mental illness, since objective and reliable mental health information could be disseminated via YouTube videos. Fourth and outside YouTube’s territory, the media industry could be cautious when, for example, song lyrics mention highly stigmatizing health conditions, such as schizophrenia, in order to minimize the promotion of broadcast negative beliefs related to the disorder and those diagnosed. National organizations responsible for monitoring compliance with broadcasting legislation could be vigilant about how mental illnesses are presented to the public.

**CONCLUSIONS**

In this study, first-generated YouTube videos were reviewed, attitudes towards schizophrenia or people with schizophrenia were identified, and videos were categorized into positive/neutral or negative. Finnish and Greek YouTube viewers are likely to watch videos which tend to present schizophrenia negatively. Viewers are exposed to various negative attitudes which were promoted through the aural, visual and textual content of the videos. How schizophrenia and psychosis are presented specifically in YouTube videos has been a neglected field, since not many related studies could be found.
Our findings are similar to those of other studies on mental disorders assessing the first-generated results on other popular websites e.g. Google (67–69), and suggest that more research is needed not only on how mental disorders are presented online, but also how and if viewers (with or without mental disorders) perceive this information. Studies in this field could unveil missing pieces in the promotion of stigmatizing beliefs via the Internet.

**SUPPLEMENTARY MATERIALS**

Supplemental data for this article can be accessed on the publisher’s website.

**DECLARATION OF INTEREST**

The authors have no conflict of interest.

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