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Research Article

Is it possible to change the public stigma towards serious mental illnesses with a minor intervention?[1]

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Abstract

In this study was use quantitative design- experimental research. The sample included 21 students. Half of them were engineering students (n: 10) and the other ones were psychology students (n: 11). To observe the difference between stigma levels of students (n: 21), pre and post-test were conducted for both control and intervention group ten-fifteen days apart. Furthermore, participants divided in two parts as psychology and engineering students and possible differences between these groups were observed as well by using five measurements (Error Choice Test, Attribution Questionnaire-9, Empowerment Scale, Recover Scale, and Self- Determination Scale). Results of the analysis demonstrated that there is a statistically significant three-way interaction between time (pretest- posttest), group (intervention / control) and department (engineering / psychology) for The Empowerment Scale. Moreover, results of the analysis indicated that video intervention was effective to reduce public stigma toward people with mental illnesses in the Attribution Questionnaire Help Item (Q7) for psychology students. Furthermore, as it is expected, psychology students reported more stigma level than engineering students in both pre and post-tests of Recovery Scale. Mean Stigma Level score was higher in 'Control group Psychology students' than 'Control group Engineering students'. It means that psychology students reported more stigma on the idea of possibility of recovery from psychological illnesses. This difference between psychology and engineering students wasn't seen in the intervention group. Therefore, this findings show that video intervention was effective on reducing the stigma levels of psychology students regarding Recovery Scale results. Therefore, it can be said that being an engineering or psychology student changed the stigma level of students who were placed in control group but not in intervention group because stigma of psychology students towards people with mental illnesses were eliminated by the intervention considerably. Overall result of the study shows that analysis supported the idea of video as an intervention technique is efficient to decrease public stigma towards people with mental illnesses.

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Introduction

Many people with mental illnesses report moderate levels of mental illness stigma. These negative attitudes towards people with mental illness might create negative effects in people's lives. Lots of studies demonstrate that people who receive stigma seek help and use mental health care less. Stigmatization might cause other problems as well such as lower self-esteem, decreased quality of life, lower life expectancy, reduced hope for recovery, problems in social

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relationships, and embarrassment of close relatives or suicidal behavior etc. Stigma might be received from different groups such as health care staff, students, managers, co-workers, family members, and partners. Moreover, sometimes people with mental illnesses might internalize these stereotypes and it causes self-stigma.

In order to fight back with public stigma and self-stigma researchers conducted lots of studies. They have tried different interventions to change stigma towards people with mental illnesses and 'Contact' is one of these methods. Video and sometimes films as a contact method is used throughout the history. Video contact as an intervention to challenge stigma is found effective as much as other contact types such as live contact (face to face). Video generally costs low. It is easy to use and it can reach to lots of people. Furthermore, since its content doesn't change (as in live contact) from one conversation to another its validity might be considered higher and that's why it might be better to use recorded video in studies as it is done in the present study. To understand what we can consider as a mental illness and what are the effects of stigma; I would like to mention mental illness in one part, and stigma, its effects and related studies in the second part of the introduction.

Mental Illness

The line between mental distress and mental illness is not clear. To define something as a mental illness; cultural, political, economic values and also the scientific facts about how our psychology and biology alter, generate anguish and functional impairment should be considered. Psychologists Scott Lilienfeld and Lori Marino (1999) pointed out that mental cases differentiate into the degree of likeness to a disorder. In order to define something as a mental disorder just some weak/moderate/high correlated characteristics are necessary even if they are not enough to constitute a mental illness single-handedly. So, the more correlated characteristics they have, the more considered as mental illnesses they are.

Stigma

Goofman's most frequent definition of stigma was that of an "attribute that is deeply discrediting" and that decreases the bearer "from a whole and usual person to a tainted, discounted one" . Moreover, he described stigma as the relationship between an "attribute and a stereotype" (Goffman, 1963). Jones and colleagues (1984) defined stigma in six different dimensions: Concealability, Course, Disruptiveness, Aesthetics, Origin, Peril. Link and Phelan (2001) formed a different kind of stigma as a critique to take the focus of stigma as 'problem' and as a cognitive process. They argue that the concept of stigma should be more about how a person experiences stigma, discrimination or ostracism (Sayce 1998, as cited in Link et al., 2004).

Labeling

Link and Phelan argue that some of the differences between people are taken into consideration as more than others in the social world. Labeling would be seen as the first stage of stigma formation.

Stereotyping

Stereotyping comes to life when a person links the label/ difference of a person with unwanted features in their mind or people who are labeled might create stereotypes for themselves as well. For instance, let's imagine people with schizophrenia. They are considered as a label, a difference. One of the unwanted features is violence. If people link these two, they create a stereotype which assumes that people with schizophrenia are generally violent.

Separating

This factor of stigma happens when social labels express a separation between 'us' and 'them'.

Status loss and discrimination

Decreasing one's or one group's value, rejecting ad excluding them derive from labeling, stereotyping and separating them from the group that we consider as normal. Whether stigma directed toward labeled or non-labeled individuals, groups or institutions, explicit or implicit all of them result negatively and cause poorer living conditions for people who receive stigma.

Public and Self-Stigma

Public Stigma

Vogel and colleagues define the public stigma as stigmatizing perception that is supported by the common people. Those people believe that a person who wants to use mental health services is undesirable and socially unacceptable (Vogel, Wade, & Haake, 2006). Moreover, people who use mental health services are evaluated less proper and they are treated more in a negative way than people who don't receive treatment (Sibicky & Dovidio, 1986, as cited in Vogel et al. 2013).

Investigations of Pietro Barbetta & Enrico Valtellina (2015) showed how the effects of stigma might be even worse for people with autism syndrome. It has been indicated that many individuals with autism report being physically restrained, including being tied up, being forced to look into the eyes of educator, separated from parents, and subjected to therapeutic or educative rage. That is why reducing stigma towards people with mental illnesses that possessed by health care workers is very important.

Public stigma might lead to behavioral consequences like discrimination. According to studies these behavioral influences of public stigma would lead people into 4 different discriminative actions: 'Withholding help', 'avoidance', 'coercive treatment', 'segregated institutions'.

As it can be seen, public stigma may cause lots of different negative perceptions about people with mental illnesses who seek treatment and this perception may generate stereotyping, prejudice, and discrimination (Corrigan, 2004). Investigators demonstrated that those stereotypes and beliefs would cause several kinds of discrimination like avoidance, lack of opportunity, and loss of self-determination (Corrigan & Shapiro, 2010). People who received psychological help stated that they receive discrimination more than people who did not use psychological services (Jorm & Wright, 2008, as cited in Vogel et al. 2013). According to several studies, when people have a perception of the public stigma, their hope or expectancy for getting better is reported lower (Link, Struening, Neese-Todd, Asmussen, & Phelan, 2001; Perlick et al., 2001; Wright, Gronfein, & Owens, 2000, as cited in Vogel et al. 2001).

Self-Stigma

Investigations have deduced another term: Self-stigma. It is described as reduced self-esteem or sense of self-worth caused by a person's ideas on how she/he is unacceptable in social contexts (Vogel et al., 2007). Corrigan and Rao (2012) point out that self-stigma shows up when individuals internalize public attitudes/stigma and are affected by them negatively, such as reduced self-esteem or self-efficacy. Results of several studies showed that individuals who have a higher degree of anticipated self-stigma are more unwilling to request for help (Hinshaw SP 2007; Schomerus et al., 2009; Sirey et al., 2001, as cited in Pattyn 2014).

The Relationship between Public and Self-Stigma

Modified Labeling Theory explains self-stigma as an internalization of public stigma (Vogel et al., 2007). Effects of public stigma can be crucial in a person's life. It not just declines the seeking help behavior, but also self-esteem, self-efficacy and it inclines the social avoidance, likelihood of symptoms, feelings of distress and hopelessness (Corrigan, 2004). In order to solve this problem, researchers need to focus on interventions to reduce public stigma. By doing that, they can find good ways to prevent self-stigma from happening and its consequences. If we can find effective and easy to access interventions for reducing public stigma, and these interventions can reach to the general public by people with major power, I believe that it is possible for us to reduce it for good.

Strategies for Changing Stigma

Challenging Public Stigma

There are several anti-stigma programs in order to eliminate public stigma and self- stigma. These programs differs for public and self-stigma. Throughout the history researchers generally studied public stigma and how to reduce it. When we look from the perspective of social psychological that is especially associated with ethnic and gender minorities, we can group these programs in 3 sections: protest, education, and contact (Corrigan & Penn, 1999). Protests generally

are formed reactively against an event/idea etc. These protests try to reduce or eliminate the behavior that is unfavorable but they generally do not replace it with positive behaviors or emotions. Therefore, in my opinion, even though there are some positive results of protests as anti-stigma approach, its effectiveness is not certain. In order to see the actual effects of protests against stigma, it should be investigated more systematically and instead of only diminishing negative attitudes, these attitudes should be replaced with the positive ones. Education is one of the ways to challenge stigma. It gives actual information about mental illnesses so that stereotypes of people will change with these information. Educational anti-stigma programs may contain different techniques such as public service announcements, books, flyers, movies, videos, web pages, podcasts, virtual reality, and other audio-visual aids (Finkelstein et al., 2008; American Psychiatric Association, 1994; National Mental Health Association. American Opinions on Mental Health Issues. Alexandria: NMHA, 1999; Substance Abuse and Mental Health Services Administration, SAMHSA, 2002, as cited in Corrigan and Shapiro, 2010)

Educational anti-stigma programs are low-cost and accessible. It is also one of the most investigated anti-stigma program. Results of some studies are proven that people who have knowledge about a mental illness more, they show understanding more and their level of stigma and discrimination decline (Roman PM et al., 1981; Brockington I et al., 1993; Link BG & Cullen FT., 1986, as cited in Corrigan & Watson, 2002). Some studies demonstrated that in short term, educative anti–stigma programs help to reduce negative attitudes toward people with mental illnesses such as dangerousness and blame (Arboleda-Flórez & Sartorius, 2008, as cited in Corrigan & Shapiro, 2010). Moreover some studies supported the increment of positive attitudes toward people with mental illnesses after anti-stigma education program (Keane M., 1990; Corrigan PW et al., 2001; Holmes E et al. 1999; Morrison JK et al., 1980; Penn D et al., 1994, as cited in Corrigan & Watson, 2002). Some investigations also proved that there is a negative correlation between people who meet individuals with mental illnesses after an education program and approving psychiatric stigma (Holmes E. et. Al.1999; Corrigan PW et al, 2001; as cited in Corrigan & Watson, 2002). Researchers pointed out that if general public meet these persons with mental illnesses in daily life, as co-workers, as peers etc., interpersonal contact might get better after a while and it helps to overcome stigma.

Results of education programs are not always positive, there can be side effects and unintended results of some studies. Results of the studies showed that biological-focused education programs not just worsen the idea of people are responsible for their mental illnesses but also people' ideas about disease prognosis become worse after these educations (Phelan, 2005; Phelan, Yang & Cruz-Rojas, 2006, as cited in Corrigan & Shapiro, 2010).

Contact is another anti-stigma strategy. This strategy involves interpersonal contact with the individuals who have mental illnesses. This contact might be as one by one, as a group, face-to-face or by different means of communication such as video conference or telephone.

According to Corrigan (2005), people who meet individuals with mental illnesses show less prejudice. However, when we look at the big picture we can see that every type of contact is not effective, even sometimes it can cause more stigma. For instance, when we examine the stigma of health professionals toward individuals with mental disorders, we can see that it is higher than other people. They contact with people with mental disorders more than other people but they are more stigmatized and it is actually ironic since they need to help those people and their relationship with these people is more important than the others. (Schulze, 2007). Health professionals approve stereotypes of individuals with mental disorders. For example, they are more likely to say that these people with mental illnesses are more dangerous and less responsible than other people.

Why sometimes contact is effective in a positive way and sometimes not? Researchers believe that there are some moderating elements that can affect the results of the contacts, such as if it is an 1on1 communication, if they have shared goal, if person is disconfirming people's ideas about the disorder.

Results of some studies showed that if contact programs are conducted carefully, by considering moderators, positive results can be gathered. For instance, in the study of Corrigan and colleagues (2001), participants after

contacting with an individual with a mental disorder demonstrated positive progression related to their attitudes. Results also showed that 'contact' as an anti-stigma strategy proved to be more useful than other strategies, control groups, education and protest.

In the light of such information, I came to the conclusion that education and protest alone are not enough to change stigma in a positive way. I believe that 'contact' is the most useful strategy in stigma alteration methods and it can be combined with education or it can be used alone by considering all mediators. There are lots of studies which combined as education and contact, education alone, contact alone, contact in a face-to-face format or contact in a video format, film usage as a strategy etc. There are different types of studies in the literature that are done to reduce public stigma with different strategies by considering variations in culture, socio-economic status of countries, different professions, different age-groups etc. I carefully designed my study in the light of these variations and sustainability of positive effects throughout the course of time.

Video Intervention as an Anti-Stigma Strategy

Even though it has been discussed before in the part of 'Contact' about the video interventions as a strategy to reduce public stigma, it might be better to give some evidence about its efficiency before defining our study since video intervention was used as an anti-stigma strategy in the present study. Janousˇkova´ and colleagues (2017) made a systematic review to assess if video interventions can be used to effectively destigmatize mental illness among young people (age range of 14-26). They are included 23 studies in the final analysis (see Table 19) Most of the interventions were based on stigmatization toward people with schizophrenia (11 studies), five of them aimed stigma towards people with mental illnesses in general, two studies were based to help seeking behavior of people with mental illnesses and its relation to stigma, three studies were based on Tourette's syndrome, one with severe mental illnesses, and one with depression and ADHD. Follow-up measurements were found in 12 of the studies and their time range was between one week and four months. Only two of the studies carried out two follow-up evaluations. Some of the studies that are included used films, videos, education as tools to reduce public stigma. Studies that are included in the systematic review of Janousˇkova´ et al., (2017). Results of the review of Janousˇkova´ and colleagues (2017) demonstrated that 'social contact' factor that mentions of a narrative of the person with mental illness and a supportive information by experts showed most benefits in stigma change studies. Moreover, most of the studies that are able to change stigma contain the message of potential recovery or possibility to reach a good life despite of psychological problems. It is also reported that the video content should contain information about the psychosocial and biological explanation of mental illnesses because a balanced perspective of a psychological problem is more useful when stereotypes are challenged. Results showed that including the theme of suicide is not useful to reduce stigma. It has been demonstrated that videos that are entertaining were popular among young people and exposure to these videos can reduce negative attitudes about mental illness. Moreover, videos as an educative tool is found effective as well. Even though their quality is changed, results of the studies suggested that video as an anti-stigma intervention is useful in general. Most of the individuals with mental illnesses report received stigma from general public. These negative attitudes towards people with mental illness might cause self-stigma and create multiple negative effects in people's lives. Several methods used to challenge public stigma throughout the years such as education, contact, campaigns or protests. Results of the studies showed that contact which includes shared personal experiences and related background information about people with mental illnesses is the most effective intervention type. In order to receive maximum efficiency, to challenge public stigma, it has been decided to use one of the contact strategies which is 'Video intervention' in the present study. Lots of studies are carried out before but none of them solely included video intervention that contains narrative of a person with mental illness told by the person himself/herself. I believe that sharing personal experiences in the video can be a game-changing factor. In order to observe the difference between stigma levels of people, pre and post-test were conducted for both control and intervention group. Furthermore, participants divided in two parts as psychology and engineering students and possible differences between these groups

were observed as well. There were one null and two alternative hypothesis as it can be seen in below.

Research Hypothesis

There were one null and two alternative hypothesis as it can be seen in below.

H_0= Video intervention as an anti-stigma strategy is not effective on changing public stigma towards people with mental illnesses.

H_1= Video intervention as an anti-stigma strategy is effective on changing public stigma towards people with mental illnesses.

H_2= There is a difference between psychology and engineering students' stigma level towards people with mental illnesses before and after the intervention.

Method

Research Model

In this study was used Quantitative Design- Experimental Research model.

Participants

Participants were drawn from the undergraduate and graduate population of a midsize public university, in Italy, Bergamo. The sample included 21 students. Half of them were engineering students (n: 10) and the other ones were psychology students (n: 11). Eleven of them are attained in the control group and ten of them are attained in the intervention group. Most of the participants in intervention group were Italian or they knew Italian very well. Gender differences (N (male):10, N (female):11) did not attain statistical significance and was not considered in the analysis for the hypotheses. Ages of participants ranged between 21 and 35 with the mean age of 26. Regarding ethnicity, 18 of the sample were white and 2 of them were Hispanic. Five of the participants were Turkish, one of them was African-American, two of them were Spanish and the rest of them were Italian. All participants know English enough to understand and respond to the questionnaires. In addition, 42, 9 % of the participants reported that they had prior experience with mental illness (self or family member). However, since it didn't attain statistical significance, it is not considered in the analysis.

Data Collection Tools

First of all, groups were asked to fill a demographic data form that includes questions regarding personal and family history of mental illness, department, gender, age etc. Groups were evaluated with the five scales of stigmatizing and affirming attitudes from the brief battery that is created by Corrigan (2012). Corrigan published this battery as 'A toolkit for Evaluating Programs Meant to Erase the Stigma of Mental Illness' in 2012. Tests that are used in this study were chosen from this toolkit. Two of the five measures is designed to measure 'public stigma' (The Attribution Questionnaires, The Error Choice Test), three of them is designed to measure 'social inclusion' (Self-Determination Scale, Recovery Scale, Empowerment Scale) that also measure general public' ideas related to social inclusion of people with mental illnesses. Half of the participants, intervention group, also saw a video after pre-test. The instruments that are given here are designed to evaluate attitudes of people, not the behaviors or not to increase affirming behaviors.

Video (Intervention)

The video is prepared by a person with schizophrenia who were willing to help us for this study. She completed her treatment process almost 13 years ago. The video lasts 38 minutes. In the video, she mentions her experiences about schizophrenia, her therapy process and she answers questions that are prepared in Italian. I believe that video content is so full and beneficial for general public to see schizophrenia as a disorder that can be treated, people with schizophrenia are capable of working, studying, forming a family etc. as much as other people. For the video, she was asked to tell a bit about herself, obviously her name was anonymous. How old is he? Is she single /married etc.? Is she working? When she is diagnosed with schizophrenia? What were the symptoms? How did she recognize that she has schizophrenia? Did schizophrenia have an impact on her relationships? If yes, in what ways schizophrenia affected her

relationship with other people? Has she ever had any problems at work / school or in family because of the disorder? How much time did she receive psychotherapy and medicines (if she has ever used it)? What does she think about psychotherapy? Does she think it is useful? If yes, in what ways psychotherapy helped her during this process? How was she feeling before and how is she feeling now? Briefly, it is told that she can talk about the entire process and if she wants to add something else, such as a memory, she is welcomed. If we talk about the content of the video; she says that her symptoms started around 2005 when she was 17 years old and then it became worse when she was at the university. Her symptoms started as depression and then she started to have psychotic symptoms. At first, she had paranoia, she had the feeling that somebody is following her or someone is behind her physically, she was feeling the weight on her shoulders. She had anxiety related to her symptoms. Then it became worse. When she was at the university she was living alone in a tiny apartment and she started to have hallucinations, she was hearing a voice of a man when she is at home. He was talking non sense but hearing someone in her home was scary enough for her. She was feeling like someone is watching her from door, from under the bed or her closet secretly etc. Sometimes she had the courage and looked for the every corner at the house, thinking that maybe someone is hiding, but she couldn't find anything. She says that actually deep down she was knowing that the voice isn't real but her conscience was playing with her because she was sensing footsteps or warm air of someone inside the home. As a result, her hallucinations lead her to depression. She had no desire to leave the home. Most of the days she wasn't able to leave her bed, she was almost in a 'catatonic state' as she described. At some point, she was unable to speak or read. She had a boyfriend at that time. When he asked her to read something, she realized that she can see the words but in her mind she couldn't find the sounds related to the words. She didn't know what these words mean. After that she realized that she has a disorder and her problem isn't something to ignore. Then, she visited the psychological services at the university and the counselor led her to a doctor in territorial services. At that time, they gave her a very heavy pharmacological treatment. She points out that medications helped her from a certain point of view. Antipsychotics helped to eliminate hallucinations.

However, she didn't have any positive feelings, medications caused depressive and anxiety symptoms more and more. She wasn't able to use any kind of means of transportation but only train since she was afraid that there will be an accident. She wasn't trusting anyone.

She dealt with her problems for another 3 years. In this three years, she didn't speak with almost no one. One of the hardest things that she experienced was her relationship with her friends. She says that when they realize that you have a problem, they just become distanced. At the end, there are few friends of her left. However, it was hard for her to maintain her relationships with them because they were asking too many questions about what happened to her, they were always forcing her to go outside and it was making her stressed. She wasn't going out, reading or watching something. She mentions that she doesn't exactly know how much time that had passed in this state but it was more than a year. She points out that she was very good at school before but after this disorder, even the simplest things had become some obstacles to overcome. Since she was losing her abilities or features, she was feeling like she doesn't know who she is and the person she knows is dead. Then her slow improvement process had begun. "It was like a putting a brick on the wall" she says. For instance, when she calls things in their own name, she was feeling great joy. After three or four years, she was feeling a lot better. However, she believes that the disease had some irreversible damages in her cognition like forgetting to take pills, or taking them more than once, writing something non-sense, or doing some mistakes when she is writing numbers etc., as a person with dyslexia she says. When people ask her how she feels like in control right now if she cannot control everything, she answers like "it is like I am not always present but I am pretty satisfied because I know my life is well; I am married, I have a work. It is a normal life and I almost not have symptoms anymore." She pointed out that she received psychotherapy regularly until last year. They finished her therapy sessions because she was feeling well. She points out that psychotherapy is very useful but of course it must end in some point it cannot last forever because then it became like a chronic disease: you go to the same therapist for years, talk about the

same stuff over and over again. Therefore, she felt good when she finished her therapy. Now she only makes two visits per a year to the psychotherapist and at the end of the visits for 5-10 minutes, she does medical visits for arranging dosages of medicines etc. Once a year, they make her cardio-logical check to see if there is a side effect of medicines. In 2005, she was using lots of heavy drugs both antidepressants and antipsychotics but then she stopped using them, right now she only takes one antipsychotic, 25 mg, in a very low dosage. It is almost like a placebo she says, but according to her therapist, this amount serves for her. Using medication on a regular base, makes her upset and she wants to stop using it because she would like to know if hallucinations will come back, if she is really treated and if this disorder is biological or not. However, when she forgets to take it, she wakes up at night and has nausea, her body temperature changes and then she cannot sleep. These effects of withdrawal makes her scare but she wishes that medications will not have serious side effects and she will no longer need it after some point.

Lastly, she tells about how psychotherapy was useful for her. She mentions that psychiatric visits were only about the control of drug adjustments etc. and most of the time, psychiatrists wasn't interested about how she feels. She says that there were psychiatrists that were interested deeply for sure but it was not stable over the years. Some of them were so mechanic and some not. Everyone has their style. However, she mentions that psychotherapists definitely were more involved into the conversations deeply and psychotherapy helped her to look from a third eye to herself and realize her problem. She tells in the video that before the therapy she was less interested in relationships and going out. She was solitary. Right now, she generally doesn't prefer to stay and reflect a bit in music. She has a tendency to close up herself, such as watching TV all the time, but she tries to get out of her box. She agrees that schizophrenia is a serious mental disorder. She says that she was lucky to receive treatment at that time. To know that the disorder might come back scares her but now she knows how to fight with it, how to realize the symptoms, at least she hopes that she can realize them quickly.

I believe that content of the video is very full and answers so many questions in mind. Since, it is already proven that some mediators in the content of videos affect the results of studies, some things that share might help to receive positive results. For instance, she pointed out that she is married, she has a continuous job, and she is living a 'normal' life. Moreover, she said that the reason of schizophrenia is not known yet. I think it was pretty important too because primary studies showed that these anti-stigma programs give the unintended idea that people with mental disorders are responsible for their illnesses and they are the ones to blame for it, and since their disorder is biological, they are not responsive to the treatments, they never recover entirely.

Error Choice Test (Knowledge Test About Mental Illness)

The Error Choice Test (see Appendix D-1) is a 14 items measurement with a multiple choices. It measures public stigma without showing the intent of measuring stigmatization. It is improved by Corrigan (2012) to acquire more accurate data about attitudes of participants toward people with mental illnesses. This test is presented as a knowledge test to the participants. It is told them that they just need to guess the answer that they think is right. The aim of this test is to prevent the social desirability which is promoted by cultural norms. It can be highly encountered in these kind of studies. In order to eliminate, in the beginning of the study, it is told to the participants that their name will be anonymous but also it is thought that using this kind of test would provide clear results to see participants' real believes on this issue. Researchers prepared The Error Choice Test by looking at real knowledge tests to make it appear more realistic and hide the real aim of the test. Half of the responses assert bias or stigma. With the help of the empirical literature, determinations which response is considered biased/stigmatized is detected and scored. For instance, one of the questions was: "The divorce rate among the general population is about 50%. What is the divorce rate among people who experience mental illness?" Participants who answered to this question as 'Greater than 70%' were scored as 1, and participants who answered as 'Less than 50%' were scored as 0. More numbers (ones) at the end of the test indicated more stigmatization (see Appendix D-2). When participants were thinking that they were just answering an information question, actually their stigma toward people with mental illnesses were evaluated.

Attribution Questionnaire-9

Public stigma was also assessed using a short version of the 27-item Attribution Questionnaire (AQ-27). This questionnaire is highly used in stigma investigations (Halter, 2004; Hudes, 2007; Bastos-Turner, 2007; George-Concepcion, 2008; Kanteretal, 2008; Lawetal, 2009; Brown, 2010, as cited in Corrigan et al., 2014). There are three versions of Attribution Questionnaire. First one is 27-item Attribution Questionnaire which is designed to assess stigma of adolescents and adults. Second version is the short version of AQ-27, named as Attribution Questionnaire-9 (see Appendix E-1). It is basically the same questionnaire, both measure the same thing but AQ-9 does it with a fewer items. And the third version of the Attribution Questionnaire is AQ-8-C, this questionnaire has 8 items for 8 stereotypes and it is a short form that is developed for children from the age of 10 to 18 (Corrigan, 2012).

These attribution questionnaires (AQ-27 and AQ-9) are designed to mention nine stereotypes about people with mental illnesses that are formed from the primary analyses of responsibility and dangerousness. For responsibility, elements represent the stereotypes of blame, pity, danger, and help. For dangerousness, elements represent the stereotypes of danger, fear, avoidance, coercion, and segregation.

The AQ-27 and the AQ-9 (the one that is used in this study) give a brief vignette about a man named Harry who has schizophrenia. After that questions are given with a nine-point Likert type scale. While The AQ-27 contains three test items for 9 stereotypes, in the AQ-9 there are one item for each stereotypes. These items are selected from AQ-27. Researchers selected these single items by evaluating which item represents the stereotype more. A scoring key is also prepared for this instrument by researchers. For the AQ-9 questionnaire, scores range from nine to 81. Higher scores signalize more stigma toward people with psychological disorders.

These are the stereotypes that are investigated via Attribution Questionnaires:

Blame: In this stereotype, general public think that people with mental illnesses are the ones to blame for their mental disorder because they have control over and responsible for their mental illness and its symptoms.

Anger: In this stereotype, people are irritated or annoyed by people with mental illnesses because they think that these people are the ones to blame for their psychological problems.

Pity: In this stereotype, general public feel sorry for people with mental illnesses, and they sympathize since people come through their psychological problems.

Help: Reports of the general public whether they are willing to help a person with a mental illness or not.

Dangerousness: In this stereotype, general public believes that people with mental illness are not safe to be around or trust etc.

Fear: In this stereotype, people are afraid from individuals with a mental illness because they believe that these people are dangerous.

Avoidance: In this stereotype, general public prefers to stay away from people with mental illness.

Segregation: In this stereotype, people believes that individuals with mental illnesses should be sent to institutions away from their public.

Coercion: In this stereotype, general public believes that people with mental illnesses should be forced to receive medication and other kind of treatments.

Below there are 3 scales: ES, RS, SDS. These scales measure the public's beliefs about recovery, social worth, and personal capabilities of persons with mental illness.

Empowerment Scale

The empowerment scale was the 3th instrument that used to evaluate public stigma in this study. The original Empowerment Scale includes 28-items that evaluate the opinions of individuals with mental illnesses about their own abilities to control their life in certain areas, in other words it was a self-stigma scale (Rogers et al., 1997, 2010, as cited in Corrigan, 2012). Then, the Empowerment Scale (ES) was modified to present it for the usage of general public. It is a nine-point Likert type scale. For the ES, scores range from three to 27. Higher scores signalize more stigma toward

people with psychological disorders.

It is used to evaluate general public's ideas about the social worth of individual with psychological problems (e.g., "I feel people with mental illness are persons of worth, at least on an equal basis with others."). As it is done in the AQ-9, researchers chose the items that represent the questions they want to ask. The three items selected for the Empowerment Affirmation Scale. I wanted to include this questionnaire since people with mental illnesses generally are not attained good jobs or experience great difficulties in the work area because people think that they are not capable enough as other people which is an indicator of public stigma.

Recovery Scale

The Recovery Scale was the 4th instrument that used to evaluate public stigma. It is also an adaptation from a longer, 27-item, measurement called the Recovery Assessment Scale. It is originally used to gather the ideas of people with mental illnesses about their self-confidence, hopes, goal-orientation, reliance on others and their attitude toward life. So, again it was a self-stigma measurement before and then it is modified by researchers to gather society's ideas on the possibility of recovery from psychological illnesses (e.g. "People with mental illness have a purpose in life"). Researchers reduced Recovery Scale into 13 items which represent five factors in the original Recovery Assessment Scale. Questions are given with a nine-point Likert type scale. For the RS, scores range from 13 to 117. Higher scores signalize more stigma toward people with mental illnesses.

Self-Determination Scale – SDS

The Self-Determination Scale (SDS) is the 5th and the last instrument that is used for evaluating public stigma. It is a 14-item measurement with a nine-point Likert type scale. For the SDS, scores range from 14 to 126 (see Appendix H-2). It evaluates people's anticipation about individuals with severe psychological disorders, whether they can go after/ benefit from a various life goals like work, relationships, housing and also if they can get benefit from or accomplish treatments such as counseling, psychotherapy, medication etc.

In the original version of the scale, the same vignette is used as in QA-9 questionnaire (Vignette: Harry, 35 years old, clerk). Since schizophrenia has subtypes, it has been thought that providing a different vignette for this scale might be useful. Therefore, a new vignette is written for SDS. The rewritten case was again a person with schizophrenia. However, this time person is a female student who is younger than the person in the other case (Harry). She has delusions and paranoias. It has been chosen to place a young student as a person with mental illness in the case since participants will be students at this study. So, it has been thought that since participants would imagine the possibility of coming across with a person with schizophrenia every day, this case might increase the magnitude of participants' responses.

Procedure

Some of the participants were found through social media and some of them were found through university campus by asking in which course they are studying and whether they know English or Italian, and they are willing to participate to the study or not. They are assigned to one of the two different groups: Intervention group (IG) and Control Group (CG). If they don't know English, and they don't study engineering or psychology (undergraduate or master), they are not included in the study at all. If they know only English, they are attained into Control Group since Control Group only took pre and post measurements which are in English and didn't watch the video which is in Italian. Therefore, participants in Intervention Group either were Italian or known Italian very well.

Firstly both groups received participant information sheet and informed consent form. It is been told to the participants also verbally that the data will be anonymous, their names don't serve for the study and if they have any questions or concerns, they can ask and if they do not want to continue to the study, they can leave it whenever they want.

Moreover, since participants found creating a code little bit confusing, researcher helped them to create their codes. After that participants received demographic data form. And then, they are received pre-tests. Before start to do the

pre-tests, researcher also showed them that in the Likert type scales, answer lines change sometimes. For instance, in the second questionnaire (AQ-9), it goes as "not at all, very much" for a while but then in one the questions it changes and become "definitely would help, definitely wouldn't help". Furthermore, in the next questionnaire, type of answers also changes and become "strongly agree, strongly disagree". Immediately after pre-test, while intervention group watched the video (intervention), control group did not receive stimulus. Both are suggested to think and reflect about metal illness and how they feel about people with mental illness until receiving post-test. After 10-20 days, they received the same questionnaire again as a post- test. Post-test is given after at least 10 days, regarding test-retest indices of the questionnaire (see psychometrics for instruments chapter). Questionnaires were given in the same order to the participants. After responding to the questionnaires, it is said 'thank you for your participation' to the participants and it is told them that it is possible to give them a feedback at the end of the study if they wish to receive.

Psychometrics (Reliability and Validity Measurements) for Instruments

In order to assess psychometrics of the brief battery, Corrigan and colleagues (2014) carried out four stigma change tests (AQ-9, RS, ES, SDS) for three years in several participant groups and they summarized the reliability and convergent validity of the questionnaires. Participant number was 598 in total. They assessed the tests in college students (n: 35), community members (n: 203), health care providers – HCP (n: 227), and mental health providers – MHP (n: 133). Participants with different marital status, from different age groups 21 to 45, from different ethnicities, from different educational backgrounds were gathered. First of all, researchers examined whether data is normally distributed or not. In order to measure it, they checked skewness of scale scores for groups separately. They interpreted skewness (see Table 2) with the rationale of Tabachnick and Fidell, 2007 (as cited in Corrigan, 2014). According to this rationale, "skew is inferred if the absolute value of the skew index is greater than twice its standard error" (Corrigan, 2014). Results of the normality examinations showed that data is normally distributed in all four questionnaires.

Table 2. Descriptive Statistics from college students, community members, health care providers, and mental health providers

	College students		**Community members**		**HCP**		**MHP**	
	M (S.D.)	Skew (SE)	M (S.D.)	Skew (SE)	M (S.D.)	Skew (SE)	M (S.D.)	Skew (SE)
SDS	62.2 (13.6)	-0.22 (0.40)	63.2 (12.3)	-0.27 (0.17)	62.0 (21.2)	-0.19 (0.16)	55.8 (17.1)	-0.08 (0.24)
RS	51.1 (15.1)	0.27 (0.40)	51.8 (10.7)	-0.04 (0.17)	55.0 (19.6)	-0.13 (0.16)	51.2 (12.4)	0.66 (0.24)
ES	10.1 (5.3)	0.56 (0.40)	9.7 (4.3)	1.58 (0.17)	12.8 (5.3)	-0.11 (0.16)	6.6 (5.1)	2.4 (0.24)
AQ-9	34.7 (9.8)	0.41 (0.40)	34.8 (7.5)	0.42 (0.17)	52.5 (10.7)	0.17 (0.16)	23.1 (8.6)	0.76 (0.21)

Note. SDS=Self-Determination Scale; RS=Recovery Scale; ES=Empowerment Scale; AQ-9=Attribution Questionnaire, HCP=Health Care Providers; and MHP=Mental Health Providers

Secondly, after examining normality, researchers examined reliability index of the questionnaires for each group. They have looked for internal consistencies of the questionnaires and test-retest reliabilities of them (see Table 3). Results of the examination showed that internal consistencies of all questionnaires are satisfactory.

Time of application of pre- and post-tests was different for each groups. Questionnaires were administered in different time schedules so when they are administered time gap between the pre and post-tests was varied for each participant groups. For instance, post-test is applied in one week to college students but for community members, health care providers, and mental health providers, it is applied in one to three hours. Results of the analysis showed that test-retest index of questionnaires are satisfactory for one hour gap, except for the Empowerment Scale Score for the mental health providers. It is also found that test–retest index were also satisfactory for the college students if post – test is applied at least after one week.

Table 3. Internal consistencies and test-retest reliabilities obtained from college students, community members, health care providers, and mental health providers

Measure	College Students	Community Members	HCP	MHP
Internal consistency				
SDS	0.79	0.80	0.93	0.86
RS	0.83	0.77	0.94	0.73
ES	0.84	0.86	0.88	0.88
AQ-9	0.73	0.62	0.71	0.71
Test-retest reliability				
SDS	0.47	0.76	0.86	0.86
RS	0.58	0.77	0.68	0.68
ES	0.54	0.73	0.34	0.34
AQ-9	0.73	0.76	0.87	0.87

Moreover, researchers examined the validity of the brief battery by analyzing correlations between the questionnaires for testing public stigma and affirming attitudes (see Table 4). They only analyzed convergent validity which is a form of construct validity. Results indicated that the correlations supported validity of the questionnaires partly. It is found that Attribution Questionnaire-9 is significantly inversely correlated with other affirming attitude questionnaires for some of the participant samples such as in three of four samples in Self- Determination Scale, in two of four samples in Recovery Scale, in all samples of Empowerment Scale. ES, RS and SDS were inter correlated.

As it can be seen from Table 4, correlations that describing 'construct validity' varied across participant groups. For instance, for mental health providers, the correlation between two of three index affirming mental health and stigmatizing attitudes was not significant. It might seem like it decreases the construct validity of the questionnaires but this result was not surprising. As it is pointed out in many researches before, mental health providers might have more stigma than other groups since they encounter people with mental illnesses when they are ill, sad etc. or they generally encounter with mainstream ideas about illnesses more such as the idea that people with schizophrenia are dangerous.

Table 4. Cross-sectional Inter-correlations

	SDS				**RS**				**ES**			
	Students	Community Members	HCP	MHP	Students	Community Members	HCP	MHP	Students	Community Members	HCP	MHP
SDS	1	1	1	1								
RS	0.13	0.34***	0.84***	0.50***	1	1	1	1				
ES	0.15.	0.49***	0.63***	0.39***	0.49**	0.37***	0.69***	0.36***	1	1	1	1
AQ-9	-0.34*	-.49***	-0.31***	0.07	0.13	-0.21**	-0.35***	0.16	-0.36*	-0.47**	-0.33***	-0.35**

SDS= Self-Determination Scale; RS: Recovery Scale; AQ-9= Attribution Questionnaire * p<0.05 **p<0.01 *** p<0.001

Furthermore, results of the sensitivity measurements of questionnaires showed that it is sensitive toward stigma change (Corrigan et al., 2013; Michaels et al., 2013, as cited in Corrigan, 2014).

By looking at its reliability, validity and sensitivity results, it is been determined that these questionnaires are one of the most suitable ones to assess stigma change toward people with mental illnesses.

Design and Statistical Analyses

Data of the study was assessed by using IBM SPSS statistics. In the study there were three independent variables. Two of them were between-subjects factors that are measured at the categorical level: 'department' and 'intervention type'; and the other one was a within-subjects factor which is measured at the categorical level: 'time' (pre & post- test); and one dependent variable which is measured at continuous level: degree of stigma (see Table 5 and 6). Since there were more than 2 factors and 'A three-way mixed ANOVA' expands the two-way mixed ANOVA by increasing the number of between- subjects factors from one to two, 'Three-Way Mixed ANOVA' (BBW) has been found suitable to analyze the data.

Results

Results of the analyses showed that there are no outliers in the data, as assessed by inspection of a boxplot for values greater than 1.5 box-lengths from the edge of the box. The assumption of normality for scores of stigma change questionnaires, first assessed by the Shapiro-Wilk test is used to see normality scores. It has been seen that in some of the questionnaires, normality assumption is not provided for the scores of questionnaires such as the Coercion item of AQ-9 questionnaire for engineering students in Intervention Group ($p < .05$), (see Table 7). Therefore, their skewness and kurtosis scores were examined, and z scores were calculated and it has been seen that more results for questionnaires are provided normality with this measurement rather than Shapiro-Wilk test.

For instance, the same, Coercion, item of AQ-9 questionnaire's z score is calculated for skewness and it showed that the results for this item is distributed normally ($z<1.96$). In order to be confident, it has been seen Normal Q-Q Plots and found that it was satisfied for all group combinations of department and type of group (intervention or control), as evaluated by visual inspection of Normal Q-Q Plots. It was an expected result for normality testing of this study since sample size is extremely small when it is compared to the number of questionnaire results. Since ANOVAs are considered to be fairly "robust" to deviations from normality, and reliability and validity of questionnaires are already proven for various sample groups, it has been decided to run the test without transforming the data and report the action taken.

GLM repeated measures for three-way mixed ANOVA run for each questionnaires' pre and post test results. Analyses indicated that there was homogeneity of variances for both pretest of Error Choice Test scores ($p = .573$) and posttest of Error Choice Test scores ($p = .496$), as assessed by Levene's test for equality of variances. Analysis for Attribution Questionnaire-9 is done for every nine item scores separately, since they do not have total scores and they are interpreted one by one. There was homogeneity of variances for both AQ-9 Pretest Pity Item (Q1) scores ($p = .502$) and AQ-9 Post-test Pity Item (Q1) scores ($p = .337$), as assessed by Levene's test for equality of variances. There was homogeneity of variances for both AQ-9 Pretest Dangerousness Item (Q2) scores ($p = .178$) and AQ-9 Post- test Dangerousness Item (Q2) scores ($p = .535$), as assessed by Levene's test for equality of variances. There was homogeneity of variances for both AQ-9 Pretest Fear Item (Q3) scores ($p = .617$) and AQ-9 Post-test Fear Item (Q3) scores ($p = .892$), as assessed by Levene's test for equality of variances. There was homogeneity of variances for both AQ-9 Pretest Blame Item (Q4) scores ($p = .527$) and AQ-9 Post-test Blame Item (Q4) scores ($p = .926$), as assessed by Levene's test for equality of variances. There was homogeneity of variances for both AQ-9 Pretest Segregation Item (Q5) scores ($p = .587$) and AQ-9 Post- test Segregation Item (Q5) scores ($p = .128$), as assessed by Levene's test for equality of variances. There was homogeneity of variances for both AQ-9 Pretest Anger Item (Q6) scores ($p = .199$) and AQ-9 Post-test Anger Item (Q6) scores ($p = .422$), as assessed by

Levene's test for equality of variances. There was homogeneity of variances for AQ-9 Pretest Help Item (Q7) scores ($p = .344$) but not AQ-9 Post-test Help Item (Q7) scores ($p =.068$), as assessed by Levene's test for equality of variances. There was homogeneity of variances for both AQ-9 Pretest Avoidance Item (Q8) scores ($p = .251$) and AQ-9 Post-test Avoidance Item (Q8) scores ($p = .544$), as assessed by Levene's test for equality of variances. There was homogeneity of variances for both AQ-9 Pretest Coercion Item (Q9) scores ($p = .269$) and AQ-9 Post-test Coercion Item (Q9) scores ($p = .369$), as assessed by Levene's test for equality of variances. There was homogeneity of variances for both The Empowerment Scale Pretest scores ($p = .164$) and The Empowerment Scale Post-test scores ($p = .877$), as assessed by Levene's test for equality of variances. There was homogeneity of variances for both the Recovery Scale Pretest scores ($p = .055$) and The Recovery Scale Post-test scores ($p = .603$), as assessed by Levene's test for equality of variances. There was homogeneity of variances for both The Self-Determination Scale Pretest scores ($p = .170$) and The Self-Determination Scale Post-test scores ($p = .510$), as assessed by Levene's test for equality of variances.

Results of the last assumption analysis showed that Mauchly's test of sphericity indicated that the assumption of sphericity had been violated. When the related tables (see Table 9) are observed for all questionnaires, the significance

value seems as "." (Blank) in the table. This is because there are only two levels of the within-subjects factor (time) so there is only one paired difference. This means that the assumption of sphericity is automatically met. Therefore, it has been approved that the variances of the differences are not equal, so null hypothesis can be rejected and alternative hypothesis can be accepted.

A three-way mixed ANOVA was run to understand the effects of group, department and time on Stigma Level Questionnaires' scores. Data are mean ± standard deviations unless otherwise stated. There were no outliers in the data, as assessed by inspection of a boxplot. There was homogeneity of variances for both pretest and post test scores of each questionnaires, as assessed by Levene's test for equality of variances.

There was a statistically significant three-way interaction between time, group and department only for The Empowerment Scale (see Table 10), (see figure 1 and 2), F (1, 17)= 5.10, p = .04, partial η^2 = .231. Other three-way interactions between variables for other questionnaires were not significant (p>05).

Statistical significance of a simple two-way interaction was accepted at a Bonferroni-adjusted alpha level of .025. There were no statistically significant simple two- way interactions of group and department at the ES Pretest Total Score F (1, 17) =1.324, p = .266, or at the ES Posttest Total Score, F (1, 17) = .159, p = .695. There was a statistically significant two-way interaction between Group and Department at AQ-9 Help Item (Q7) (see Table 11), F (1, 17) = 6.577, p = .020. Statistical significance of a simple two-way interaction was accepted at a Bonferroni-adjusted alpha level of .025. There was a statistically significant two-way interaction between time and group at The Recovery Scale (see Table 12), F (1, 17) = 5.021, p = .039. All other two-way interactions were not statistically significant (p > .05).

Statistical significance of a simple main effect was accepted at a Bonferroni adjusted alpha level of .025. Regarding AQ-9 Help Item (Q7) results, there was a statistically significant simple main effect of group at the Psychology Department (see Table 13), F (1, 17) = 16.21, p = .001, but not at the Engineering Department, F (1, 17) =.093, p = .765. All pairwise comparisons were performed for statistically significant simple main effects. Bonferroni corrections were made with comparisons within each simple main effect considered a family of comparisons. Adjusted p-values are reported. Mean Stigma Level (Help Item) score was higher in control group psychology students than intervention group psychology students (see Table 14), a mean difference of 3.800, 95% CI [1.809, 50791], p = .001. All pairwise comparisons were performed for statistically significant 'simple simple' main effects for AQ-9 Help Item Q7 (see Table 15 & Table 16). Bonferroni corrections were made with comparisons within each 'simple simple' main effect considered a family of comparisons. Adjusted p-values are reported. Pretest Help Item (AQ-9) score was higher in psychology students in control group (M = 6.500, SD = 2.345) than those in intervention group (M = 1.800, SD = .447), a mean difference of 4.700, 95% CI [2.139, 7.261], p = .001. Posttest Help Item (AQ-9) score was higher in psychology students in control group (M = 4.500, SD = 2.588) than those in intervention group (M = 1.600, SD = .548), a mean difference of 2.900, 95% CI [.258, 5.542], p = .033.

Statistical significance of a simple main effect was accepted at a Bonferroni adjusted alpha level of .025. Regarding Post Test Recovery Scale results, there was a statistically significant simple main effect of department at the Control Group (see Table 17), F (1, 17) = 47.76, p = .043, but not at the Intervention Group, F (1, 17) = .320, p =.579. All pairwise comparisons were performed for statistically significant simple main effects. Bonferroni corrections were made with comparisons within each simple main effect considered a family of comparisons. Adjusted p-values are reported. Mean Stigma Level (Recovery Scale Post Test) score was higher in control group psychology students than control group engineering students (see Table 18), a mean difference of 16.267, 95% CI [.563, 31.97], p = .043.

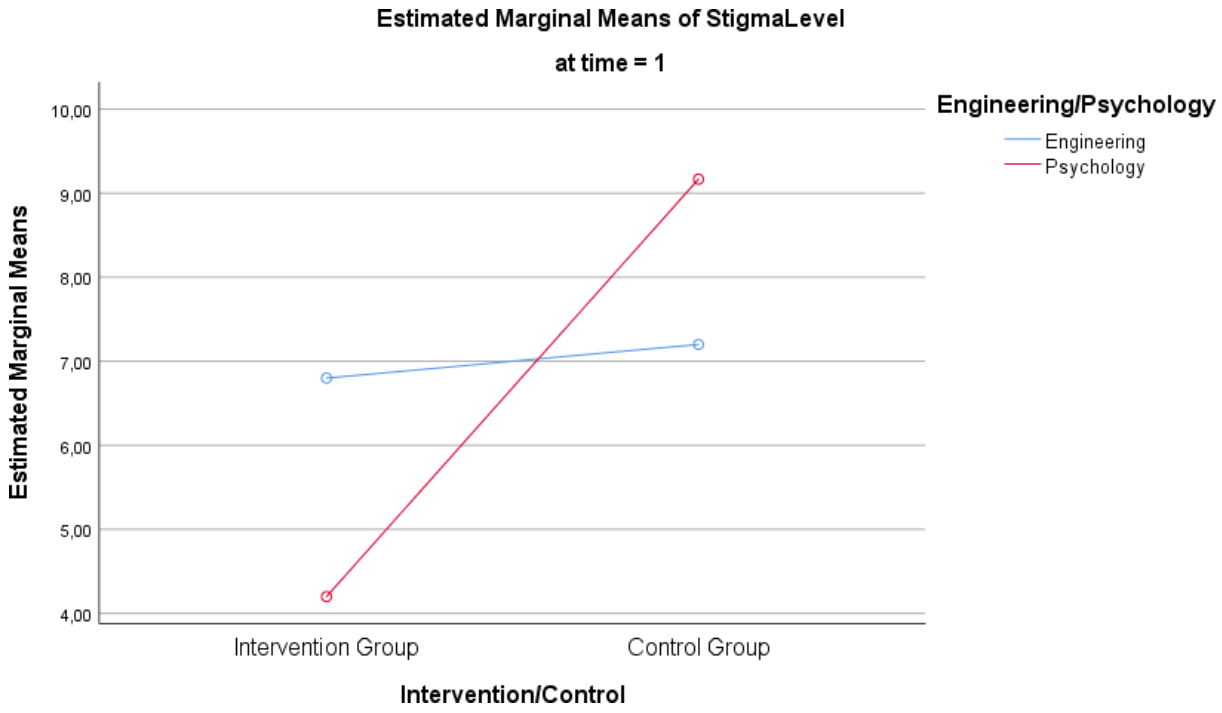

Figure 1. Intervention/Control * Engineering/Psychology * time (Estimated Marginal Means of Stigma Level in time 1 – Pretest Empowerment Scale)

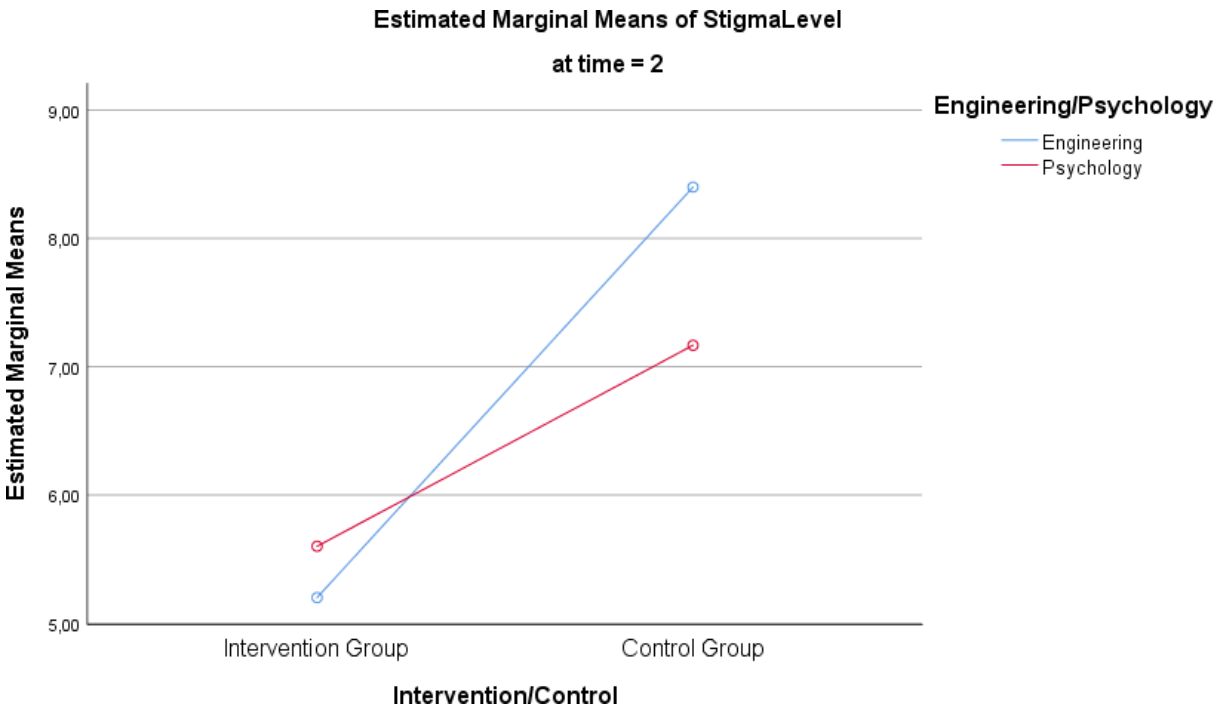

Figure 2. Intervention/Control * Engineering/Psychology * time (Estimated Marginal Means of Stigma Level in time 2 – Posttest Empowerment Scale)

Table 10. Test of Within-Subjects Effects- Three-way interaction between time, group and department for The Empowerment Scale

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Time	Sphericity Assumed	.652	1	.652	.133	.720	.008
	Greenhouse-Geisser	.652	1.000	.652	.133	.720	.008
	Huynh-Feldt	.652	1.000	.652	.133	.720	.008
	Lower-bound	.652	1.000	.652	.133	.720	.008
Time*Group	Sphericity Assumed	.235	1	.235	.048	.830	.003
	Greenhouse-Geisser	.235	1.000	.235	.048	.830	.003
	Huynh-Feldt	.235	1.000	.235	.048	.830	.003
	Lower-bound	.235	1.000	.235	.048	.830	.003
Time*Department	Sphericity Assumed	.026	1	.026	.005	.943	.000
	Greenhouse-Geisser	.026	1.000	.026	.005	.943	.000
	Huynh-Feldt	.026	1.000	.026	.005	.943	.000
	Lower-bound	.026	1.000	.026	.005	.943	.000
Time*Group*Department	Sphericity Assumed	25.070	1	25.070	5.098	.037	.231
	Greenhouse-Geisser	25.070	1.000	25.070	5.098	.037	.231
	Huynh-Feldt	25.070	1.000	25.070	5.098	.037	.231
	Lower-bound	25.070	1.000	25.070	5.098	.037	.231
Error (Time)	Sphericity Assumed	83.600	17	4.918			
	Greenhouse-Geisser	83.600	17.000	4.918			
	Huynh-Feldt	83.600	17.000	4.918			
	Lower-bound	83.600	17.000	4.918			

Table 11. Tests of Between-Subjects Effects for AQ-9, Help Item Q7

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	533,452	1	533,452	109,790	,000	,866
Group	43,852	1	43,852	9,025	,008	,347
Department	,026	1	,026	0,005	,942	,000
Group*Department	31,957	1	31,957	6,577	,020	,279
Error	82,600	17	4,859			

Table 12. Test of Within-Subjects Effects for Recovery Scale

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Time	Sphericity Assumed	3,157	1	3,157	.028	,869	,002
	Greenhouse-Geisser	3,157	1.000	3,157	.028	,869	,002
	Huynh-Feldt	3,157	1.000	3,157	.028	,869	,002
	Lower-bound	3,157	1.000	3,157	.028	,869	,002
Time*Group	Sphericity Assumed	563,713	1	563,713	5,021	,039	,228
	Greenhouse-Geisser	563,713	1.000	563,713	5,021	,039	,228
	Huynh-Feldt	563,713	1.000	563,713	5,021	,039	,228
	Lower-bound	563,713	1.000	563,713	5,021	,039	,228
Time*Department	Sphericity Assumed	2,113	1	2,113	,019	,892	,001
	Greenhouse-Geisser	2,113	1.000	2,113	,019	,892	,001
	Huynh-Feldt	2,113	1.000	2,113	,019	,892	,001
	Lower-bound	2,113	1.000	2,113	,019	,892	,001
Time*Group*Department	Sphericity Assumed	146,739	1	146,739	1,307	,269	,071
	Greenhouse-Geisser	146,739	1.000	146,739	1,307	,269	,071
	Huynh-Feldt	146,739	1.000	146,739	1,307	,269	,071
	Lower-bound	146,739	1.000	146,739	1,307	,269	,071
Error (Time)	Sphericity Assumed	1908,600	17	112,271			
	Greenhouse-Geisser	1908,600	17.000	112,271			
	Huynh-Feldt	1908,600	17.000	112,271			
	Lower-bound	1908,600	17.000	112,271			

Table 13. Univariate Tests for AQ-9 Help Item Q7F

Engineering/ Psychology		Sum of Squares	df	Mean Square	F	Sig
Engineering	Contrast	,225	1	,225	,093	,765
	Error	41,300	17	2,429		
Psychology	Contrast	39,382	1	36,382	16,210	,001
	Error	41,300	17	2,429		

Table 14. Pairwise Comparisons for AQ-9 Help Item Q7 in general

Engineering/ Psychology	(I)Intervention/Control	(J)Intervention/Control	Mean Difference (I-J)	Std.Error	Sig.[b]	Lower Bound	Upper Bound
Engineering	Intervention Group	Control Group	-,300	,986	,765	-2,380	1,780
	Control Group	Intervention Group	,300	,986	,765	-1,780	2,380
Psychology	Intervention Group	Control Group	-3,800	,944	,001	-5,791	-1,809
	Control Group	Intervention Group	,3800	,944	,001	1,809	5,791

*The mean difference is significant at the ,05 level b. Adjustment for multible comparisons: Bonferroni

Table 15. Descriptive Statistics for AQ-9 Help Item Q7

	Intervention/Control	Engineering/Psychology	Mean	Std. Deviation	N
AQ-9 Pre-Test	Intervention Group	Engineering	3,4000	1,67332	5
		Psychology	1,8000	,44721	5
		Total	2,6000	1,42984	10
	Control Group	Engineering	4,2000	2,68328	5
		Psychology	6,5000	2,34521	6
		Total	5,4545	2,65946	11
	Total	Engineering	3,8000	2,14994	10
		Psychology	4,3636	2,97566	11
		Total	4,0962	2,56719	21
AQ-9 Post-Test	Intervention Group	Engineering	34,00	2,50998	5
		Psychology	1,6000	,54772	5
		Total	2,5000	1,95798	10
	Control Group	Engineering	3,2000	1,78885	5
		Psychology	4,5000	2,58844	6
		Total	3,9091	2,25630	11
	Total	Engineering	3,3000	2,05751	10
		Psychology	3,1818	2,40076	11
		Total	3,2381	2,18872	21

Table 16. Pairwise Comparisons for Pre and Post AQ-9 Help Item Q7 for Simple Simple Main Effects

Engineering/ Psychology	Time	(I)Intervention/Control	(J)Intervention/Control	Mean Difference (I-J)	Std.Error	Sig.[b]	Lower Bound	Upper Bound
Engineering	1	Intervention Group	Control Group	-,800	1,268	,536	-3,475	1,875
		Control Group	Intervention Group	,800	1,268	,536	-1,875	3,475
	2	Intervention Group	Control Group	,200	1,308	,880	-2,559	2,959
		Control Group	Intervention Group	-,200	1,308	,880	-2,959	2,559
Psychology	1	Intervention Group	Control Group	-4,700*	1,214	,001	-7,261	-2,139
		Control Group	Intervention Group	4,700*	1,214	,001	2,139	7,261
	2	Intervention Group	Control Group	-2,900*	1,252	,033	-5,542	-2,58
		Control Group	Intervention Group	2,900*	1,252	,033	,258	5,542

*The mean difference is significant at the ,05 level b. Adjustment for multible comparisons: Bonferroni

Table 17. Univariate Tests for the Recovery Scale Posttest Scores, simple main effect of Department

Intervention/Control		Sum of Squares	df	Mean Square	F	Sig
Intervention	Contrast	48,400	1	48,400	,320	,579
	Error	2568,533	17	151,090		
Control	Contrast	721,648	1	721,648	4,776	,043
	Error	2568,533	17	151,090		

Table 18. Pairwise Comparisons for Recovery Scale Posttest Scores

Intervention/Control	(I)Engineering/Psychology	(J) Engineering/Psychology	Mean Difference (I-J)	Std.Error	Sig.[b]	Lower Bound	Upper Bound
Intervention	Engineering	Psychology	-4,400	7,774	,579	-20,802	12,002
	Psychology	Engineering	4,400	7,774	,579	-12,002	20,802
Control	Engineering	Psychology	-16,267*	7,443	,043	-31,970	-563
	Psychology	Engineering	16,267	7,443	,043	,563	31,970

*The mean difference is significant at the ,05 level b. Adjustment for multible comparisons: Bonferroni

Conclusion and Discussion

The main purpose of this study was to examine whether a video as an intervention type is effective to reduce public stigma towards people with mental illnesses. The second purpose of this study was to examine whether there is a difference between psychology and engineering students' stigma level towards people with mental illnesses before and after the intervention.

Regarding the present study, Mauchly's test of sphericity indicated that the assumption of sphericity had been violated. So, it has been approved that the variances of the differences are not equal, so null hypothesis can be rejected and alternative hypothesis can be accepted.

Results of the analysis demonstrated that there is a statistically significant three-way interaction between time (pretest- posttest), group (intervention / control) and department (engineering / psychology) for The Empowerment Scale. This questionnaire is used to evaluate general public's ideas about the social worth of individual with psychological problems (e.g., "I feel people with mental illness are persons of worth, at least on an equal basis with others."). I can say that it was one of the strong expectations of the study since one of the strong stigma of general public is that people with mental illnesses are not able to function like other people in several life areas, such as in work, or in marriage. However, on the video intervention, this idea was disconfirmed because the woman on the video is working efficiently on her job, she is married, she has friends etc. There wasn't another three way interaction between the variables but this result tells us something very important: Stigma is not just one-way perception. It consists lots of sub-stigmas. If we want to change stigma toward people with mental illnesses, we need to work on these sub- stigmas one by one. After this study, people's approach about whether a person with mental illness are capable as much as other people is changed and this is one of the important results of this study.

According to results of the study, regarding Post-test Recovery Scale results, there was a statistically significant two-way interaction between time and group. Moreover, psychology students reported more stigma level than engineering students in both pre and post-tests Recovery Scale. It was one of the results that is expected since the former studies already reported many times that mental health students and workers generally hold more stigma towards people with mental illnesses.

When posttest results of Recovery Scale are considered, they are demonstrated that there was a statistically significant simple main effect of 'Department' at the Control Group, but not at the Intervention Group. Further analysis showed that Mean Stigma Level score was higher in 'Control group Psychology students' than 'Control group Engineering students'. It means that psychology students reported more stigma on the idea of possibility of recovery from psychological illnesses. This difference between psychology and engineering students wasn't seen in the intervention group. Therefore, this findings show that video intervention was effective on the stigma levels of psychology students regarding Recovery Scale results. Even though stigma level of psychology students were still

slightly higher than the stigma level of engineering students at the post test results, the difference between the stigma level of psychology and engineering students was not significant after the intervention. So, being an engineering or psychology student changed the stigma level of students who were placed in control group but not in intervention group because stigma of psychology students towards people with mental illnesses were eliminated by the intervention considerably.

Results of the analysis showed that there was a statistically significant two-way interaction between Group and Department at AQ-9 Help Item (Q7). Regarding AQ-9 Help Item (Q7) results, there was a statistically significant simple main effect of group (control/intervention) at the Psychology Department, but not at the Engineering Department. Further analysis showed that Posttest Help Item (AQ-9) score was higher in psychology students in control group than those in intervention group. Thus, results of the analysis demonstrated that video intervention was effective to reduce public stigma toward people with mental illnesses in the Attribution Questionnaire Help Item (Q7) for psychology students. It is promising because people who work in the health care area, as psychologists, need to have this particular feature which is 'urge to help' in order to be beneficial for people with mental illnesses. As it can be seen from the results of the study, null hypothesis rejected and both of the alternative hypotheses are accepted. Results supported the idea that video as an intervention is an effective tool and it can be used to change public stigma towards people with mental illnesses.

Limitations and Strengths of the Study and Future Directions

I believe that researchers created these instruments (AQ-9, ES, RS, ECT, and SDS) to analyse in the easiest way possible, so they did not include any reversible items. However, I believe that it created some confusion in the process of testing. As it is pointed out before in the procedure part that in the Likert type questionnaires, answer lines changed a lot and most of the participants found it confusing, because not just the answers change but the positive and negative sides of the answers also change. For example, while in the second questionnaire (AQ-9), 1 represents a negative answer (not at all), in the third questionnaire (ES), 1 represents a positive answer (strongly agree). I have observed that most of the participants didn't realize the answer lines change. I had to warn each one of them before every questionnaire so they do not report their answers wrongly. I believe that if questionnaires are redesigned, at least by reversing negative and positive polls and making them unite in the one style, it would be easier to apply the instruments in the future studies.

One of the weak sides of the questionnaires are that they are based on self-report and limited to attitude testing. In order to eliminate one possible result of self-report, social desirability, researchers added Error Choice Test but still other questionnaires are open to risks of self-report. Another weak side was that they only measure attitudes but it is not just these questionnaires' problem. In the literature, there are a few studies that measure discriminative behaviors. Moreover, studies that are conducted generally focus on decreasing negative attitudes, but they do not fill the gap that is created with something else. I believe that this gap should be filled with positive attitudes and behaviors. Therefore, studies that focus on discriminatory behaviors and increasing affirming behaviors should be conducted more.

In the present study, post-tests are given to the participants after at least 10 days later from the pre-test because test-retest indices for one of the questionnaires (ES) was suitable only after 1 week gap, while for other instruments test-retest indices were good only after a single hour. However, this created some questions in mind as 'if the Empowerment Scale would have been excluded from the study and they would have received 2 post-tests, one is 1 hour after the video, and the second one is 25-30 days later as follow-up, would we have observed some differences between these two post-tests?' It is possible to test it in future studies.

When examining reliability and validity of the questionnaires, researchers only included one type of validity: convergent validity which is a type of construct validity. If questionnaires would be tested with predictive and discriminant validity, it would increase the strength of the measurements in the future.

In my view, when it is considered all weaknesses and strengths of these questionnaires, using these questionnaires was a

good choice since their psychometrics are analyzed in four different samples and proved its efficiency, so they are strong enough to test public stigma.

Stigma towards people with mental illnesses may start during childhood. There are some questionnaires to test stigma, such as AQ-8-C, developed for children between the ages of 10 and 18. However, there is a gap in the literature on this issue, there are few studies related. Interventions and studies should be conducted on this age range as well.

The intervention on the present study was a video. Video is created by a former patient with schizophrenia. She mentioned lots of personal experiences in the video. I think that sharing personal experiences in the video rather than just focusing on general features of the disorder was pretty important for participants to establish connection with the person with mental illness and this leads to a change in their stigma levels.

I believe that participant number (n: 21) was not high enough in this study.

Furthermore, intervention group was formed mostly by Italian participants while control group consisted people from other nations as well. Even though results didn't show any significant effect of these features, I believe that the future studies should be conducted with more participants that are split equally according to the nations of participants and then results should be observed to see if it causes a significance on the stigma level of participants.

I do believe that overall process of the study and results were pretty important for the literature of stigma-change because even though lots of studies are carried out before to change public stigma, none of them only used 'video intervention' that contains narrative of a person with mental illness told by the person himself/herself as an anti-stigma strategy.

Biodata of Author

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