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**IMPROVING FUTURE PSYCHOLOGISTS' ATTITUDES TOWARD PEOPLE WITH SCHIZOPHRENIA:**

**A QUASI- RANDOMIZED CONTROLLED TRIAL**

Lorenza Magliano<sup>a</sup>, Angela Rinaldi<sup>a</sup>, Regina Costanzo<sup>a</sup>, Renata De Leo<sup>a</sup>, Giustina Schioppa<sup>a</sup>, Miriam Petrillo<sup>a</sup>, John Read<sup>b</sup>

<sup>a</sup>Department of Psychology, Second University of Naples, Italy

<sup>b</sup>Department of Psychological Sciences, Swinburne University of Technology, Melbourne, Australia

**Corresponding author:** Lorenza Magliano

**Corresponding author at:** Department of Psychology, Second University of Naples, Italy – Viale Ellittico 31, 81100

Caserta, Italy; phone/fax +39 0823 275358; e-mail: lorenza.magliano@unina2.it

## ABSTRACT

**Objective** To investigate the effect of an educational intervention addressing common prejudices via scientific evidence and audio-testimony from People Diagnosed with Schizophrenia (PWS), on psychology students' (PS) attitudes.

**Methods** The intervention, including two three-hour sessions with an interval of a week between, was provided to PS during their 5<sup>th</sup> year of their master's degree in Psychology at the Second University of Naples, Italy. Students were randomly assigned to an experimental or a control group.

**Results** Compared to their baseline assessment, at one-month reassessment, the 76 educated students endorsed more psychosocial causes and recommended more often psychologists for treatment of schizophrenia. They were also more optimistic about recovery, less convinced that PWS are recognizable and unpredictable and more convinced that pharmacological and psychological treatments are useful. No significant changes were found, from baseline to one-month reassessment, in the 112 controls. At one-month reassessment, educated students were more optimistic about recovery and less convinced that PWS are unpredictable than controls.

**Conclusions** Psychology students' attitudes toward PWS can be improved by training initiatives including education and indirect contact with users.

**Practice implications.** Results of this educational initiative have led to reorganization of the content of the Psychiatry course for future psychologists.

**KEY-WORDS** psychology students, intervention, stigma, prejudices, schizophrenia

# **IMPROVING FUTURE PSYCHOLOGISTS' ATTITUDES TOWARD PEOPLE WITH SCHIZOPHRENIA: A QUASI-RANDOMIZED, CONTROLLED STUDY**

## **1. INTRODUCTION**

Despite consistent scientific evidence that the majority of People diagnosed With Schizophrenia (PWS) have personal histories of traumatic life events and adversities (Read, Magliano, & Beavan, 2013; Varese et al., 2012) their needs for psychological support remain largely unmet. For instance, a study in 19 Italian Mental Health Services (MHS) (Semisa et al., 2008) , found that in 60% of MHS no PWS received even three sessions of cognitive-behavioral therapy (CBT) per year, while in 40% of MHS less than 10% of PWS received this psychological support. Another study of 187 randomly selected PWS in contact with MHSs in North-West England, (Haddock et al., 2014) found that only ten received CBT within the 12-month audit period. Limited availability of effective psychological therapies for psychosis in clinical settings is paralleled by the low number of psychologists routinely working with people with severe mental illness (SMI) (Buck, Romeo, Olbert, & Penn, 2014; Roe, Yanos, & Lysaker, 2006).

Poor involvement of psychologists in the care of people with SMI can be due to several reasons, including psychologists' attitudes toward PWS (Buck et al., 2014; Deacon, 2013; Reavley & Jorm, 2014; Servais & Saunders, 2007). Some studies have found that some psychologists are less willing to interact with PWS than with persons with other mental health problems, tend to distance themselves from PWS, and view these people as considerably more ineffective and incomprehensible than individuals with other mental problems (Buck et al., 2014; Servais & Saunders, 2007). However, another study, exploring the attitudes of health professionals toward persons diagnosed with either depression, schizophrenia, post-traumatic stress disorder, or social phobia (Reavley & Jorm, 2014), found that psychologists were less likely to hold stigmatizing attitudes or desire social distance than general practitioners and psychiatrists.

As future health professionals, undergraduate psychology students (PS) represent a target population for efforts to increase the probability that PWS will be offered effective non-pharmacological therapies. Therefore, it is valuable to investigate PS' attitudes towards PWS and to design training initiatives to improve their willingness to work with these persons.

Findings from the few studies exploring PS' views of PWS have reported that these students – similarly to Medical Students (MS) (Magliano, Read, Sagliocchi, Patalano, D'Ambrosio, et al., 2013; Magliano, Read, Sagliocchi, Patalano, & Oliviero, 2013) – are not immune to stigma and are not particularly keen to work with PWS in the future. A study of 164 graduate students in Clinical Psychology in the USA and Canada (Buck et al., 2014) found that they were significantly less comfortable treating a PWS, compared to people with other mental health problems. A study of 469 New Zealand undergraduate PS found that the majority believed that “mental patients” are unpredictable, antisocial and dangerous (Read & Harré, 2001). A study on the views of 236 Italian PS about schizophrenia (Costanzo et al., 2013), found that

33% of PS believed that people with this condition could recover, 14% of PS was convinced that PWS are dangerous and 65% that they are unpredictable.

Findings from the few studies that have specifically investigated whether attitudes of PS toward PWS can be changed through training initiatives found that ad-hoc intervention based on education and contact with PWS, or both, are successful, at least in the short time. For instance, a study by Lincoln et al. (Lincoln, Arens, Berger, & Rief, 2008) on 60 MS and 61 PS, reported that a psychosocial-oriented intervention reduced the stereotypes of both dangerousness and unpredictability among MS and PS. A study of 126 PS in New Zealand (Read & Law, 1999) found that a series of lectures presenting the psychosocial causes of severe mental health problems, including schizophrenia, reduced students' perceptions of mental patients as dangerous/unpredictable. A RCT of 143 PS comparing contact with PWS via a film, simulation of auditory hallucinations, or no intervention (Brown, Evans, Espenschade, & O'Connor, 2010) found that filmed contact intervention led to decreases in desire for social distance and in negative emotions toward PWS which persisted across 1-week, while simulation led to increased stigma. Another study, of 53 undergraduate PS, investigated the effectiveness of an alternative method of teaching psychopathology (based on an approach developed by Corrigan and Penn (Corrigan & Penn, 1999) and first-person testimonies) versus a traditional, diagnosis-centered education about schizophrenia and bipolar disorders (Mann & Himelein, 2008). The study found a significant decrease in stigma toward PWS or bipolar disorders following the intervention in the alternative group only.

In 2011, a new educational intervention on schizophrenia for MS and PS was introduced at the Second University of Naples Italy (Magliano et al., 2014). The intervention, administered to 211 MS and PS was successful in increasing students' acknowledgment of the psychosocial factors underlying schizophrenia and reducing students' prejudices against PWS, at immediate post-intervention reassessment. In particular, the percentage of students who firmly believed that PWS are unpredictable decreased from 26% at baseline to 7% at post-intervention, and the percentage of students who believed PWS were somewhat or very dangerous fell from 96% to 77%. Importantly, the percentage of students who firmly believed that PWS could recover increased from 29% at baseline to 84% at post-intervention reassessment.

In the current study, the intervention was replicated in a new sample of PS in their 5th year of studies at the Second University of Naples, Italy, using a quasi-randomized controlled design and re-assessments one-month after the intervention. Of the 188 students involved in the study, 76 were randomly assigned to a group who received the educational intervention and 112 to a control group.

The main hypotheses were that, at one-month follow up reassessment:

- a) educated students would, compared to their baseline assessment: i) identify more psychological factors as the causes of schizophrenia; ii) be more convinced of the usefulness of psychological interventions and of the involvement

of psychologists in the treatment of schizophrenia; iii) be less convinced that PWS are unpredictable, dangerous, easily recognizable, and affected by an incurable illness

- b) controls would, compared to their baseline assessment, not improve in the above listed variables
- c) educated students would improve more than controls in the above listed variables.

## **2. METHODS**

### **2.1 Contents of the educational intervention**

The educational intervention included two three-hour sessions with an interval of a week between them (Magliano et al., 2014). The intervention was developed by a working group of MS and PS and a teacher, on the basis of stigma literature findings. Moreover, four persons who had recovered from, or who had faced stigma due to, mental health problems, provided audio-taped testimonies of their personal experiences. The first session covered the following topics: a) definitions of stereotypes, prejudices and discrimination; b) theoretical basis, experimental studies and personal stories on stigma and its effects; d) stigma and the media; e) stigma and mental health problems; f) stigma and schizophrenia; g) stigma against persons with mental disorders in health contexts. The second session focused on: a-c) scientific evidence on social dangerousness in “at risk” minority social groups, in persons with mental disorders, and in persons with schizophrenia; d) subjective and objective dimensions of recovery; e) scientific evidence on recovery in schizophrenia; and f) recovery-oriented and empowerment-based mental health services. In both sessions scientific reports, media articles, cartoons, audio-testimonies, and videos from anti-stigma campaigns were used. The presentations were followed by open discussion. Some topics were directly presented by students from the working group.

### **2.2 Study design**

The educational intervention was scheduled within the compulsory laboratory activities included in the Psychiatry course for all PS of the last semester of the 5th year of master’s degree in ‘Psychology applied to Institutional contexts’ of the Second University of Naples, Italy.

At the beginning of the Psychiatry course, students were randomly assigned to a group that received the intervention (education group) or to a control group, on the basis of their college number (even vs. odd). Because it was necessary that all students received the same laboratory activities, controls attended the educational intervention after the one-month reassessment, during the provision of main Psychiatry course.

Before the start of the educational initiative, all students (N=208) were invited to participate in a voluntary evaluation of their views of schizophrenia to be repeated one month after the intervention in the educated group, and at the same time in controls. All students who accepted (208, 100%) were asked to read a clinical description of schizophrenia according

to the ICD-10 criteria for schizophrenia and to complete the Opinions on mental illness Questionnaire (OQ) (Magliano, Fiorillo, De Rosa, Malangone, & Maj, 2004). Baseline vs one-month questionnaires were matched by using an anonymous numeric code.

The study was authorized by the Head of the Faculty of Psychology in agreement with the local Research Ethical Board, and it was carried out in March-April 2012 and in March-April 2013.

### **2.3 Assessment instrument**

The Opinions on mental illness Questionnaire (OQ) is a self-report tool exploring beliefs about: a) the causes of schizophrenia; b) the effectiveness of available treatments and patients' right to be informed; c) the psychosocial consequences of schizophrenia (i.e., problems that PWS may experience in family and affective relationships, and in social and occupational roles; social distance from and perception of recognizability, dangerousness and unpredictability of persons with the disorder). Further 4 "yes/no" items explore the professionals to be involved in the treatments. Respondents' beliefs about causes and appropriate professionals were assessed by yes/no items, while beliefs about b-c variables were rated on a 3-point scales, from 1= "not true" to 3= "completely true". OQ psychometric properties have been previously tested (Magliano et al., 2004) (Cohen's kappa ranging from 0.50 and 1 for 74% of the items; Cronbach alpha ranging between 0.42 and 0.72). For the purposes of this study, only OQ exploring: beliefs about the causes of schizophrenia, and about the possibility of recovery, the usefulness of drug and psychological therapies, the involvement of psychologists in the treatment, and the recognizability, unpredictability, and dangerousness of PWS were analyzed.

### **2.4 Statistical analyses**

At baseline, education and control groups were compared with respect to sex and age by  $\chi^2$  and t-test, respectively. In the education group, baseline vs. one-month reassessment paired comparisons of students' views about: a) the causes of schizophrenia, and the involvement of psychologists in its treatment were performed using McNemar test; and b-c) recovery, usefulness of drug and of psychological treatments; and recognizability, unpredictability, and dangerousness of PWS were performed using Wilcoxon signed-rank test for paired data. The same paired comparisons were performed in the control group. Education and control groups were compared at one-month reassessment with respect to a) variables by using Chi-square ( $\chi^2$ ), and b-c) variables by using Mann-Whitney U test. Only results at the  $p < 0.05$  with Bonferroni correction are reported (one correction for all analyses), to reduce the probability of type I errors (false positives).

## **3. RESULTS**

### **3.1 Descriptive data at baseline assessment**

Of the 208 PS who were engaged in the initiative, 20 did not fill in the questionnaire twice, leaving a final sample of 188 (169, 89.9% female, mean age 26.3 ( $\pm$  4.3) years). Eighteen students who had been randomly assigned to education group asked to be moved to control group (receiving the intervention after one-month reassessment), due to timetable clashes. Therefore, 76 (40.4.2%) students attended the educational initiative on schizophrenia, and 112 (59.6%) were included in the control group.

At baseline, heredity (156, 83.0%) and psychological traumas (111, 59.0%) were the most frequently cited causes of schizophrenia in both groups (Table 1). Ninety-four percent (176) of students indicated the psychiatrist, while 78.8% (148) of students recommended the psychologists among treating professionals for schizophrenia. The majority of respondents firmly believed that psychological interventions are useful in schizophrenia (111, 60.0%), while 36.2% (67) were convinced of the usefulness of drugs (Table 2).

Twenty-three percent (36) of students firmly believed that PWS could be well again, while 36.5% (65) did not believe that PWS are easy recognizable. Finally, nearly all the students were, partially or completely, convinced that PWS were unpredictable (168, 94.4%) and dangerous (165, 95.4%; Table 3).

### **3.2 Paired comparisons of baseline vs. one-month reassessments in education group**

Compared to their baseline assessment, the 76 educated students more frequently mentioned stress (43.4% vs. 72.4%, McNemar test: 14.7,  $p < .05$ ) and love disillusionment (6.6% vs. 30.3%, McNemar test,  $p < .05$  binomial distribution) among the causes of schizophrenia at one-month reassessment. The percentage of students who firmly believed that PWS could recover moved from 23.8% at baseline assessment to 64.9% at one-month reassessment (Wilcoxon test: -4.2,  $p < .05$ ), and that of students who believed that PWS is not easily recognizable moved from 38.4% at baseline assessment to 63.5% at post-intervention assessment (Wilcoxon test: -3.5,  $p < .05$ ). Furthermore, the percentage of students who firmly believed that PWS were unpredictable moved from 35.7% at baseline assessment to 8.7% at one-month reassessment (Wilcoxon test: -5.1,  $p < .05$ ). At one-month after the intervention, an higher percentage of students believed that drugs interventions (33.0% vs. 53.9%; Wilcoxon test: -3.9,  $p < .05$ ); and psychological therapies (59.2% vs. 85.3%; Wilcoxon test: -4.1,  $p < .05$ ) were useful for schizophrenia, and recommended the psychologists among the treating professionals (77.6% vs. 97.4%, McNemar test:  $p < .05$ , binomial distribution).

### **3.3 Paired comparisons of baseline vs. one-month reassessment in control group**

In control group, no statistically significant differences were found when initial assessment was compared with reassessment performed one-month later.

### **3.4 Comparisons between education and control groups at one month reassessment**

At one month reassessment, educated students were more firmly convinced that PWS could recover (“completely true” 64.9% vs 35.9%, Mann-Whitney U test: 2686,  $p < .05$ ; Table 2), and less convinced that PWS were unpredictable (“completely true” 8.7% vs 26.0%, Mann-Whitney U test: 2328.0,  $p < .05$ ), and easy recognizable (“not true” 63.5% vs 36.0%, M-W: 2656,  $p < .05$ ), compared to controls (Table 3).

#### **4. DISCUSSION AND CONCLUSION**

##### **4.1 Discussion**

The results of this study confirm findings from previous research that students’ attitudes toward PWS can be successfully improved by training initiatives that include education and indirect contact with users (Haddock et al., 2014; Mann & Himelein, 2008; Roe et al., 2006; Stubbs, 2014; Yamaguchi et al., 2013).

At 1-month after the intervention, students reported more frequently stress and love disillusionment among the causes of schizophrenia, compared to their baseline assessment. Since the educational intervention did not specifically address the aetiology of schizophrenia, it is likely that these findings are due to students’ indirect exposure to PWS thought audio-taped testimonies (Banfi, 2009; Corrigan & Penn, 1999; Govers, 2009; Stubbs, 2014). In the testimonies, users recounted traumatic events they experienced before the onset and over the course of schizophrenia, and highlighted the factors which helped them to cope with negative events and schizophrenia consequences, successfully.

Greater relevance attributed to psychological causal factors requiring effective psychological interventions may also partly explain the higher percentage of educated students who recommended psychologists for treatment at one-month reassessment. Listening to service users’ testimonies may have also contributed to the greater usefulness acknowledged to both biological and psychological therapies by educated students at follow-up. For instance, one user outlined the beneficial effects of drug therapies to alleviate disturbing symptoms she experienced in critical periods and the counterproductive effects of long-term drug therapies on her subsequent participation in psychotherapy sessions (Govers, 2009). She also reported how useful she found “spoken therapy”, particularly to deal with traumatic past events and to feel supported in recovery, and how “lucky” she felt for having “met a psychiatry with human face”. These findings confirm the hypothesis that such an educational, contact-based initiative can facilitate students’ adherence to an integrated bio-psycho-social model of care in schizophrenia, and support the favourable changes found at immediate post intervention assessment in our previous study (Magliano et al., 2014).

Greater acknowledgement of the positive role played by psychosocial factors – such as having friends, affective relationships, and a job - in the process of recovery from schizophrenia (Banfi, 2009; Govers, 2009; Soundy et al., 2015) as reported by the users, and exposure to scientific evidence on the fact that more than 50% of PWS, if adequately supported, recover from this disorder (Levine, Lurie, Kohn, & Levav, 2010; Tibaldi & Govers, 2012) may explain why



the percentage of educated students who firmly believed that PWS can recover moved from 23.8% at baseline assessment to 64.9% at one-month reassessment.

Although these results do not allow us to affirm that the PS became more eager to work with PWS, the data suggest that this education intervention may engender in future psychologists a more balanced view of schizophrenia, denying neither the relevance of drug treatments in some stages of the disorder, nor the importance of psychological therapies in recovery process.

At one-month after the intervention assessment, only 11.4% of educated students firmly believed that PWS are unpredictable. Moreover, the comparisons of educated and control groups highlights that educated students had a more optimistic views of schizophrenia and were less convinced that PWS are unpredictable, than controls. As far as students' perception of dangerousness of PWS, change from baseline to one-month paired reassessment did not reach statistical significance, although a positive trend was observed in the sample ("not true": 7.1% vs. 25.3%). This result suggests that providing students with epidemiological data demonstrating that the risk of aggressive behaviours is modest in those with schizophrenia - when PWS receive appropriate therapies and are not in acute psychotic episodes (Fazel et al., 2009) - might be not sufficient to modify PS' deep-rooted beliefs about dangerousness at one-month from an educational intervention.

This is the first quasi-controlled trial on the effects of an educational intervention addressing common prejudices toward PWS among PS carried out in Italy. Among the strengths of the study, there are the inclusion of all students of two academic years, the quasi-randomized design with re-assessment one-month after the intervention, and the low refusal rates. Positive features of the intervention are that it includes both education and indirect contact with persons having or having had mental problems – two strategies of proven efficacy in reducing stigma (Corrigan & Penn, 1999; Yamaguchi et al., 2013), and that the intervention has been developed by a working group including students from medical and psychology schools. These strengths support the generalizability of the findings of the study and might facilitate the replication of this educational initiative in other academic and non-academic contexts.

The study also has a number of limitations suggesting caution in interpreting the results. The one-month follow-up period does not allow us to verify whether such positive results persisted for a longer time, nor can we conclude that changes in beliefs about schizophrenia were predictive of changes in actual behaviours towards PWS. Contamination across the groups cannot be excluded, since students in the same year of their master's degree were randomly assigned to educational or control groups. Randomization was altered by the 18 students who switched from education to control group. These students may have been less interested in schizophrenia, increasing magnitude of differences between groups. Furthermore, social desirability cannot be excluded.

## **4.2 Conclusions**

We are aware that it takes more than some laboratory activities to address deep-rooted beliefs and fears about interacting with PWS (Friedrich et al., 2013). Deeper changes in the entire health professional training are needed to address the toxic effects of stigma on future health professionals.

However, we also believe that improving PS' attitudes toward PWS through educational initiatives can be a crucial first step towards increasing psychologists' willingness to support PWS in their recovery journey.

## **4.3 Practice implications**

Positive results of this educational initiative have represented a prompt for rethinking the content of the Psychiatry course. Since 2014, clinical presentation of each psychiatric disorder now includes a video-testimony of a person who has experienced that mental disorder and describes the psychological, social, and medical factors that helped him/her to cope with her/his negative experiences successfully. Moreover, to reinforce the short-term improvement of PS' beliefs about the usefulness of psychological treatments for schizophrenia, practical training in evidence based psychosocial treatments for schizophrenia and other severe mental problems (Mueser, Deavers, Penn, & Cassisi, 2013) has been included in the psychiatric course. Finally, in order to assess the effect of the educational initiative at longer follow up, psychiatric training course has been moved from the last to the first semester of the 5th year. Results of these forthcoming initiatives will be provided in future papers.

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## **CONFLICT OF INTEREST**

The authors declare that they have no conflicts of interests concerning this article.

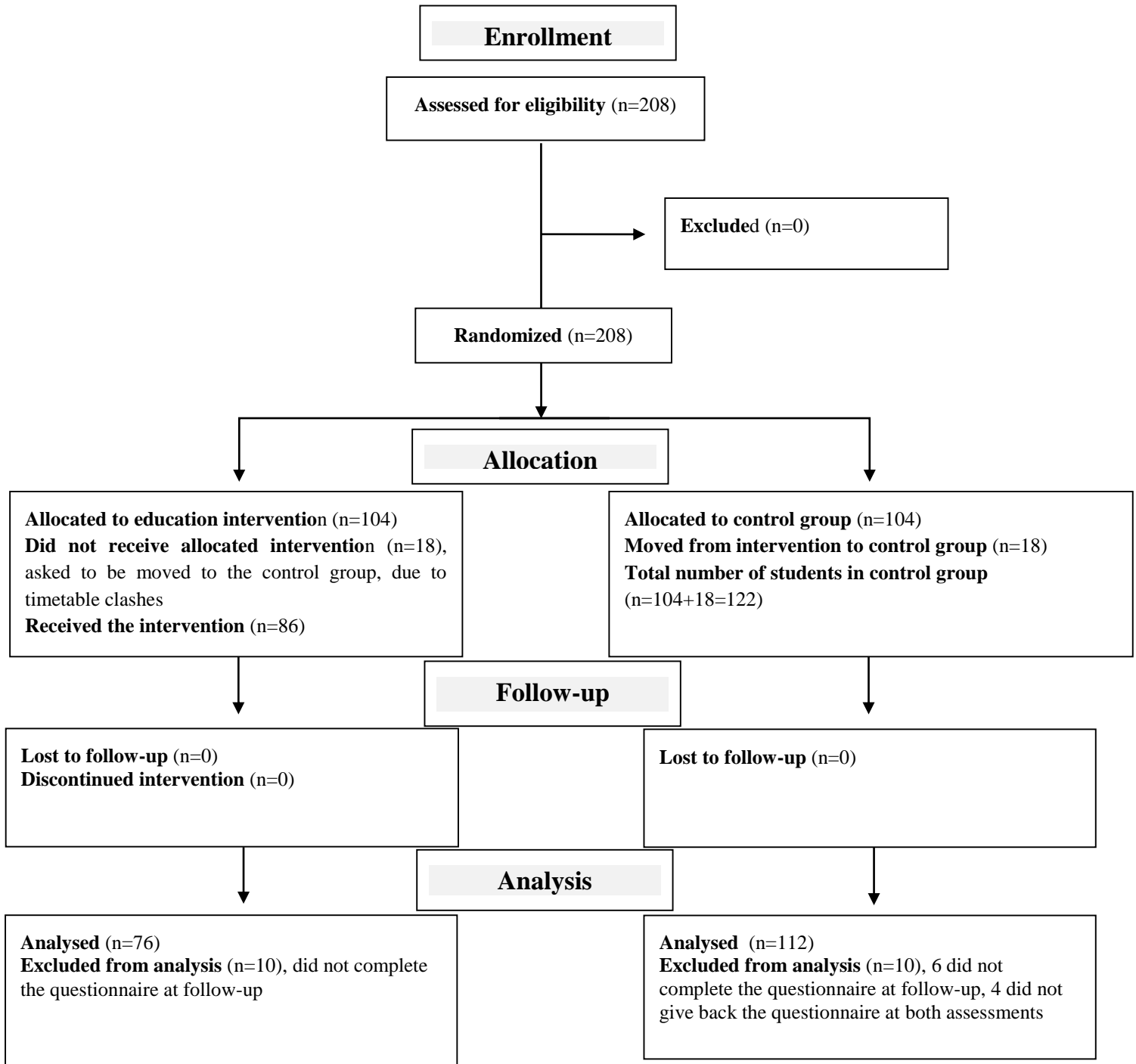
## **REFERENCES**

- Banfi, A. (2009). La mia pazza...gravidanza! *ForumSaluteMentale* Retrieved from [www.forumsalutementale.it](http://www.forumsalutementale.it)
- Brown, S. A., Evans, Y., Espenschade, K., & O'Connor, M. (2010). An examination of two brief stigma reduction strategies: filmed personal contact and hallucination simulations. *Community Mental Health Journal*, *46*, 494-499. doi: 10.1007/s10597-010-9309-1

- Buck, B., Romeo, K. H., Olbert, C. M., & Penn, D. L. (2014). Self-reported comfort treating severe mental illnesses among pre-doctoral graduate students in clinical psychology. *Journal of Mental Health, 23*, 297-302. doi: 10.3109/09638237.2014.924048
- Corrigan, P. W., & Penn, D. L. (1999). Lessons from social psychology on discrediting psychiatric stigma. *American Psychology, 54*, 765-776.
- Costanzo, R., De Leo, R., Petrillo, M., Rinaldi, A., Schioppa, G., & Magliano, L. (2013). Le opinioni degli studenti di psicologia sulla schizofrenia [Opinions' of psychology students about schizophrenia]. *Poster presented at the Scientific Days of the Second University of Naples, Italy*
- Deacon, B. J. (2013). The biomedical model of mental disorder: a critical analysis of its validity, utility, and effects on psychotherapy research. *Clinical Psychology Review, 33*(7), 846-861. doi: 10.1016/j.cpr.2012.09.007
- Fazel, S., Langstrom, N., Hjern, A., Grann, M., & Lichtenstein, P. (2009). Schizophrenia, substance abuse, and violent crime. *The British journal of psychiatry. Supplement Royal College of Psychiatrists, 301*, 2016-2023.
- Friedrich, B., Evans-Lacko, S., London, J., Rhydderch, D., Henderson, C., & Thornicroft, G. (2013). Anti-stigma training for medical students: the Education Not Discrimination project. *British Journal of Psychiatry Suppl, 55*, s89-94. doi: 10.1192/bjp.bp.112.114017
- Govers, L. (2009). "Lo psichiatra mi inseguiva a piedi per le strade di Torino". *Parlare Con Le Voci*. Retrived from [www.parlareconlevoci.it](http://www.parlareconlevoci.it)
- Haddock, G., Eisner, E., Boone, C., Davies, G., Coogan, C., & Barrowclough, C. (2014). An investigation of the implementation of NICE-recommended CBT interventions for people with schizophrenia. *Journal of Mental Health, 23*, 162-165. doi: 10.3109/09638237.2013.869571
- Levine, S. Z., Lurie, I., Kohn, R., & Levav, I. (2010). Trajectories of the course of schizophrenia: From progressive deterioration to amelioration over three decades. *Schizophrenia Research, 126*, 184-191. doi: <http://dx.doi.org/10.1016/j.schres.2010.10.026>
- Lincoln, T. M., Arens, E., Berger, C., & Rief, W. (2008). Can antistigma campaigns be improved? A test of the impact of biogenetic vs psychosocial causal explanations on implicit and explicit attitudes to schizophrenia. *Schizophrenia Bulletin, 34*, 984-994. doi: 10.1093/schbul/sbm131
- Magliano, L., Fiorillo, A., De Rosa, C., Malangone, C., & Maj, M. (2004). Beliefs about schizophrenia in Italy: a comparative nationwide survey of the general public, mental health professionals, and patients' relatives. *Canadian Journal of Psychiatry, 49*(5), 322-330.
- Magliano, L., Read, J., Sagliocchi, A., Oliviero, N., D'Ambrosio, A., Campitiello, F., ...Patalano, M. (2014). "Social dangerousness and incurability in schizophrenia": results of an educational intervention for medical and psychology students. *Psychiatry Research, 219*, 457-463. doi: 10.1016/j.psychres.2014.06.002
- Magliano, L., Read, J., Sagliocchi, A., Patalano, M., D'Ambrosio, A., & Oliviero, N. (2012). Differences in views of schizophrenia during medical education: a comparative study of 1st versus 5th-6th year Italian medical students. *Social Psychiatry and Psychiatric Epidemiology, 48*, 1647-1655. doi: 10.1007/s00127-012-0610-x
- Magliano, L., Read, J., Sagliocchi, A., Patalano, M., & Oliviero, N. (2013). Effect of diagnostic labeling and causal explanations on medical students' views about treatments for psychosis and the need to share information with service users. *Psychiatry Research, 210*, 402-407. doi: 10.1016/j.psychres.2013.07.022
- Mann, C. E., & Himelein, M. J. (2008). Putting the person back into psychopathology: an intervention to reduce mental illness stigma in the classroom. *Social Psychiatry and Psychiatric Epidemiology, 43*, 545-551. doi: 10.1007/s00127-008-0324-2

- Mueser, K. T., Deavers, F., Penn, D. L., & Cassisi, J. E. (2013). Psychosocial treatments for schizophrenia. *Annual Review of Clinical Psychology, 9*, 465-497. doi: 10.1146/annurev-clinpsy-050212-185620
- Read, J., & Harré, N. (2001). The role of biological and genetic causal beliefs in the stigmatisation of the "mental patients". *Journal of Mental Health, 10*, 223-235. doi: 10.1080/09638230020023778
- Read, J., & Law, A. (1999). The relationship of causal beliefs and contact with users of mental health services to attitudes to the 'mentally ill'. *International Journal of Social Psychiatry, 45*, 216-229.
- Read, J., Magliano, L., & Beavan, V. (2013). Public beliefs about the causes of "schizophrenia": bad things happen and can drive you crazy. In J. Read & J. Dillon (Eds.), *Models of Madness, 2nd ed.* (pp. 143-156). London: Routledge
- Reavley, N. J., & Jorm, A. F. (2014). The Australian public's beliefs about the causes of schizophrenia: associated factors and change over 16 years. *Psychiatry Research, 220*, 609-614. doi: 10.1016/j.psychres.2014.07.016
- Roe, D., Yanos, P. T., & Lysaker, P. H. (2006). Overcoming barriers to increase the contribution of clinical psychologists to work with persons with severe mental illness. *Clinical Psychology, 13*, 376-383. doi: 10.1111/j.1468-2850.2006.00051.x
- Semisa, D., Lasalvia, A., Miceli, M., Dall'Agnola, R. B., Pucci, C., Bissoli, S.,... SIEP-DIRECT working group (2008). The acceptability of the NICE recommendations for schizophrenia in the Italian Departments of Mental Health. The SIEP-DIRECT'S Project on the discrepancy between routine practice and evidence. *Epidemiologia e Psichiatria Sociale, 17*, 291-304.
- Servais, L. M., & Saunders, S. M. (2007). Clinical Psychologists' Perceptions of Persons With Mental Illness. *Professional Psychology: Research and Practice, 38*, 214-219. doi: 10.1037/0735-7028.38.2.214
- Soundy, A., Stubbs, B., Roskell, C., Williams, S. E., Fox, A., & Vancampfort, D. (2015). Identifying the facilitators and processes which influence recovery in individuals with schizophrenia: a systematic review and thematic synthesis. *Journal of Mental Health, 1-8*. doi: 10.3109/09638237.2014.998811
- Stubbs, A. (2014). Reducing mental illness stigma in health care students and professionals: a review of the literature. *Australian Psychiatry, 22*, 579-584. doi: 10.1177/1039856214556324
- Tibaldi, G., & Govers, L. (2012). Evidence-based hope for recovery from "schizophrenia": A common objective for all stakeholders in the mental health field. *Psychosis: Psychological, Social and Integrative Approaches, 4*, 105-114. doi: 10.1080/17522439.2011.584349
- Varese, F., Smeets, F., Drukker, M., Lieverse, R., Lataster, T., Viechtbauer, W., Read, L., van Os, J., Bentall, R. P. (2012). Childhood adversities increase the risk of psychosis: a meta-analysis of patient-control, prospective- and cross-sectional cohort studies. *Schizophrenia Bulletin, 38*, 661-671. doi: 10.1093/schbul/sbs050
- Yamaguchi, S., Wu, S. I., Biswas, M., Yate, M., Aoki, Y., Barley, E. A., & Thornicroft, G. (2013). Effects of short-term interventions to reduce mental health-related stigma in university or college students: a systematic review. *Journal of Nervous and Mental Diseases, 201*, 490-503. doi: 10.1097/NMD.0b013e31829480df

**Figure 1. Participants Flow Diagram**



**Table 1. Students' causal explanations of schizophrenia: paired comparisons of baseline versus one-month reassessment in educated (N=76) and control groups (N=112).**

Causes	Answers	Groups	Baseline	One-month
			assessment	reassessment
			N (%)	N (%)
Heredity	Yes	E	64 (84.2)	53 (69.7)
		C	92 (82.1)	96 (85.7)
Psychological traumas	Yes	E	47 (61.8)	58 (76.3)
		C	64 (57.1)	66 (58.9)
Stress	Yes	E	33 (43.4)	55 (72.4)*
		C	45 (40.2)	56 (50.0)
Love disillusionment	Yes	E	5 (6.6)	23 (30.3)*
		C	13 (11.6)	31 (27.7)
Physical illness	Yes	E	4 (5.3)	4 (5.3)
		C	4 (3.6)	9 (8.0)
Incorrect therapy	Yes	E	17 (22.4)	10 (13.2)
		C	14 (12.5)	23 (20.5)
Misuse of alcohol	Yes	E	18 (23.7)	15 (19.7)
		C	28 (25.0)	24 (21.6)
Misuse of street drugs	Yes	E	25 (32.9)	17 (22.4)
		C	42 (37.5)	38 (33.9)
Frequenting bad company	Yes	E	1 (1.3)	1 (1.3)
		C	2 (1.8)	0
Family conflicts	Yes	E	20 (26.3)	33 (43.4)
		C	38 (33.9)	32 (28.6)
Chemical imbalance	Yes	E	32 (42.1)	30 (39.5)
		C	47 (42.0)	59 (52.7)
Physical illness in pregnancy	Yes	E	10 (13.2)	5 (6.6)
		C	14 (12.5)	20 (17.9)

E=Educated group; C=Control group; \* Mc Nemar test,  $p < .05$  with Bonferroni correction

**Table 2. Students' views on prognosis and treatments in schizophrenia: paired comparisons of baseline vs. one-month reassessment in educated (N=76) and control groups (N=112).**

Items	Answers	Groups	Baseline assessment	One-month reassessment
			N (%)	N (%)
PWS can recover	Not true	E	2 (3.2)	2 (2.7)
	Partially true		46 (73.0)	24 (32.4)
	Totally true		15 (23.8)	48 (64.9)*
	Not true	C	7 (7.4)	6 (5.8)
	Partially true		66 (70.2)	60 (58.3)
	Totally true		21 (22.3)	37 (35.9)
Drug treatments are useful in schizophrenia	Not true	E	5 (6.7)	0
	Partially true		45 (60.0)	35 (46.1)
	Totally true		25 (33.3)	41 (53.9)*
	Not true	C	3 (2.7)	1 (0.9)
	Partially true		65 (59.1)	62 (55.4)
	Totally true		42 (38.2)	49 (43.8)
Psychological treatments are useful in schizophrenia	Not true	E	0	0
	Partially true		31 (40.8)	11 (14.7)
	Totally true		45 (59.2)	64 (85.3)*
	Not true	C	1 (0.9)	1 (0.9)
	Partially true		42 (38.5)	35 (31.3)
	Totally true		66 (60.6)	76 (67.9)

E=Educated group; C=Control group; \* Wilcoxon signed-rank test for paired data,  $p < .05$  with Bonferroni correction

**Table 3. Students' views on unpredictability, dangerousness and recognizability in schizophrenia: paired comparisons of baseline vs.one-month reassessment in educated (N=76) and control groups (N=112).**

Items	Answers	Groups	Baseline	One-month reassessment
			assessment	
			N (%)	N (%)
PWS are dangerous	Not true	E	5 (7.1)	19 (25.3)
	Partially true		60 (85.7)	54 (72.0)
	Totally true		5 (7.1)	2 (2.7)
	Not true	C	3 (2.9)	9 (8.4)
	Partially true		87 (84.5)	91 (85.0)
	Totally true		13 (12.6)	7 (6.5)
PWS are unpredictable	Not true	E	5 (7.1)	24 (34.8)
	Partially true		40 (57.1)	39 (56.5)
	Totally true		25 (37.5)	6 (8.7)*
	Not true	C	5 (4.6)	9 (8.7)
	Partially true		57 (52.8)	68 (65.4)
	Totally true		46 (42.6)	27 (26.0)
PWS are recognizable	Not true	E	28 (38.4)	47 (63.5)
	Partially true		40 (54.8)	24 (32.4)
	Totally true		5 (6.8)	3 (4.1)*
	Not true	C	37 (35.2)	36 (36.0)
	Partially true		55 (52.4)	55 (55.0)
	Totally true		13 (12.4)	9 (9.0)

E=Educated group; C=Control group; \*Wilcoxon signed-rank test for paired data,  $p < .05$  with Bonferroni correction