Changing Attitudes About Schizophrenia

by E. Paul Holmes, Patrick W. Corrigan, Princess Williams, Jeffrey Canar, and Mary Ann Kubiak

Abstract

Research on the effectiveness of short-term education programs in changing societal attitudes about mental illness has been mixed. Education efforts seem to be mediated by characteristics of the program participants. This study determines whether the effects of a specially prepared, semester-long course on severe mental illness are mediated by pre-education knowledge about and contact with severe mental illness. Eighty-three participants who were enrolled in either a course on severe mental illness or general psychology completed the Opinions about Mental Illness Questionnaire before beginning the course and at completion. Research participants also completed a pre- and posttest of knowledge about mental illness and a pretest on their contact with people who have severe mental illness. The education program had positive effects on some attitudes about mental illness. Interestingly, the effects of education group interacted with pre-education knowledge and contact and varied depending on attitude. Participants with more pre-education knowledge and contact were less likely to endorse benevolence attitudes after completing the education program. Participants with more intimate contact showed less improvement in attitudes about social restrictiveness. Implications of these augmentation and ceiling effects are discussed.

Key words: Stigma, schizophrenia, attitudes, education.


Misconceptions and inaccurate attitudes about persons with severe mental illnesses such as schizophrenia severely affect the lives of persons with these disorders (Link et al. 1989; Wahl and Harman 1989; Corrigan and Penn 1999). For example, research has shown that many people with severe mental illness experience discrimination at work because of stigmatizing views about mental illness (Farina and Felner 1973; Bordieri and Drehmer 1986; Link 1987), when leasing apartments (Page 1983), and in the criminal justice system (Sosowsky 1980; Steadman 1981). Results of two independent factor analyses of more than 2,000 English and American subjects yielded three factors that describe stigmatizing attitudes (Taylor and Dear 1980; Brockington et al. 1993):

1. Authoritarianism—people with severe mental illness are irresponsible, so their life decisions should be made by others;
2. Benevolence—people with severe mental illness are childlike and need to be cared for; and
3. Fear and exclusion—people with severe mental illness should be feared and therefore segregated from the community.

Given the effects of stigma on mental illness, various advocacy groups believe that changing public attitudes will diminish stigma, stop discrimination, and enhance the quality of life of people with psychiatric disability (Flynn 1987; Corrigan and Penn 1999). The National Alliance for the Mentally Ill (NAMI), for example, has embraced education as an essential element of its stigma-busting efforts. NAMI has developed and distributed its Science and Treatment Kit to State affiliates; these kits are multimedia presentations that inform the public about important issues related to mental illness and corresponding treatments.

Several research studies have examined the effects of education on attitudes about severe mental illness. Cross-sectional studies have shown that members of the general public who have more knowledge about mental illness are less likely to endorse stigmatizing attitudes (Roman and Floyd 1981; Link and Cullen 1986; Link et al. 1987; Brockington et al. 1993). These studies suggest that education programs that increase factual knowledge about mental illness may improve attitudes about severe mental ill-
nesses such as schizophrenia. Researchers who study the social cognitive underpinnings of stigma and stereotype believe that education challenges the misconceptions that support these stereotypes (Pruegger and Rogers, 1994). Persons are less likely to endorse these knowledge structures in the face of contrary information.

In two related studies, Keane (1990, 1991) examined how an 8-week course on general psychiatry affected the attitudes of nursing and medical students. Changing student views about mental illness is important given the frequency with which professionals endorse stigmatizing attitudes (Mirabi et al. 1985; Lyons and Ziviani 1995). In Keane's (1990, 1991) studies, attitudes were measured using the Opinions about Mental Illness Questionnaire (OMI), a questionnaire with factors that parallel the three stigmatizing factors described by Brockington et al. (1993). Nursing students showed significant improvements on the authoritarianism scale of the OMI (Keane 1991) and medical students completing the course showed significant improvement in the benevolence scale (Keane 1990).

Penn and colleagues (1994) examined the effect of education in a study that varied the kinds of information presented to research participants. Some participants received information about the confederate's acute symptoms; others were informed about the confederate's aftercare plan (Penn et al. 1994, p. 575). Although the investigators believed this information would allay negative attitudes, results were somewhat mixed: Information about posttreatment living arrangements reduced negative judgments about the confederate; however, information about acute symptoms seemed to create greater stigma. Research participants who were given information about psychotic symptoms showed a significant increase in negative attitudes about schizophrenia.

Examination of Penn et al.'s findings also showed that several attitudes about severe mental illness remained unchanged after education. A TV-based education program had similar limitations; Wahl and Leffkowitz (1989) found that a three-sentence message provided before and after a made-for-TV-film about a psychiatric patient who murders his wife had no effect on viewers' attitudes about mental illness. These mixed findings are consistent with social psychological research, which suggests that stigma and stereotype can be relatively immutable to the effects of education. Social psychological research on stereotyping has shown that members of the general public who have regular contact with representatives of a minority group are more likely to endorse positive attitudes about that group (Gaertner et al. 1996). In terms of mental illness, citizens who regularly encounter individuals with schizophrenia are likely to have more positive attitudes about psychiatric disability (Corrigan and Penn, 1999).

Providing sufficient information to counter stigma regarding symptoms is difficult in one-page vignettes like those used by Penn and colleagues (1994; 1999, this issue). A longer education program that includes discussion about stigmatizing assumptions may be needed. The study reported in this article examines the effects of a semester-long course on severe mental illness and psychiatric rehabilitation on the attitude of adults at a community college. The course was specifically designed to provide factual information that challenges many of the misconceptions about schizophrenia. The specificity of its effects was tested by comparing attitude change after the course with attitude change that results from completing a general psychology course.

Adults participating in an education program are not passive agents; information learned during these classes interacts with person variables. This study examined two factors that may interact with the effects of education on attitudes about schizophrenia and other severe mental illnesses. First, given the positive relationship between knowledge about severe mental illness and attitudes (Link et al. 1987; Brockington et al. 1993), the student's pre-education knowledge about severe mental illness is likely to affect the impact of education on attitudes. Second, contact with people with severe mental illness may interact with the effects of education. Social psychological research on stereotyping has shown that members of the general public who have regular contact with representatives of a minority group are more likely to endorse positive attitudes about that group (Gaertner et al. 1996). In terms of mental illness, citizens who regularly encounter individuals with schizophrenia are likely to have more positive attitudes about psychiatric disability (Corrigan and Penn, 1999).

Lack of attitude change in the Penn et al. (1994) study may have occurred because research participants were apprised about symptom level without any information to normalize symptom experience, that is, put violent behavior in a meaningful context. In a subsequent study, Penn and associates (Penn et al. 1999, this issue) assumed that stigmatizing views about schizophrenia stem from concerns about dangerousness, based on earlier research that showed a significant relationship between stigma and perceived dangerousness (Link et al. 1987). Therefore, Penn and colleagues (in press) provided one-page information sheets about the base rate of violence in mentally ill populations or the relationship between psychotic symptoms and aggression. They believed that participants in the second study would stigmatize less when they understood the true base rate of violent behavior or when they learned that persons with psychotic symptoms are not always dangerous and unpredictable. Results supported this hypothesis: Participants who learned about violence were less likely to stigmatize than were a no-information control group. However, information about psychotic symptoms and aggression had no significant effect on stigmatizing attitudes.

In two related studies, Keane (1990, 1991) examined...
Individuals with greater pre-education knowledge about mental illness are primed to positive attitudes about psychiatric disability and, therefore, show greater attitude change after completing an education program. Alternatively, attitude change might be limited by a ceiling effect. Individuals with relatively higher pre-education knowledge about or contact with severe mental illness may already have relatively positive attitudes about mental illness close to the ceiling of the OMI scale. Education will not improve attitudes already at the upper limits of the scale. This study will determine whether person variables interact with education and what kind of effect they exert on attitude change. Research on racial discrimination shows that education has significantly greater impact on stereotypes when contact with persons in the stereotyped group is integrated into the education program (Weber and Crocker 1983; Rothbart and Lewis 1988). Hence, we expect contact to yield an augmenting effect on mental illness stigma.

The effects of an education program will also depend on its content. Hence, a course may have differing effects on the three clusters of stigmatizing attitudes: authoritarianism, benevolence, and fear and exclusion. Rather than yielding a general, nonspecific effect on attitudes, a course may have positive effects on some attitudes and no effects on others. This study tests the generality of education effects on attitude change. Like Keane (1990, 1991), we expect education to have significant effects on authoritarianism and benevolence.

**Method**

Adults enrolled at a community college in metropolitan Chicago were solicited for this study. One hundred prospective participants were recruited from one of two courses taught at the college: “Severe Mental Illness and Psychiatric Rehabilitation” (referred to as Severe Mental Illness) and “Introduction to General Psychology” (General Psychology). The first course reviewed the principles and skills that comprise rehabilitation for people with psychiatric disability. As such, the course began with information reviewed in the two studies by Penn et al. (1994, in press); an extensive discussion of phenomenology, course, and etiology of schizophrenia; a review of research on dangerousness; and a summary of the medical and rehabilitation services that treat the disorder. The course also included two 60-minute lectures/discussions, the first by a consumer and the second by a family member. In-class contact with consumers and family members was expected to decrease negative attitudes about mental illness (Corrigan and Penn, 1999).

Students participated in the course for a 16-week semester in cohorts of 10 to 14. Students from three semesters were recruited for this study. The course was taught by the first author (E.P.H), a clinical psychologist and clinical director of a large psychiatric rehabilitation program. The syllabus for the course has now been adopted by more than 40 community colleges in Illinois for training students on severe mental illness and psychiatric rehabilitation.

Attitudes of individuals completing the Severe Mental Illness course were compared with attitudes of students in General Psychology. General Psychology was selected as a comparison course because it teaches students basic theories about human behavior without providing any direct information regarding severe mental illness or challenging stigma about psychiatric disability. Although some change in attitudes might result from this course, it was not expected to be as great as the improvement in attitudes shown by students in the severe mental illness course. Three cohorts of 12 to 16 students completed the semester-long course.

**Measures.** Participants in both groups completed measures of knowledge about and contact with severe mental illness. They also completed the OMI to assess stigmatizing attitudes.

**Knowledge test.** Research participants were administered an 80-item true-false knowledge test before beginning their respective courses and upon completion. Given the findings of Penn et al. (1994) on the separate effect of information about symptoms and treatment, the knowledge test queried participants regarding factual information about both domains. In establishing content validity for the test, three independent raters judged a preliminary set of 100 items for relevance to severe mental illness and psychiatric rehabilitation. Any item not judged relevant by all three raters was removed from the final test. The list was thus pared to 89 items. Three independent raters then judged whether answers to each item were true or false. Raters did not agree on answers for nine items and these items were removed from the test. Cronbach’s alpha for the subsequent 80-item test was determined on a sample of 60 community college students not participating in this study and was found to be adequate (alpha = 0.92). Total number correct on the knowledge test was recorded for research participants as an index of their level of factual knowledge about severe mental illness.

**Level-of-contact report.** Previous studies measured contact categorically by asking participants the question, “Do you know someone with a mental illness?” (Roman and Floyd 1981; Penn et al. 1994). Categorical measures have limited power so we developed the continuous level-of-contact report, which all research participants completed before beginning their course. The level-
of-contact report (see figure 1) lists 12 situations in which intimacy of contact with severe mental illness varies. These situations were adapted from other scales used in stigma research (Link et al. 1987; Penn et al. 1994) and varied from least intimate contact (i.e., “I have observed, in passing, a person I believe may have had a mental illness”) to medium intimacy (“I have worked with a person who had a severe mental illness at my place of employment”). Three experts in severe mental illness and psychiatric rehabilitation ranked the situations in terms of intimacy of contact; the mean of rank order correlations summarizing interrater reliability was 0.83.

Research participants were instructed to check all situations on the list that they had experienced in their lifetime. The index for contact in this study was the rank score of the most intimate situation indicated by the participant. For example, a person who checked “A friend of the family has a severe mental illness” (rank order score = 9), “I have watched a documentary on television about mental illness” (rank order score = 4), and “My job includes providing services to persons with a severe mental illness” (rank order score = 7) would receive a score of 9 because “A friend of the family has a severe mental illness” is the most intimate of checked situations.

Figure 1. Level-of-contact report

Please read each of the following statements carefully. After you have read all the statements below, place a check by the statements that best depict your exposure to persons with a severe mental illness.

1. I have watched a movie or television show in which a character depicted a person with mental illness.
2. My job involves providing services/treatment for persons with a severe mental illness.
3. I have observed, in passing, a person I believe may have had a severe mental illness.
4. I have observed persons with a severe mental illness on a frequent basis.
5. I have a severe mental illness.
6. I have worked with a person who had a severe mental illness at my place of employment.
7. I have never observed a person that I was aware had a severe mental illness.
8. My job includes providing services to persons with a severe mental illness.
9. A friend of the family has a severe mental illness.
10. I have a relative who has a severe mental illness.
11. I have watched a documentary on the television about severe mental illness.
12. I live with a person who has a severe mental illness.

Note.—Rankings made by the panel of experts are included for each item.

OMI. Participants completed the OMI before participating in their course and upon completion (Cohen and Struening 1962). This questionnaire has 70 statements about the presentation and treatment of severe mental illness (e.g., “One of the main causes of mental illness is a lack of moral strength or will power”), which respondents rate using a 6-point agreement scale (6 = strongly disagree). Factor analyses of the OMI have yielded five reliable and valid factors (Struening and Cohen 1963). Three of the scales closely parallel the results of factor analyses on stigmatizing attitudes (Taylor and Dear 1980; Brockington et al. 1993), have been used extensively in previous education research (Keane 1990, 1991), and so were selected for this study: (1) authoritarianism—a negative attitude that people with severe mental illness are threatening and inferior and, therefore, they require coercive handling; (2) benevolence—a negative attitude that people with severe mental illness need to be cared for and, therefore, they should be approached paternalistically; and (3) social restrictiveness—a negative attitude that people with severe mental illness are socially threatening and so they need to be restricted in hospital and community settings. This last factor parallels the fear and exclusion factor in the study by Brockington et al. (1993). The three OMI scales have been used extensively to describe professional and public attitudes about severe mental illness; higher OMI scores represent greater disagreement with the stigmatizing attitude (Cohen and Struening 1962, 1964, 1965).

The dependent variable used in the analyses in this study was change scores for each of the three OMI scales, that is, the difference between post- and pre-education OMI scores. Difference scores, rather than residualized change scores, were selected because preliminary analyses of our data failed to show a significant relationship (p > 0.70) between difference and total scores; a positive relationship between difference and total scores is one reason why residualized change scores are used (Chapman and Chapman 1989).

Data Analysis. The primary purpose of this study was to determine whether the effects of education on stigmatizing attitudes interact with pre-education knowledge and contact. We selected multiple regression as the test to examine these effects because pre-education knowledge and contact can be entered into regression equations as continuous variables, thereby increasing the power of the analyses over group comparisons like analyses of variance. Moreover, effects of demographic variables that might confound changes in OMI scores could be partialled out in multiple regressions. Finally, the multiple effects of education, contact, and knowledge could be modeled in a single equation.
Given this rationale, data from the study were analyzed in three steps. First, the association between education group, demographic variables, and OMI change scores were examined. In addition, the interaction of demographic variables with education, pre-education knowledge, and contact were regressed against OMI change scores to determine whether demographics interact with education to account for significant change in stigmatizing attitudes. Any demographic or interaction variable found to account for significant variance in OMI change scores would have been included in subsequent multiple regressions.

Second, preliminary analyses were conducted to determine bivariate correlations between OMI change scores and education, pre-education knowledge, and contact. Interactions between education and the two person variables (pre-education knowledge and contact) were also determined; bivariate correlations between these interactions and OMI change scores were then calculated. The effect of education, pre-education knowledge, contact, and interaction variables was expected to vary with the content of stigmatizing attitudes. Hence, these bivariate correlations were determined individually for changes in authoritarianism, benevolence, and social restrictiveness. Subsequent t tests were conducted to determine whether patterns of correlations significantly differed by content of stigmatizing attitudes.

In the third step of these analyses, education, pre-education knowledge, pre-education contact, and interaction variables that accounted for significant variance in OMI change scores were simultaneously entered into a multiple regression. The purpose of these analyses was to determine which variables accounted for independent variance in each OMI change score.

**Results**

**Demographic Variables and OMI Change Scores.**

One benefit of completing the study on adults in community college is that students participating in the Severe Mental Illness course were more similar demographically to the general public than were the nursing, medical, and university students that participated in earlier studies (Keane 1990, 1991; Penn et al. 1994; 1999, this issue). Compare these students’ demographics with those of the students in the General Psychology course, individuals who had only recently completed high school (table 1). Both groups had completed an equal number of years of school (mean = 13.4 years). There were no significant differences across groups in gender or ethnicity; however, students participating in the Severe Mental Illness course, like adults in the general public, were significantly older, more likely to be employed, and more likely to be married.

The difference in demographic variables across groups could confound the results of this study. However, examination of correlations between OMI change scores and demographic variables yielded no significant associations (p > 0.10). Moreover, interactions between demographic variables and education group, pre-education knowledge, and pre-education contact were not found to be significantly associated with the three OMI change scores (p > 0.10). Therefore, neither demographic variables nor their interactions were included in the subsequent multiple regressions.

Table 2 lists the mean and standard deviations for scores on the three OMI scales and knowledge test collected before and after completing each education course. Students completing the Severe Mental Illness course showed significant improvement in their knowledge test scores. No change was noted in knowledge for students in the General Psychology course. Students in the Severe Mental Illness course also showed significant improvement in benevolence and social restrictiveness OMI scales. Interestingly, students in General Psychology also showed significant improvement in benevolence attitudes.

### Table 1. Demographic characteristics of survey participants

<table>
<thead>
<tr>
<th></th>
<th>Education course taken by participant</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Severe Mental Illness</td>
</tr>
<tr>
<td></td>
<td>n = 35</td>
</tr>
<tr>
<td>Gender, %</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>13.5</td>
</tr>
<tr>
<td>Female</td>
<td>86.5</td>
</tr>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>37.6</td>
</tr>
<tr>
<td>SD</td>
<td>14.3</td>
</tr>
<tr>
<td>Ethnicity, %</td>
<td></td>
</tr>
<tr>
<td>Nonwhite</td>
<td>59.6</td>
</tr>
<tr>
<td>White</td>
<td>40.4</td>
</tr>
<tr>
<td>Marital status, %</td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>31.3</td>
</tr>
<tr>
<td>Nonmarried</td>
<td>68.7</td>
</tr>
<tr>
<td>Years of education</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>13.4</td>
</tr>
<tr>
<td>SD</td>
<td>1.4</td>
</tr>
<tr>
<td>Work status, %</td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>17.3</td>
</tr>
<tr>
<td>Part-time job</td>
<td>59.6</td>
</tr>
<tr>
<td>Full-time job</td>
<td>23.0</td>
</tr>
</tbody>
</table>

Note.—SD = standard deviation.

1 Groups differed significantly (p < 0.001).
2 Severe mental illness and general psychology groups differed significantly (p < 0.05).
Table 2. Means and standard deviations (SD) of OMI scales and knowledge tests across education groups

<table>
<thead>
<tr>
<th>OMI scales</th>
<th>Authoritarian</th>
<th>Benevolence</th>
<th>Social restrictiveness</th>
<th>Knowledge test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td>Severe Mental Illness</td>
<td>Pretest</td>
<td>Posttest</td>
<td>Pretest</td>
<td>Posttest</td>
</tr>
<tr>
<td>Authoritarian</td>
<td>105.9 (16.0)</td>
<td>106.9 (16.0)</td>
<td>6.7^1</td>
<td>10.5 (7.2)</td>
</tr>
<tr>
<td>Benevolence</td>
<td>3.8 (4.9)</td>
<td>10.2 (6.9)</td>
<td>41.4 (57.4)</td>
<td>33.8 (46.0)</td>
</tr>
<tr>
<td>Social restrictiveness</td>
<td>38.4 (6.9)</td>
<td>41.4 (6.3)</td>
<td>57.4 (7.1)</td>
<td>34.4 (7.8)</td>
</tr>
<tr>
<td>Knowledge test</td>
<td>50.4 (4.8)</td>
<td>57.4 (7.1)</td>
<td>46.5 (5.3)</td>
<td>46.0 (6.5)</td>
</tr>
</tbody>
</table>

Note.—OMI = Opinions of Mental Illness Questionnaire.

1 Pretest significantly differs from posttest (p < 0.001).
2 Pretest significantly differs from posttest (p < 0.01).

Bivariate Correlations Between OMI Change Scores and Education Group, Pre-education Knowledge, and Pre-education Contact. Correlation coefficients representing the relationship between OMI change scores and measures of education group, knowledge, and contact are summarized in table 3. Nonsignificant trends described the relationship between pre-education knowledge and contact (r = 0.17, p = 0.08). Note that several associations between the five independent variables in the table and the benevolence and social restrictiveness change scores were significant. However, none of the correlation coefficients between the authoritarianism change score and the five independent variables were significant, suggesting that the effects of education and person variables did not affect the authoritarianism attitude factor. This conclusion was specifically tested in a series of t statistics that examined the difference in the first row of correlation coefficients (representing the association between authoritarianism change score and the five independent variables) and the remaining correlation coefficients (representing the association between the benevolence and social restrictiveness change scores and the independent variables). These t statistics are summarized in table 4. Note that seven out of ten t statistics are significant (p < 0.05), suggesting that education and person variables significantly affected change in OMI benevolence and social restrictiveness scales while having no effect on authoritarianism.

As table 3 shows, education group had significant effects on benevolence (r = −0.24, p < 0.05) and social restrictiveness (r = −0.20, p < 0.05). Research participants who completed the Severe Mental Illness course showed greater improvement in benevolence and social restrictiveness attitudes than did individuals completing General Psychology. Note, however, that these correlation coefficients did not meet the Bonferroni criterion for significance. Hence, the effects of education alone on changing attitudes may be considered as nonsignificant trends.

Results in table 3 suggest that knowledge pretest and level-of-contact report were significantly associated with change in several OMI scales; these correlation coefficients met Bonferroni criterion for significance. Participants with greater knowledge pretest scores showed more improvement in the benevolence scale of the OMI (r = 0.37, p < 0.0001). Participants with more intimate contact with severe mental illness also showed greater improvement in benevolence (r = 0.31, p < 0.0001). Both these correlations support the augmentation effects of knowledge and contact; participants who knew relatively more

Table 3. Pearson product moment correlates to changes in attitudes about mental illness

<table>
<thead>
<tr>
<th>OMI change score</th>
<th>A Education group</th>
<th>B Knowledge pretest</th>
<th>C Level of contact</th>
<th>Interactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authoritarian</td>
<td>0.05</td>
<td>0.11</td>
<td>−0.06</td>
<td>A × B</td>
</tr>
<tr>
<td>Benevolence</td>
<td>−0.24^1</td>
<td>0.37^2</td>
<td>0.31^2</td>
<td>−0.22^1</td>
</tr>
<tr>
<td>Social restrictiveness</td>
<td>−0.20^1</td>
<td>−0.06</td>
<td>−0.25^3</td>
<td>−0.24^1</td>
</tr>
</tbody>
</table>

Note.—Correlation coefficients in italic type met the Bonferroni criterion for significance (0.05/15 = 0.003). OMI = Opinions of Mental Illness Questionnaire.

1 p < 0.05.
2 p < 0.0001.
3 p < 0.005.
Table 4. *t* statistics representing the differences in *r*'s that describe the correlation between the five independent variables in table 3 (A, B, C, A × B, A × C) and change scores for either authoritarianism or benevolence and social restrictiveness

<table>
<thead>
<tr>
<th>OMI change score</th>
<th>A Education group</th>
<th>B Knowledge pretest</th>
<th>C Level of contact</th>
<th>Interactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authoritarianism vs. Benevolence</td>
<td>2.15^1</td>
<td>-2.01^1</td>
<td>-2.81^1</td>
<td>2.07^1</td>
</tr>
<tr>
<td>Authoritarianism vs. Social restrictiveness</td>
<td>2.08^1</td>
<td>1.39</td>
<td>1.59</td>
<td>2.53^2</td>
</tr>
</tbody>
</table>

Note.—Correlation coefficients in italic type met the Bonferroni criterion for significance (0.05/15 = 0.003). OMI = Opinions of Mental Illness Questionnaire.

1 \( p < 0.05 \)
2 \( p < 0.01 \)
3 \( p < 0.005 \)

about, and had relatively more contact with, severe mental illness before education showed greater improvement in benevolence attitudes about severe mental illness after completing their courses.

Note, however, that table 3 also reports a finding that supports the ceiling effect: Level-of-contact report was shown to be inversely related to change in social restrictiveness (\( r = -0.25, p < 0.05 \)). Examination of the corresponding scatterplots suggested that research participants who reported relatively less contact before education had greater improvements in attitudes about social restrictiveness after completing their course. (Copies of these scatterplots may be obtained from the first author.)

Table 3 also listed correlations between OMI change scores and interaction between education group and knowledge pretest and the interaction between education group and level-of-contact report. The interaction between education group and knowledge pretest correlated significantly with change in attitudes about benevolence (\( r = -0.22, p < 0.05 \)) and social restrictiveness (\( r = -0.24, p < 0.05 \)). Although the probability of these coefficients was less than 0.05, they did not meet Bonferroni criterion and should, therefore, be considered cautiously. The findings represent the augmenting effects of pre-education knowledge and contact on participating in the education program. Examination of the corresponding scatter plots reveals that students in the Severe Mental Illness course who had more knowledge about and contact with severe mental illness before the course showed greater improvements in benevolence and social restrictiveness attitudes than students completing General Psychology did.

The interaction between education group and level-of-contact report correlated significantly with social restrictiveness change scores (\( r = -0.30, p < 0.005 \)); this result met the Bonferroni criterion for significance and showed the impact of a ceiling effect on education. Examination of the scatterplots reveals that students in the Severe Mental Illness course who had relatively more intimate contact with severe mental illness showed less change in attitudes about social restrictiveness. No significant effect on benevolence was noted.

Multiple Regression. A hierarchical, stepwise multiple regression was completed to determine whether the variables in table 3 accounted for independent variance in benevolence and social restrictiveness change scores. In particular, the goal of the analyses was to determine whether pre-education knowledge and contact accounted for significant OMI change score variance after education group was entered into the regression equation. Results of these analyses are reported in table 5. No multiple regression was computed for authoritarianism because no independent variables in table 3 correlated with it significantly.

Results for benevolence change scores showed that after entering education group into the equation, both the interaction of education group and pre-education knowledge (A × B), as well as the level-of-contact report score

Table 5. Results of stepwise regression for the OMI change scores that correlated significantly (\( p < 0.05 \)) with more than one independent variable

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Multiple R</th>
<th>F-to-enter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent variable:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benevolence change score</td>
<td>0.28</td>
<td>5.48</td>
</tr>
<tr>
<td>A Education group</td>
<td>0.37</td>
<td>4.83</td>
</tr>
<tr>
<td>A × B</td>
<td>0.44</td>
<td>1.18</td>
</tr>
<tr>
<td>C Level of contact report</td>
<td>F-to-enter is not significant</td>
<td>0.96</td>
</tr>
<tr>
<td>B Knowledge pretest</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Dependent variable:   |            |            |
| Social restrictiveness change score | 0.20 | 2.62 |
| A Education group    | 0.37 | 7.64 |
| A × B                | 0.48 | 7.47 |
| C Level of contact report | F-to-enter is not significant | 0.10 |

Note.—OMI = Opinions of Mental Illness Questionnaire.
alone, accounted for significant change score variance. These three independent variables accounted for 19.3 percent of the variance in benevolence change. In terms of social restrictiveness, note that the $F$-to-enter representing the relationship between social restrictiveness change score and education group was not significant ($F = 2.62, p > 0.05$) even though the Pearson product moment correlation in table 3 was significant. This discrepancy occurred because five research participants did not complete all the measures and were not included in the multiple regression, thereby decreasing the degrees of freedom for this independent variable. Despite this problem, two of the variables in table 5 accounted for significant variance in the change in social restrictiveness: the interaction between knowledge pretest and education group as well as the level-of-contact report. The three variables accounted for 22.9 percent of change score variance in social restrictiveness.

**Discussion**

The primary purpose of this study was to determine whether the effects of an education program on severe mental illness are mediated by previous knowledge about and contact with severe mental illness. The study also examined the specificity of education effects by examining the pattern of change scores across various attitude factors. Overall, results suggested that the effects of education and its interaction with knowledge and contact varied with attitude content. Namely, attitudes about benevolence and social restriction seemed to improve during the education program. Changes in authoritarian attitudes about mental illness were not found to be associated with any of the independent variables examined in the study. These results are contrary to the findings of Keane (1991), who showed that authoritarian attitudes of nursing students moderated after an 8-week psychiatry course. The results of our study, when compared with Keane (1991), seemed to suggest that the effects of education on specific attitudinal factors may depend on the group participating in the program. More than likely, the pre-education attitudes of nursing students differ from those of the general public and, therefore, lead to different patterns of attitude change.

Like Keane (1990), results from our study showed that the education group was significantly associated with improvement in the OMI benevolence scale. Individuals who participated in the Severe Mental Illness course showed greater improvement in attitudes about patients needing care. Results from our study also showed that participation led to improved attitudes about social restrictiveness. Interestingly, a concurrent General Psychology course yielded significant changes in the benevolence factor of the OMI. This result is not totally surprising, however, because participating students were relatively young (mean = 19.7 years) and probably being exposed to their first information about psychology. Note that change in benevolence scores for students who completed the Severe Mental Illness course was significantly greater than the change score for students in the General Psychology course.

Unfortunately, the main effects on the education group did not meet the Bonferroni criterion for significance, suggesting that the impact of education may be limited. Given findings like these, a second goal of this study was to determine whether pre-education knowledge about and contact with severe mental illness mediated the effects of education. We noted that pre-education knowledge and contact might augment attitude change or limit this kind of change because of a ceiling effect. Both effects were found in this study depending on the attitude factor. Pre-education knowledge and contact seemed to augment benevolence attitude change. Members of the general public with more pre-education knowledge and contact were less likely to endorse benevolence attitudes after completing the education program. Moreover, the effect of pre-education knowledge interacted with education group. Students in the Severe Mental Illness course and who had relatively more pre-education knowledge about severe mental illness showed the greatest improvement in benevolence attitudes.

A contrary result (ceiling effect) was found between contact and change in OMI social restrictiveness scores. Research participants who had had prior intimate contact with mental illness showed lesser improvement in attitudes about social restrictiveness. Moreover, individuals participating in the education course on Severe Mental Illness and who had had more intimate contact showed less improvement in social restrictiveness.

What might account for a ceiling effect in social restrictiveness and an augmentation effect in benevolence? In writing up one of the first factor analyses of the OMI, Cohen and Struening (1962) noted that benevolence is a relatively more benign stigma of mental illness compared with social restrictiveness, “a sort of Christian kindliness toward unfortunates” (p. 353). Persons with knowledge of or contact with severe mental illness are sensitized to issues regarding stigma and may have already perceived the error of a manifestly stigmatizing attitude like social restrictiveness. They are unlikely to benefit from any further education on this attitude. However, further education, like the course on Severe Mental Illness, shows them the disrespect inherent in benevolence attitudes in which persons with mental illness are viewed as children. In this case, their pre-existing contact and knowledge augment change in the benevolence attitude.
The purpose of this study was to determine whether the limited effects of specially crafted courses on severe mental illness are extended when considering person variables and the interaction of these person variables with education. Results of the multiple regression supported our hypothesis, namely that pre-education contact with severe mental illness accounted for independent variance in attitude change for both benevolence and social restrictiveness. Moreover, the interaction of knowledge and contact with education accounted for unique variance in attitude change.

There were both costs and benefits of conducting this research using existing courses at a community college. Unfortunately, we were not able to assign persons randomly to courses, thereby diminishing the internal validity of the results. Note, however, that demographic variables that might confound results of this study were not found to interact with results. Moreover, the age, work history, and marital status of students completing the course on Severe Mental Illness were more similar to the general adult population than were the age, work history, and marital status of the nursing, medical, and college students that participated in the studies by Keane (1990, 1991) and Penn et al. (1994; 1999, this issue), thereby extending the external validity of the study. The course on Severe Mental Illness is now part of the standard community college curriculum in Illinois; hence, results found in this study are likely to be experienced by a large sample of the general adult population. There is one severe limitation in this semester-long course that must be examined in future research; it requires 16 weeks to complete compared with the one-page vignettes used in the studies by Penn and colleagues (1994; 1999, this issue). Brief education programs are appealing because they may affect stigmatizing attitudes with less effort and may be accessible to far more people.

It is unclear which active features in the Severe Mental Illness course led to improvement in benevolence and social restrictiveness attitudes. Future research needs to identify variables that enhance education effects. For example, did the inclusion of consumers and family members enhance attitude change? Future research also needs to determine whether attitude change found in studies like these is maintained over time. Finally, research needs to examine whether improved attitude corresponds with change in behavior. Are members of the general public less likely to discriminate against persons with severe mental illness after participating in an education course like this?

References


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