



Mental Health  
Commission  
of Canada

Commission de  
la santé mentale  
du Canada

# Opening Minds In Middle School:

Results of a Storybook Intervention

Judeline Innocent, PhD (Candidate), Cynthia Baker PhD, Diane Buchanan, PhD,  
Rosemary Wilson, PhD, and Heather Stuart, PhD.

November, 2012

### Acknowledgements

This project was made possible through funding from the *Opening Minds* Anti-stigma Anti-discrimination Initiative of the Mental Health Commission of Canada. The work of the Mental Health Commission of Canada is supported by a grant from Health Canada. The views expressed in this publication are those of the authors.

The authors wish to thank the Gayle Grass and the *Iris the Dragon* charity, and the school boards, principals, teachers, staff, parents and students who participated in this project.

Michelle Koller, PhD Candidate, Queen's University, developed the template for the analysis used in this report. Dr. Heather Stuart, Michelle Koller, PhD Candidate and Dr. Shu-Ping Chen developed the template for the report with input from *Opening Minds* staff, *Opening Minds* Principal Investigators, and the Youth Program network. This report is based on the proposal and subsequent data collected and analyzed as part of a PhD dissertation by Judeline Innocent, School of Nursing, Queen's University.



## ***OPENING MINDS: Changing how we see mental illness.***

As part of its 10-year mandate, The Mental Health Commission of Canada has embarked on an anti-stigma initiative called *Opening Minds* to change the attitudes and behaviours of Canadians towards people with a mental illness. *Opening Minds* is the largest systematic effort undertaken in Canadian history to reduce the stigma and discrimination associated with mental illness. *Opening Minds* is taking a targeted approach, initially reaching out to healthcare providers, youth, the workforce and media. *Opening Mind's* philosophy is to build on the strengths of existing programs from across the county, and to scientifically evaluate their effectiveness. A key component of programs being evaluated is contact-based educational sessions and educational materials intended to decrease stigma, where target audiences hear personal stories from and interact with individuals who have experience with a mental illness and have recovered or are managing their illness. *Opening Mind's* goal is to replicate effective programs nationally, develop new interventions to address gaps in existing programs and add other target groups over time.

For more information go to:

[www.mentalhealthcommission.ca/English/Pages/OpeningMinds.aspx](http://www.mentalhealthcommission.ca/English/Pages/OpeningMinds.aspx)

## **Introduction and Purpose**

Stigma and discrimination have gained the attention of the public health and policy communities as a hidden and costly burden cause by society's prejudicial reaction to people with a mental illness (World Health Organization, 2001). Stigma and discrimination pose major obstacles in virtually every life domain, carrying significant negative social and psychological impacts. Reducing stigma and discrimination have become important policy objectives at both international and national levels (Sartorius & Schulze, 2005). The 2009 launch of the Mental Health Commission's *Opening Minds* anti-stigma anti-discrimination initiative marked the largest systematic effort to combat mental illness related stigma in Canadian History.

The *Opening Minds* program has partnered with a number of programs that deliver contact-based education to primary and high school students throughout Canada. Contact-based education involves people who have experienced a mental illness to educate students by telling their personal stories and allowing time for active discussion. In some cases, teacher lesson plans accompany the classroom presentations.

This report is intended to provide programs with an overview of their key evaluation results. A subsequent initiative will examine each program's components in depth in order to highlight the active ingredients that are associated with the largest change.

## Overview of He Shoots! He Scores!

We evaluated the children's book entitled, *He Shoots! He Scores*, which was written by Gayle Grass (2010). The book is part of the *Iris the Dragon* series of children's books that have been written to help children understand and address the challenges that accompany mental illness. *He Shoots, He Scores* is about a 13 year old boy who is navigating the developmental transition into adolescence. The story shows how the boy overcomes self-stigma and how his friends support him through the process. Like all of the books in the *Iris the Dragon Series*, *He Shoots! He Scores!* was vetted by mental health experts. Books used in this evaluation were donated by the *Iris the Dragon* charity. *Iris the Dragon* is a registered Canadian charity that promotes positive youth development, recovery, and resilience.

The *Iris the Dragon* tales depict life in the "Riverbank Community" of animals who live in harmony with nature and in care and consideration of one another. In the context of enchantment, there are several key elements that have been deliberately included in the story that are designed to entertain, arouse curiosity, and stimulate imagination. In addition, the story is designed to help children develop their intellects, clarify emotions, help children become more attuned to their anxieties and aspirations, give full recognition to the characters' difficulties, but at the same time suggest solutions to these problems. The hero in this fairy-tale is engaged in a traumatic struggle and helped by primitive and natural things, such trees and animals. This connection to the Earth and its creatures often appeals more to children, as they feel more in touch with these natural elements than adults. The fate of these heroes gives the child the hope that, like them, they will be guided and given help when needed.

## Approach to Data Collection

Students were told that a nursing student was going to see them to provide education about mental illness and ask them some questions. The nursing student who explained the instructions used a standardized script. Each student was given a storybook. In order to insure that the book was read in its entirety and to account for different reading speeds, an audio version of the book was also provided. Students listened to the story and followed along in their books. The book took approximately 30 minutes to complete. Students were supervised but no additional teaching was provided.

These results are based on surveys collected at two points in time. The first (pretest) measure occurred immediately prior to the intervention and the second (posttest) measure occurred immediately following the intervention. One hundred and twenty-seven students from five middle schools participated in all the components of this evaluation.

All programs participating in this network initiative have used the same pre- and post-test survey questionnaires to collect their data. These surveys were adapted from items used by the six contact based programs that participated in the instrument development phase of this project. The resulting Stigma Evaluation Survey contained 22 self-report items. Of these:

- 11 items measured **stereotyped attributions**
  - controllability of illness – 4 items,
  - potential for recovery – 2 items, and
  - potential for violence and unpredictability – 5 items
  
- 11 items measured expressions of **social tolerance**, which include both social distance and social responsibility items
  - desire for social distance – 7 items, and
  - social responsibility for mental health issues – 4 items

All items were scored on a 5-point agreement scale, ranging from strongly agree to strongly disagree. To avoid potential response sets some items were positively worded while others were negatively worded. Items were scored so that higher scores on any item would reflect higher levels of stigma. The scales had good reliability in this pooled sample with a pre-test Cronbach's alpha of 0.85 for the Stereotype Scale and 0.85 for the Social Tolerance Scale. Both are well above the conventional threshold of .70 indicating that they are highly reliable. Information on gender, age and grade was also collected.

## Results

### Sample Characteristics

Unless otherwise specified, the analysis is based on 127 matched pre and post-tests out of the 159 students (80%) who completed the pre-test and post-test surveys. The characteristics of the students are presented in **Table 1**. The majority (54%) were female. About half (50%) were 13 years old and most (68%) were in either grade 8. On the pre-test almost three quarters (73%) of the students indicated they knew someone with a mental illness.

**Table 1.** Sample Characteristics for Those Who Completed Both the Pre and Post-test

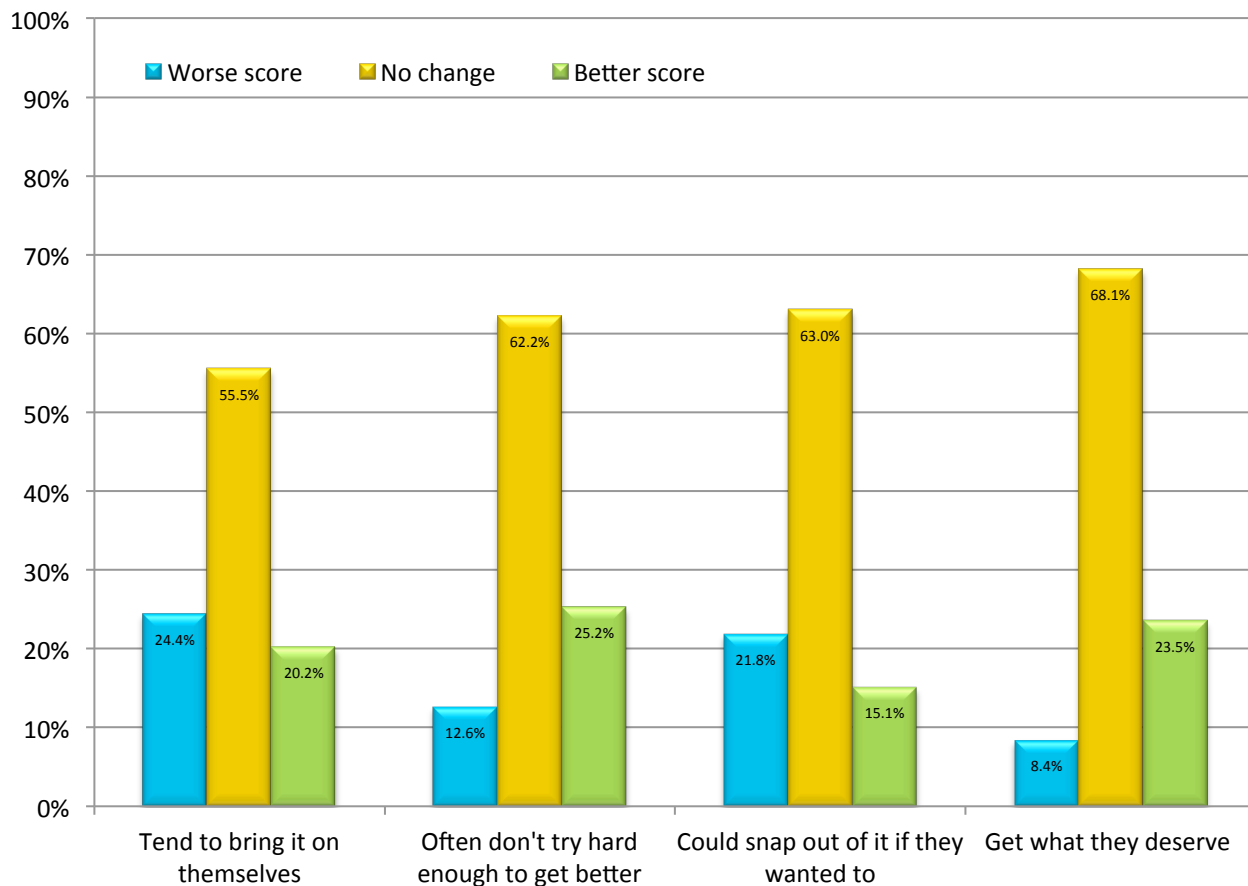
Characteristic	% (n) (n=127)
<b>Gender</b> <ul style="list-style-type: none"> <li>• Male</li> <li>• Female</li> </ul>	45.7 % (58) 54.3 % (69)
<b>Age</b> <ul style="list-style-type: none"> <li>• 11</li> <li>• 12</li> <li>• 13</li> <li>• 14</li> </ul>	3.9 % (5) 23.6 % (30) 49.6 % (63) 22.8 % (29)
<b>Grade</b> <ul style="list-style-type: none"> <li>• 6</li> <li>• 7</li> <li>• 8</li> </ul>	5.5 % (7) 26.8 % (34) 67.7% (86)
<b>Contact- Pre-test - Does someone you know have a mental illness (multiple responses accepted)</b> <ul style="list-style-type: none"> <li>• No</li> <li>• Uncertain</li> <li>• Yes</li> <li>• Missing</li> </ul>	8.2 % (10) 18.9 % (23) 73.0 % (89) (5)

## Stereotypes Attributions

With the exception of the items measuring dangerousness, violence, and predictability, at the time of the pre-test, the majority of respondents held positive (non-stereotypical) attitudes toward people with a mental illness. For example, before the intervention students tended to disagree with the common stereotypes that people with a mental illness could snap out of it if they wanted to (76% disagreed), need to be locked away (76% disagreed), or don't try hard enough to get better (73%). Sixty-nine percent disagreed that people with a mental illness get what they deserve and 61% disagreed that people with a mental illness bring it on themselves. However, less than half (47%) disagreed with the stereotype that people with a mental illness are more dangerous than the average person and slightly over one quarter (26%) disagreed with the stereotype that you can never know what someone with a mental illness is going to do (see **Appendix A** for detailed tables).

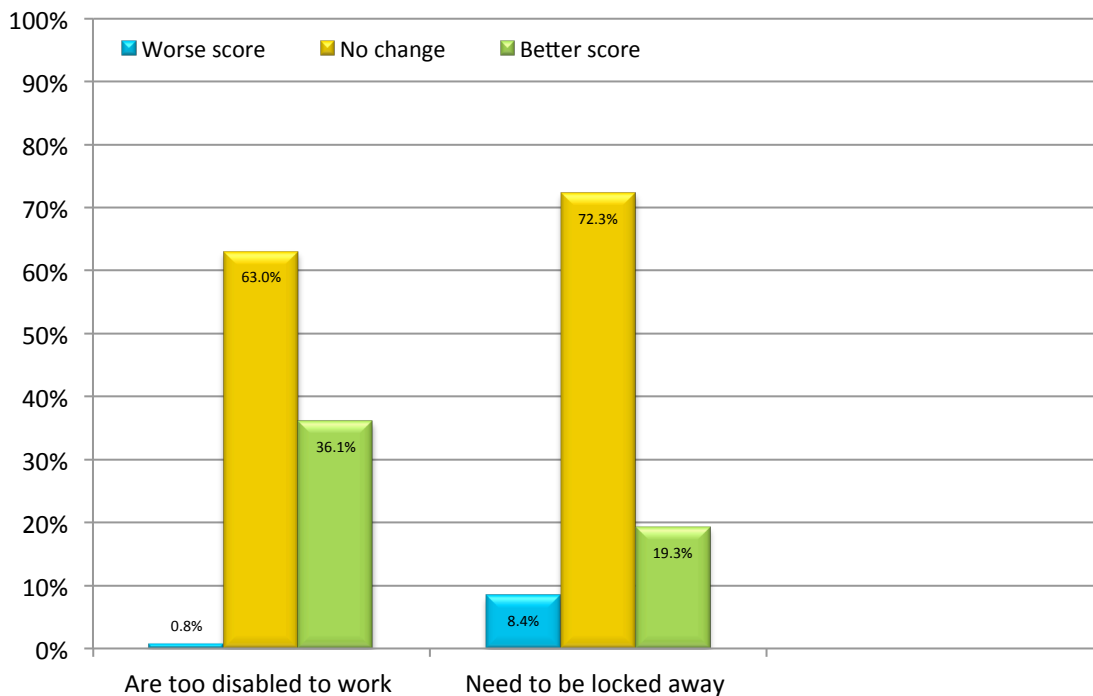
**Figure 1** shows the proportion of students who made any change on the controllability items from pre-test to post-test (where pre-test and post-test surveys were individually matched). The greatest positive shift (reflecting reduced stigma) was for the item “people with a mental illness often don’t try hard enough to get better” (25% improvement), followed by “people with a mental illness get what they deserve” (24% improvement). There was a 20% improvement for the item “people with a mental illness tend to bring it on themselves and a 15% improvement for the item “people with a mental illness could snap out of it if they wanted to”. The majority of students (55% - 68%) did not change scores. Percentages varied by item. These reflected two conditions: either they already held a non-stigmatizing attitude and stayed the same or they had a negative attitude on the pre-test and did not improve. A proportion of students (8%-24%) showed negative change. Please refer to **Appendix A** (p. A3) for specifics.

**Figure 1.** Proportion of students who made any change on the Likert scale from pre-test to post-test – Controllability Items (n=119 pre-test/post-test pairs). The bars show the proportion (%) of students who had a post-test score that was worse than the pre-test score, did not change, and got better (became less stigmatizing).



**Figure 2** shows the proportion of students who made any change on the recovery items. Thirty-six percent improved on the item, “most people with a mental illness are too disabled to work” and 19% improved on the item, “people with serious mental illnesses need to be locked away”. Students whose scores did not change reflected two conditions: either they already held a non-stigmatizing attitude and stayed the same or they had a negative attitude on the pre-test and did not improve. Students whose scores did not change reflected two conditions: either they already held a non-stigmatizing attitude and stayed the same or they had a negative attitude on the pre-test and did not improve. A relatively small proportion of students (0.8% and 8.4%) showed a negative change. Please refer to **Appendix A** (p. A3) for specifics.

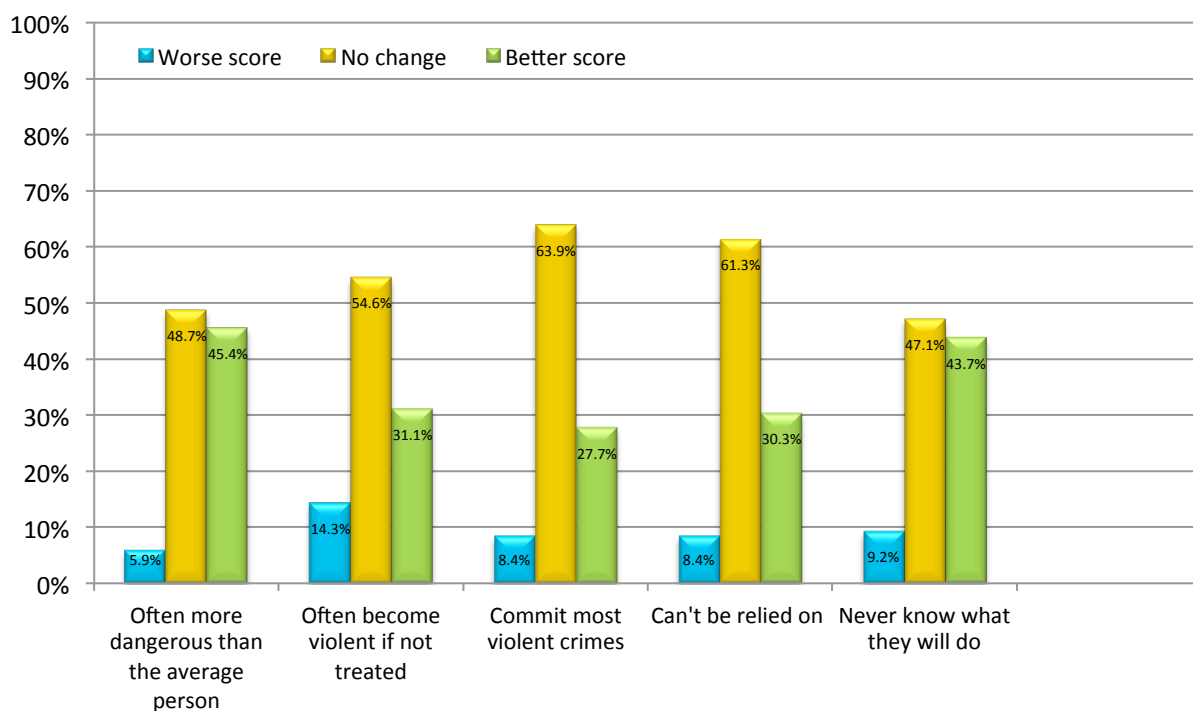
**Figure 2.** Proportion of students who made any change on the Likert scale from pre-test to post-test – Recovery Items (n=119 pre-test/post-test pairs)





**Figure 3** shows the proportion of students who made any change on the items dealing with violence and unpredictability. All showed a large improvement of 28% or more. The greatest improvement was for the items, “people with a mental illness are often more dangerous than the average person” (45% improvement) and “you can never know what someone with a mental illness is going to do” (44% improvement). These were the largest improvements on any single item. Students whose scores did not change reflected two conditions: either they already held a non-stigmatizing attitude and stayed the same or they had a negative attitude on the pre-test and did not improve. Some students (6% -14 %) showed a negative change. Please refer to **Appendix A** (p. A3) for specifics.

**Figure 3.** Proportion of students who made any change on the Likert scale from pre-test to post-test – Violence/Unpredictability Items (n=119 pre-test/post-test pairs)

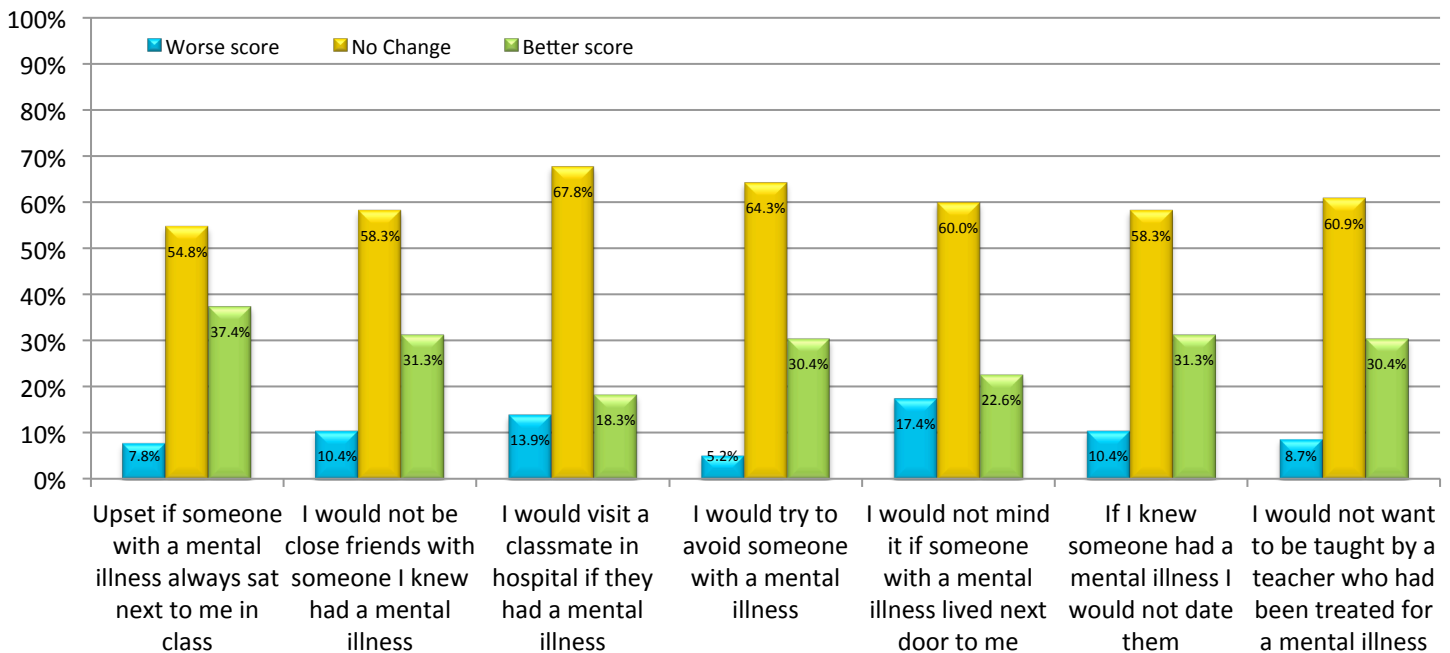


## Expressions of Social Distance

Prior to the intervention students showed generally positive, non-stigmatizing responses to six out of the seven social distance items. For example, 77% agreed with the statement “I would not mind if someone with a mental illness lived next door to me”; and 76% disagreed with the statements “I would try to avoid someone with a mental illness” and 71% “I would not be close friends with someone I knew had a mental illness” (see **Appendix A** for detailed tables.)

**Figure 4** shows the proportion of students who made any change on the social distance items. All items showed improvement. For example, following the intervention there was a 37% improvement in the item “I would be upset if someone with a mental illness always sat next to me in class, and a 31% improvement in the items “I would not be close friends with someone I knew had a mental illness” and “If I knew someone had a mental illness I would not date them”. Similarly, there was a 30% improvement for the items, “I would not want to be taught by a teacher who had been treated for a mental illness” and “I would try to avoid someone with a mental illness”. Students whose scores did not change reflected two conditions: either they already held a non-stigmatizing attitude and stayed the same or they had a negative attitude on the pre-test and did not improve. Some students (5-17%) showed a negative change (see **Appendix A**, p. A8).

**Figure 4.** Proportion of students who made any change on the Likert scale from pre-test to post-test – Social Distance Items (n=115 pre-test/post-test pairs)

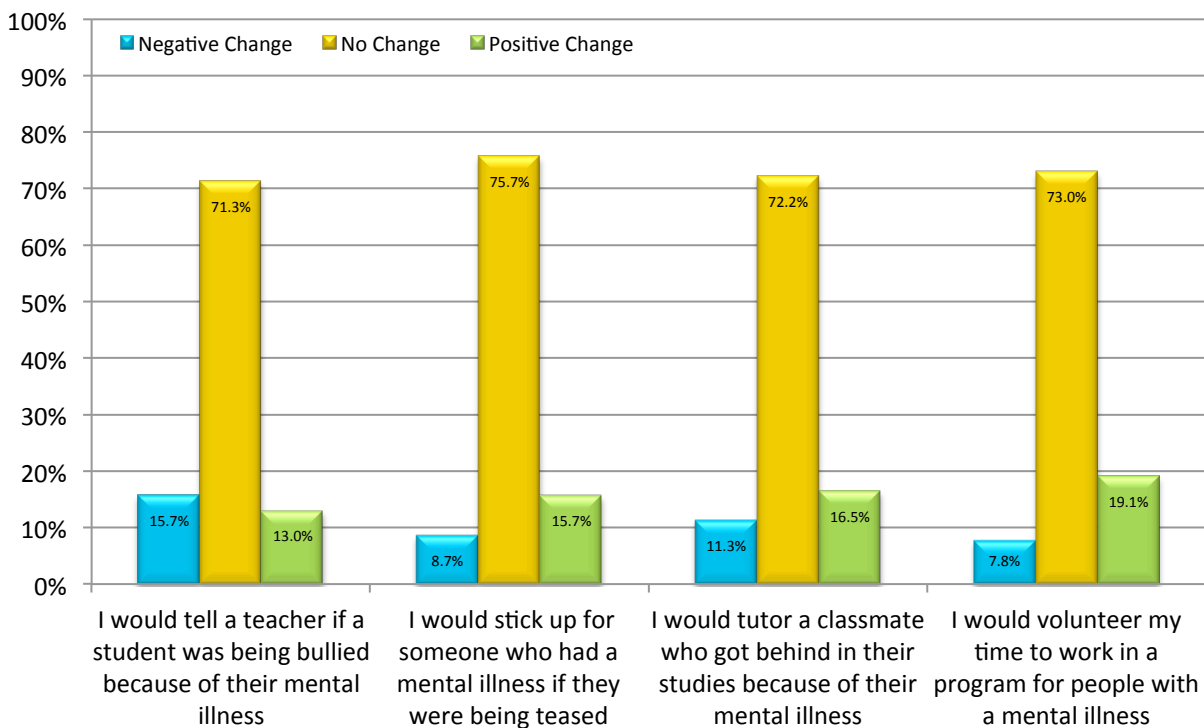


## Social Responsibility

Before the storybook intervention, students were generally socially conscious. Eighty-five percent said “they would stick up for someone who had a mental illness if they were being teased” and 84% percent said they “would tell a teacher if a student was being bullied because of their mental illness” (see **Appendix A** for detailed tables).

**Figure 5** shows the proportion of students who made any change on the social responsibility items. The highest changes were noted for two items: “I would volunteer my time to work in a program for people with mental illness” (19% improvement) and “I would tutor a classmate who got behind in their studies because of their mental illness” (17% improvement). Students whose scores did not change reflected two conditions: either they already held a non-stigmatizing attitude and stayed the same or they had a negative attitude on the pre-test and did not improve. A proportion of students (8% to 16%) showed a negative change (see Appendix A, p. A8).

**Figure 5.** Proportion of students who made any change on the Likert scale from pre-test to post-test – Social Responsibility items (n=115 pre-test/post-test pairs)

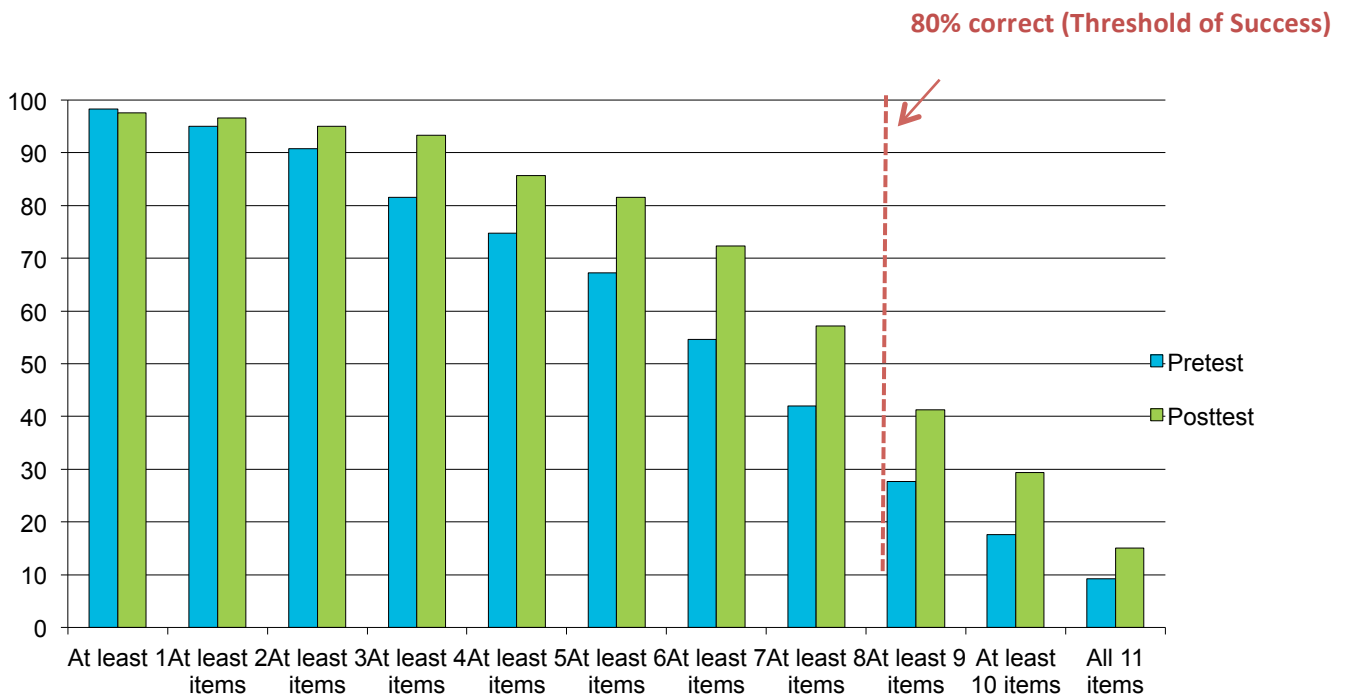


## Overall Success

In order to provide a measure of the overall success of the intervention, we chose (*a priori*) a cut-off score of 80% correct. Though somewhat arbitrary, we have used this cutoff in previous work to count the number of students who achieve an A grade or higher following an educational session. More specifically, success was measured by comparing the proportion of students who obtained 80% or more correct (non-stigmatizing) answers on the post-test compared to the pre-test.

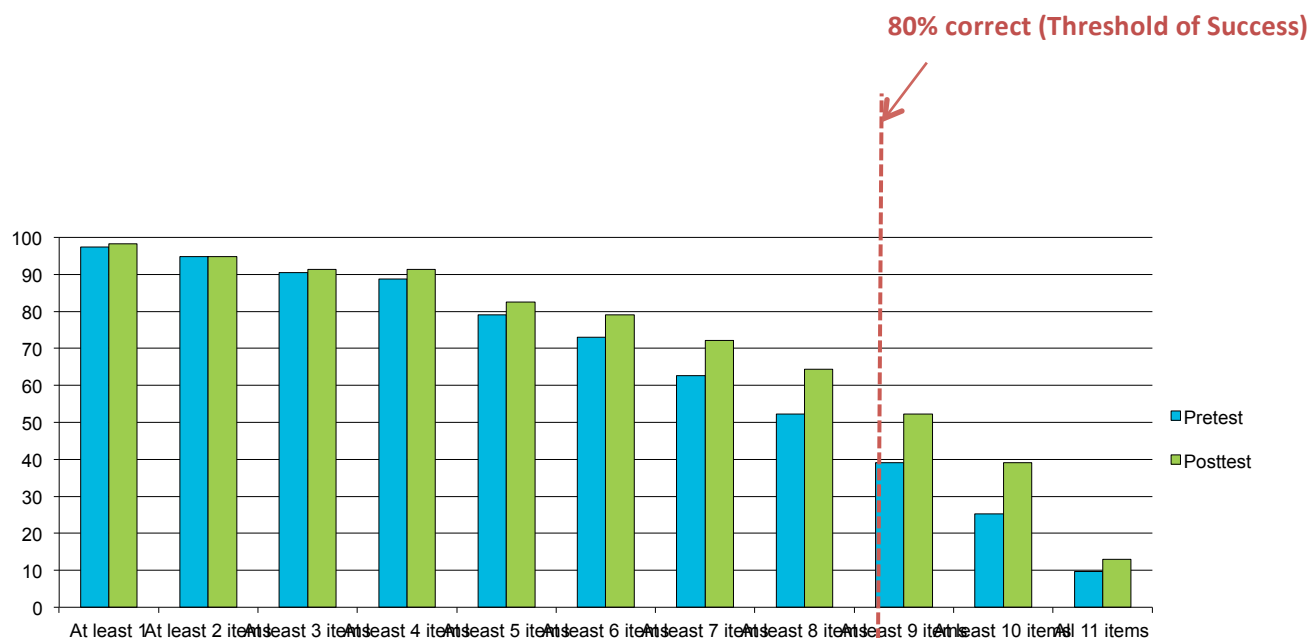
**Figure 6** shows the cumulative percent of items reflecting non-stigmatizing responses for the Stereotype Scale. Prior to the intervention, 28% of students gave a non-stigmatizing response to at least 9 of the 11 stereotype items reflecting 80% correct (corresponding to the red-dotted line on the graphs below). At post-test this had increased to 41% (reflecting a 13% improvement overall). When item scores were aggregated to reflect a scale value out of 55, the average (median) score dropped from 25 at the pretest to 23 at the post-test (reflecting a 4% drop in the average scale score). A Wilcoxon Signed Rank Test showed that at post-test there was a significant drop in the Stereotype Scale Score ( $Z=-6.328, p<.001$ ).

**Figure 6.** Cumulative Percent of Stereotype Scale Items Reflecting Non-stigmatizing response (n=119)



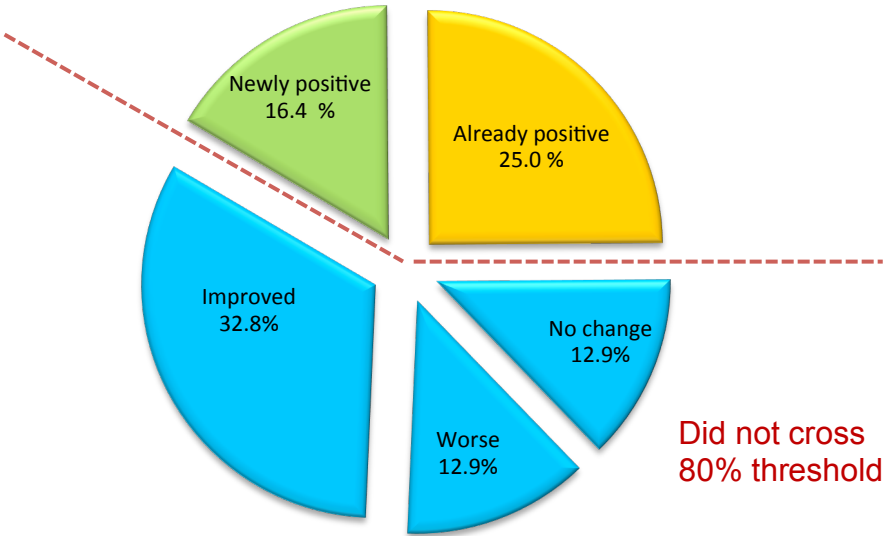
**Figure 7** shows the cumulative percent of items reflecting non-stigmatizing responses for the Social Tolerance Scale. Prior to the intervention 39% of the students gave a non-stigmatizing response to 9 the 11 items reflecting 80% correct (corresponding to the red-dotted line on the graphs below). At post-test this had increased to 52% (reflecting a 13% improvement overall). When item scores were aggregated to reflect a scale value out of 55, the average (median) score dropped from 24 at the pretest to 23 at the post-test (reflecting a 2% drop in the average scale score). A Wilcoxon Signed Rank Test showed that at post-test there was a significant drop in the Social Tolerance Scale Score ( $Z=-4.227, p<.001$ ).

**Figure 7.** Cumulative Percent of Tolerance Items Reflecting Non-stigmatizing response (n=115)



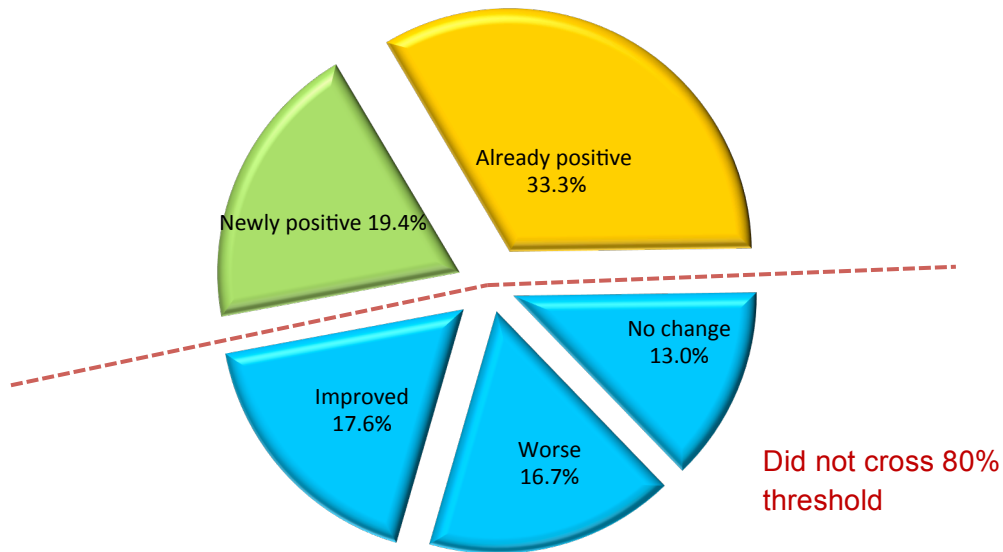
**Figure 8 and 9** show the change in stereotype and social tolerance scale scores. Prior to the intervention more respondents were positive (80% threshold, 9 out of 11 positive responses) on the tolerance scale (33.3%) compared to the stereotype scale (25.0%). After the intervention, the percent that improved their attitudes by crossing the 80% threshold was 16% (stereotype scale) and 19% (tolerance scale). The percent that improved their scores but did not cross the 80% threshold was 33% (stereotype scale) and 18% (tolerance scale).

**Figure 8.** Change in Stereotype Scale Score (n=116)



Notes: To adjust for regression to the mean, pre-test outliers (those whose pre-test scale scores were over 2 standard deviations beyond the mean) were omitted from this analysis.

**Figure 9.** Change in Social Tolerance Scale Score (n=108)



Notes: To adjust for regression to the mean, pre-test outliers (those whose pre-test scale scores were over 2 standard deviations beyond the mean) were omitted from this analysis.

## Conclusion

This report describes the results of a storybook anti-stigma intervention provided to middle school students. The results show that this intervention was successful in improving the proportion of students who got 80% of the answers correct, so received an A grade, on the tests used to assess social stereotypes and social tolerance.

Findings also showed that a small number of students continued to hold stigmatizing beliefs despite their participation—for example, almost 25% did not disagree with the stigmatizing statement that people with a mental illness tend to bring it upon themselves. These findings suggest that while certain elements of the story appear to be reducing stigma, there may be some messages that consolidate stereotypes, or fail to eradicate them, among certain sub-groups of students. Considering that some students did not move in the expected direction, there may be some value in assessing their ‘readiness for change’ in future evaluations to determine if their stage of change is predictive of program outcomes. Qualitative investigation may also help identify the active ingredients in the program or why some students benefited more than others.

An important limitation of this evaluation was that the story was given in isolation from the usual interactive lesson content. In addition, it was read in one sitting. The book is divided into four sections according to the four

seasons that unfold in the story line and should be read in four sections; each followed by discussion. By examining the book in isolation, the full impact of the lesson plan was not realized. This may account for some of the variability across students and likely underestimates the full effect. One outstanding question that was not addressed in this evaluation is how long the effects last. Follow-up surveys, which were out of the scope of this study, would be needed to address this question.



## Appendix A

Stereotyped attribution items are shown in the three tables below. For ease of presentation, items were recoded into three categories: agree (strongly agree and agree), neutral, and disagree (disagree and strongly disagree) and grouped by theme controllability of illness, potential for recovery and potential for violence and unpredictability.

### Stigma Stereotype Results

#### Controllability Items

Stereotyped Attributions Items	Pre-test % (n=119)	Post-test % (n=119)	% Change
People with a mental illness tend to bring it on themselves. <ul style="list-style-type: none"> <li>Strongly disagree/disagree</li> <li>Unsure</li> <li>Strongly agree/ agree</li> </ul>	60.5 % (72) 31.9 % (38) 7.6 % (9)	64.7%(77) 12.6%(15) 22.7%(27)	4.2 -19.3 15.1
People with mental illnesses often don't try hard enough to get better. <ul style="list-style-type: none"> <li>Strongly disagree/disagree</li> <li>Unsure</li> <li>Strongly agree/ agree</li> </ul>	73.1 % (87) 17.6 % (21) 9.2 % (11)	76.5%(91) 15.1%(18) 8.4%(10)	3.4 -2.5 -0.8
People with a mental illness could snap out of it if they wanted to. <ul style="list-style-type: none"> <li>Strongly disagree/disagree</li> <li>Unsure</li> <li>Strongly agree/ agree</li> </ul>	75.6%(90) 14.3% (17) 10.1%(12)	69.7%(83) 16.8%(20) 13.4%(16)	-5.9 2.5 3.3
Most people with a mental illness get what they deserve. <ul style="list-style-type: none"> <li>Strongly disagree/disagree</li> <li>Unsure</li> <li>Strongly agree/ agree</li> </ul>	68.9%(82) 24.4%(29) 6.7%(8)	73.1%(87) 19.3%(23) 7.6%(9)	4.2 -5.1 0.9

## Recovery Items

Stereotyped Attributions Items	Pre-test % (n=119)	Post-test % (n=119)	% Change
Most people with a mental illness are too disabled to work.			
<ul style="list-style-type: none"> <li>• Strongly disagree/disagree</li> <li>• Unsure</li> <li>• Strongly agree/ agree</li> </ul>	70.6%(84) 20.2%(24) 9.2%(11)	92.4%(110) 4.2%(5) 3.4%(4)	21.8 -16 -5.8
People with serious mental illnesses need to be locked away.			
<ul style="list-style-type: none"> <li>• Strongly disagree/disagree</li> <li>• Unsure</li> <li>• Strongly agree/ agree</li> </ul>	75.6%(90) 17.6%(21) 6.7%(8)	82.4%(98) 14.3%(17) 3.4%(4)	6.8 -3.3 -3.3
Note: Missing excluded from percent calculation			

## Violence/ Unpredictability Items

Stereotyped Attributions Items	Pre-test % (n=119)	Post-test % (n=119)	% Change
People with a mental illness are often more dangerous than the average person.			
<ul style="list-style-type: none"> <li>• Strongly disagree/disagree</li> <li>• Unsure</li> <li>• Strongly agree/ agree</li> </ul>	47.1%(56) 28.6% (34) 24.4%(29)	66.4%(79) 23.5%(28) 10.1%(12)	19.3 -5.1 -14.3
People with a mental illness often become violent if not treated.			
<ul style="list-style-type: none"> <li>• Strongly disagree/disagree</li> <li>• Unsure</li> <li>• Strongly agree/ agree</li> </ul>	37.0% (44) 47.9% (57) 15.1% (18)	47.1% (56) 39.5% (47) 13.4% (16)	10.1 -8.4 -1.7
Most violent crimes are committed by people with a mental illness.			
<ul style="list-style-type: none"> <li>• Strongly disagree/disagree</li> <li>• Unsure</li> <li>• Strongly agree/ agree</li> </ul>	63.0%(75) 28.6%(34) 8.4%(10)	73.9%(88) 21.8%(26) 4.2%(5)	10.9 -6.8 -4.2
You can't rely on someone with a mental illness.			
<ul style="list-style-type: none"> <li>• Strongly disagree/disagree</li> <li>• Unsure</li> <li>• Strongly agree/ agree</li> </ul>	61.3%(73) 27.7%(33) 10.9%(13)	79.0%(94) 13.4%(16) 7.6%(9)	17.7 -14.3 -3.3
You can never know what someone with a mental illness is going to do.			
<ul style="list-style-type: none"> <li>• Strongly disagree/disagree</li> <li>• Unsure</li> <li>• Strongly agree/ agree</li> </ul>	26.1%(31) 33.6%(40) 40.3%(48)	39.5% (47) 42.0%(50) 18.5%(22)	13.4 8.4 -21.8
Note: Missing excluded from percent calculation.			

Survey Item	Negative change % (n)	No change % (n)		Positive change % (n)	McNemar-Bowker Significance
		Stigmatizing % (n)	Non-stigmatizing % (n)		
<b>Controllability Items</b>					
People with a mental illness tend to bring it on themselves	24.4%(29)	55.5%(66)		20.2%(24)	$\chi^2 = 20.8; df = 3 ; * p < .001$
		13.4%(16)	42.0%(50)		
People with mental illnesses often don't try hard enough to get better	12.6%(15)	62.2%(74)		25.2%(30)	$\chi^2 = 10.8; df = 9; p < .001$
		10.9%(13)	51.3%(61)		
People with a mental illness could snap out of it if they wanted to	21.8%(26)	63.0%(75)		15.1%(18)	$\chi^2 = 4.9; df = 8 p = .765$
		14.3%(17)	48.7%(58)		
Most people with a mental illness get what they deserve	8.4%(10)	68.1%(81)		23.5%(28)	$\chi^2 = 16.3; df = 6 ; p < .012$
		21.0%(25)	47.1%(56)		
<b>Recovery Items</b>					
Most people with a mental illness are too disabled to work	0.8%(1)	63.0%(75)		36.1%(43)	$\chi^2 = 40.2; df = 6; p < .001$
		6.7%(8)	56.3%(67)		
People with serious mental illnesses need to be locked away	8.4%(10)	72.3%(86)		19.3%(23)	$\chi^2 = 6.9; df = 7; p = .436$
		13.4%(16)	58.8%(70)		
<b>Violence / Unpredictability Items</b>					
People with a mental illness are often more dangerous than the average person	5.9%(7)	48.7 % (58)		45.4% (54)	$\chi^2 = 40.5; df = 8, p < .001$
		21.0%(25)	27.7%(33)		
People with a mental illness often become violent if not treated	14.3%(17)	54.6%(65)		31.1%(37)	$\chi^2 = 17.2; df = 7; p < .016$
		35.3%(42)	19.3%(23)		
Most violent crimes are committed by people with a mental illness	8.4%(10)	63.9%(76)		27.7%(33)	$\chi^2 = 16.0; df = 5; p < .007$
		17.6%(21)	46.2%(55)		
You can't rely on someone with a mental illness	8.4%(10)	61.3%(73)		30.3%(36)	$\chi^2 = 20.1; df = 6; p < .003$
		16.8%(20)	44.5%(53)		
You can never know what someone with a mental illness is going to do	9.2%(11)	47.1%(56)		43.7%(52)	$\chi^2 = 31.3; df = 7; p < .001$
		32.8%(39)	14.3%(17)		
Notes: <ul style="list-style-type: none"> <li>• Base size is those who responded to all the pre-test and post-test items (n=119)</li> <li>• Change was defined as moving on 5-point Likert Scale from the pre-test to the post-test (negative change: toward a more stigmatizing answer; positive change: toward a less stigmatizing answer)</li> <li>• The non-stigmatizing response means agree or strongly agree; the stigmatizing response includes unsure, disagree, and strongly disagree</li> <li>• Statistical tests use the original five-point scale, positive change does not necessary imply a non stigmatizing response.</li> <li>• *Due to response distribution responses were recoded into 3 categories to perform statistical test</li> <li>• Degrees of freedom depend on the number of non-empty cells and may vary by question due to different response patterns</li> </ul>					

## Percent Non Stigmatizing Endorsement of Knowledge Items

	<b>Pre-test % (119)</b>	<b>Post-test % (119)</b>
None	1.7% (2)	2.5% (3)
At least 1	98.3% (117)	97.5% (116)
At least 2 items	95.0% (113)	96.6% (115)
At least 3 items	90.8% (108)	95.0% (113)
At least 4 items	81.5% (97)	93.3% (111)
At least 5 items	74.8% (89)	85.7% (102)
At least 6 items	67.2% (80)	81.5% (97)
At least 7 items	54.6% (65)	72.3% (86)
At least 8 items	42.0% (50)	57.1% (68)
At least 9 items	27.7% (33)	41.2% (49)
At least 10 times	17.6% (21)	29.4% (35)
All 11 times	9.2% (11)	15.1% (18)

## Social Tolerance Results

### Social Distance Items

Stereotyped Attributions Items	Pre-test % (n=115)	Post-test % (n=115)	% Change
I would be upset if someone with a mental illness always sat next to me in class. <ul style="list-style-type: none"> <li>Strongly disagree/disagree</li> <li>Unsure</li> <li>Strongly agree/ agree</li> </ul>	65.2%(75) 20.0%(23) 14.8%(17)	75.7%(87) 19.1% (22) 5.2%(6)	10.5 -0.9 -9.6
I would not be close friends with someone I knew had a mental illness. <ul style="list-style-type: none"> <li>Strongly disagree/disagree</li> <li>Unsure</li> <li>Strongly agree/ agree</li> </ul>	71.3%(82) 20.0%(23) 8.7%(10)	80.0%(92) 14.8%(17) 5.2%(6)	8.7 -5.2 -3.5
(R) I would visit a classmate in hospital if they had a mental illness. <ul style="list-style-type: none"> <li>Strongly agree/ agree</li> <li>Unsure</li> <li>Strongly disagree/disagree</li> </ul>	63.5%(73) 26.1%(30) 10.4%(12)	65.2%(75) 25.2%(29) 9.6%(11)	1.7 -0.9 -0.8
I would try to avoid someone with a mental illness. <ul style="list-style-type: none"> <li>Strongly disagree/disagree</li> <li>Unsure</li> <li>Strongly agree/ agree</li> </ul>	75.7%(87) 15.7%(18) 8.7%(10)	84.3%(97) 13.9%(16) 1.7%(2)	8.6 -1.8 -7
(R) I would not mind it if someone with a mental illness lived next door to me. <ul style="list-style-type: none"> <li>Strongly agree/ agree</li> <li>Unsure</li> <li>Strongly disagree/disagree</li> </ul>	77.4%(89) 13.9%(16) 8.7%(10)	81.7%(94) 10.4%(12) 7.8%(9)	4.3 -3.5 -0.9
If I knew someone had a mental illness I would not date them. <ul style="list-style-type: none"> <li>Strongly disagree/disagree</li> <li>Unsure</li> <li>Strongly agree/ agree</li> </ul>	27.0%(31) 50.4%(58) 22.6%(26)	38.3%(44) 49.6%(57) 12.2%(14)	11.3 -0.8 -10.4
I would not want to be taught by a teacher who had been treated for a mental illness. <ul style="list-style-type: none"> <li>Strongly disagree/disagree</li> <li>Unsure</li> <li>Strongly agree/ agree</li> </ul>	57.4%(66) 28.7%(33) 13.9%(16)	72.2%(83) 19.1%(22) 8.7%(10)	14.8 -9.6 -5.2
Notes: <ul style="list-style-type: none"> <li>(R) Signifies the item was reverse coded in the scale calculation. Higher scale scores reflect higher levels of stigma</li> </ul>			

## Social Responsibility Items

Stereotyped Attributions Items	Pre-test % (n=115)	Post-test % (n=115)	% Change
(R) I would tell a teacher if a student was being bullied because of their mental illness. <ul style="list-style-type: none"> <li>• Strongly agree/ agree</li> <li>• Unsure</li> <li>• Strongly disagree/disagree</li> </ul>	84.3%(97) 12.2% (14) 3.5%(4)	80.9%(93) 13.9%(16) 5.2%(6)	-3.4 1.7 1.7
(R) I would stick up for someone who had a mental illness if they were being teased. <ul style="list-style-type: none"> <li>• Strongly agree/ agree</li> <li>• Unsure</li> <li>• Strongly disagree/disagree</li> </ul>	85.2%(98) 12.2%(14) 2.6%(3)	82.6%(95) 13.9%(16) 3.5%(4)	-2.6 1.7 0.9
(R) I would tutor a classmate who got behind in their studies because of their mental illness. <ul style="list-style-type: none"> <li>• Strongly agree/ agree</li> <li>• Unsure</li> <li>• Strongly disagree/disagree</li> </ul>	61.7%(71) 28.7%(33) 9.6%(11)	63.5%(73) 22.6%(26) 13.9%(16)	1.8 -6.1 4.3
(R) I would volunteer my time to work in a program for people with a mental illness. <ul style="list-style-type: none"> <li>• Strongly agree/ agree</li> <li>• Unsure</li> <li>• Strongly disagree/disagree</li> </ul>	43.5%(50) 48.7%(56) 7.8%(9)	53.9%(62) 36.5%(42) 9.6%(11)	10.4 -12.2 1.8
Notes: <ul style="list-style-type: none"> <li>• (R) Signifies the item was reverse coded in the scale calculation. Higher scale scores reflect higher levels of stigma.</li> </ul>			

Survey Item	Negative change % (n)	No change % (n)		Positive change % (n)	McNemar-Bowker Significance
		Stigmatizing % (n)	Non-stigmatizing % (n)		
<b>Social Distance Items</b>					
I would be upset if someone with a mental illness always sat next to me in class	7.8%(9)	54.8%(63)		37.4%(43)	$\chi^2 = 23.6$ ; df =7; p<.001
		13.0%(15)	41.7%(48)		
I would not be close friends with someone I knew had a mental illness	10.4%(12)	58.3%(67)		31.3%(36)	$\chi^2 =4.8$ ; df =3; p=.191 *
		10.4%(12)	47.8%(55)		
(R) I would visit a classmate in hospital if they had a mental illness	13.9%(16)	67.8%(78)		18.3%(21)	$\chi^2 =9.6$ ; df =9; p=.382
		24.3%(28)	43.5%(50)		
I would try to avoid someone with a mental illness	5.2%(6)	64.3%(74)		30.4%(35)	$\chi^2 =23.9$ df =6; p<.001
		9.6%(11)	54.8%(63)		
(R) I would not mind it if someone with a mental illness lived next door to me	17.4%(20)	60.0%(69)		22.6%(26)	$\chi^2 =5.7$ ; df =9; p=.765
		5.2%(6)	54.8%(63)		
If I knew someone had a mental illness I would not date them	10.4%(12)	58.3%(67)		31.3%(36)	$\chi^2 =14.6$ ; df =7; p<.041
		43.5%(50)	14.8%(17)		
I would not want to be taught by a teacher who had been treated for a mental illness	8.7%(10)	60.9%(70)		30.4%(35)	$\chi^2 =17.6$ ; df =8; p<.024
		20.0%(23)	40.9%(47)		
<b>Social Responsibility Items</b>					
(R) I would tell a teacher if a student was being bullied because of their mental	15.7%(18)	71.3%(82)		13.0%(15)	$\chi^2 =5.1$ ; df =7; p=.653
		9.6%(11)	61.7%(71)		
(R) I would stick up for someone who had a mental illness if they were being teased	8.7%(10)	75.7%(87)		15.7%(18)	$\chi^2 =8.3$ df =6; p=.217
		10.4%(12)	65.2%(75)		
(R) I would tutor a classmate who got behind in their studies because of their mental illness	11.3%(13)	72.2%(83)		16.5%(19)	$\chi^2 =10.3$ ; df =7; p=.174
		26.1%(30)	46.1%(53)		
(R) I would volunteer my time to work in a program for people with a mental illness	7.8%(9)	73.0%(84)		19.1%(22)	$\chi^2 =12.5$ ; df =6; p<.052
		38.3%(44)	34.8%(40)		
Notes:					
<ul style="list-style-type: none"> <li>• Base size is those who responded to all the pre-test and post-test items (n=115)</li> <li>• Change was defined as moving on 5-point Likert Scale from the pre-test to the post-test (negative change: toward a more stigmatizing answer; positive change: toward a less stigmatizing answer)</li> <li>• The non-stigmatizing response means agree or strongly agree; the stigmatizing response includes unsure, disagree, and strongly disagree.</li> <li>• Statistical tests use the original five point scale, positive change does not necessary imply non stigmatizing response.</li> <li>• *Due to response distribution responses were recoded into 3 categories to perform statistical test</li> <li>• Degrees of freedom depend on the number of non-empty cells and may vary by question due to different response patterns.</li> </ul>					

## Percent Non Stigmatizing Endorsement of Social Distance Items

	Pre-test % (n)	Post-test % (n)
None	2.6% (3)	1.7% (2)
At least 1	97.4% (112)	98.3% (113)
At least 2 items	94.8% (109)	94.8% (109)
At least 3 items	90.4% (104)	91.3% (105)
At least 4 items	88.7% (102)	91.3% (105)
At least 5 items	79.1% (91)	82.6% (95)
At least 6 items	73.0% (84)	79.1% (91)
At least 7 items	62.6% (72)	72.2% (83)
At least 8 items	52.2% (60)	64.3% (74)
At least 9 items	39.1% (45)	52.2% (60)
At least 10 times	25.2% (29)	39.1% (45)
All 11 times	9.6% (11)	13.0% (15)