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Reducing stigma in high school students: A cluster randomized controlled trial of the National Alliance on Mental Illness' *Ending the Silence* intervention

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## Abstract

Beyond education and contact program components, existing research on how to design a successful adolescent stigma reduction intervention has been inconclusive. This study evaluated the effectiveness of a school-based mental health (MH) stigma reduction and health promotion program, “*Ending the Silence*” (ETS), developed by the National Alliance on Mental Illness (NAMI). A diverse sample of 206 high school students in New York City participated in the current study. Using a cluster randomized controlled trial design, fourteen 9<sup>th</sup>-12<sup>th</sup> grade classes (Grade 9-12) were randomly assigned to the ETS program or an active control presentation on careers in psychology. Students completed four surveys throughout the study (pre, immediate post-presentation, 4-weeks post, 8-weeks post). Prospective results (over two-months) and qualitative feedback were analyzed. Prospectively, mixed effects modelling indicated significant effects in favor of the ETS group for reduced negative stereotypes, improved mental health knowledge, and less anticipated risk for disclosing to a counselor. There were also trends in favor of the ETS group for reductions in intended social distancing and negative affect, and improvements in help-seeking intentions. Other predictors of stigma included mental health knowledge, gender, race/ethnicity, prior contact with mental illness, and grade level. Qualitative feedback indicated positive impressions of ETS overall, but suggestions for more interactive activities and discussion. Relatively brief programs such as ETS appear to be a practical vehicle for stigma reduction. Future research is warranted on longer-term programs and adolescent development variables.

*Keywords:* stigma, adolescence, mental health, Ending the Silence, National Alliance on Mental Illness

Reducing High School Stigma: A Cluster Randomized Controlled Trial of the National Alliance on  
Mental Illness' *Ending the Silence* Intervention

## **Introduction**

Adolescence is a key period for personal and social development, and mental health conditions can significantly alter the trajectory of an adolescent's life. The median age of onset for a mental health condition is fourteen (Auerbach et al., 2018) and approximately 75% of all lifetime mental health conditions worldwide begin by the mid-20s (Kessler et al., 2007). Formal service utilization and help-seeking tend to be low (e.g., Merikangas et al., 2011) and are impacted by a host of factors, including *stigma* (Cauce et al., 2002; Corrigan, Druss, & Perlick, 2014; Spencer, Chen, Gee, Fabian, & Takeuchi, 2010; World Health Organization, 2005). *Stigma* refers to a process of labeling that can lead to stereotyping and discrimination within a context of power (Goffman, 1963; Link & Phelan, 2001). Stigma can lead to a lack of engagement in mental health treatment and inhibit full inclusion in society (Corrigan, Watson, Byrne, & Davis, 2005). Stigma remains understudied among youth, but recent reviews and meta-analyses have documented that stigma is prevalent among youth (Silke, Swords, & Heary, 2016), impacts help-seeking (Nam et al., 2013), and overlaps significantly with developmental processes such as peer group formation and identity development (DeLuca, 2019). Overall, adolescents in the stage of middle adolescence appear to be particularly ideal targets for stigma reduction, as this is the period in which cognitive differences with adults relevant to stigma begin to diminish (Corrigan et al., 2007). Further, adolescents typically have less information and more tentatively formed attitudes about people with mental illness than adults (Corrigan et al., 2005), which also makes this population particularly conducive to stigma change. Thus, the stigma process can be disrupted in this period before it forms more fully.

## **Youth Mental Health Stigma Reduction**

Coordinated efforts to reduce youth mental health stigma in the US are in the early stages. A recent systematic review (Salerno, 2016) of fifteen school-based (grades 5-12) programs in the US found that most improved mental health knowledge, reduced negative stereotypes, and improved help-seeking outcomes in the short-term. Salerno (2016) concluded that more studies on program implementation and

long-term effects are needed, specifically by collecting more socio-demographic information and using randomized designs and long-term follow-ups. The few researchers who have used long-term follow-ups have found mixed findings related to maintained stigma reductions (Corrigan, Michaels, & Morris, 2015; Perry et al., 2014; Pinto-Foltz et al., 2011; Thornicroft et al., 2016; Yamaguchi, Mino, & Uddin, 2011). Overall, several research teams have concluded that they cannot make any firm recommendations for school-based stigma reduction programs due to inconsistent or null results that may stem from poor reporting quality, a dearth of randomized trials/lack of control groups, sample heterogeneity, program structure heterogeneity and lack of fidelity measurement, different outcome measurements, and inadequacy of stigma measures for youth (Austin & Schwartz, 2018; Koller & Stuart, 2016; Mellor, 2014; Schachter et al., 2008; Wei, Hayden, Kutcher, Zygmunt, & McGrath, 2013).

**Program structure and stigma measurement.** In regard to structure, most stigma reduction programs include education (e.g., dispelling myths about mental illness; providing mental health education) or contact components (e.g., presentations by persons living with a mental illness who share their stories of recovery), or a combination of both (Corrigan et al., 2015). The nature of the education (e.g., diagnosis-specific) and contact (e.g., age of person, via video or in-person), however, differs from program to program (Schachter et al., 2008). Similarly, outcome measures vary from study to study and include a range of stigma dimensions, though help-seeking and disclosure carryover-related outcomes tend to be the most understudied (Clement et al., 2015; Salerno, 2016). For example, only five out of the forty studies (13%) in Yamaguchi and colleagues' (2011) review of interventions evaluated personal mental health and help-seeking outcomes. Hartman and colleagues (2013) conducted the first known study to evaluate the impact of a short stigma reduction program (75 minutes) on non-help seeking adolescents' self-stigma, using a no-control group, pre/post-test design. These authors found reductions in self-stigma of seeking help among Canadian high school youth after the program, but more research is needed to generalize these findings.

Corrigan, Morris, Michaels, Rafacz, and Rüsich (2012) conducted the largest meta-analysis to date of stigma reduction studies ( $N = 72$ ) for adults and adolescents. Nineteen studies in this sample were

evaluated among adolescents (age 12-18). Results indicated that, on average, education and contact-based interventions were both effective for adolescents at reducing stigma (i.e., attitudes/stereotypes, negative affect, and intended social distancing). In-person contact interventions yielded the largest effect sizes overall and specifically for intended social distancing and behavioral intentions toward someone living with mental illness (e.g., willingness to help). Nevertheless, many existing programs for youth still need to be further evaluated for efficacy.

### **National Alliance on Mental Illness - *Ending the Silence***

Ending the Silence (ETS), developed by the National Alliance on Mental Illness (NAMI, the largest grassroots mental health nonprofit in the US), is one national, standardized approach that can be further evaluated and used as a vehicle to overcome the aforementioned limitations in stigma reduction research (NAMI, 2015). ETS is a one-day, classroom-based presentation that lasts approximately 50 minutes. To date, however, the ETS program has not been thoroughly empirically evaluated. Analyzing nearly 2,000 post-test surveys from middle and high school students in New York City, researchers (DeLuca, Evans, & Yanos, 2018) found an overall 80% satisfaction rate with ETS (e.g., would recommend the program to others; believed the presenters communicated effectively). Ninety percent or more of students agreed that they know the early warning signs of mental illness, that they now knew how to help themselves or a friend if they noticed mental health warning signs, and that the presenters communicated effectively.

Only three studies have evaluated ETS beyond the standard NAMI post-test survey. Wong and colleagues (2015) used a pre/immediate post-test, no control group design with high school students in California. Results indicated some significant changes on individual items related to social distance, emotional responses, attitudes, and knowledge, but no changes in help-seeking or peer support. In an unpublished master's thesis, Taniyama (2016) also evaluated ETS among high school students in California using a no control group design, but included a stronger pre-, immediate post-, and 6-week follow-up method. Results indicated significant improvements in emotions, knowledge, and attitudes at the post-test, which maintained at 6-weeks (Taniyama, 2016). Lastly, Wahl, Rothman, Brister, and

Thompson (2018) recently evaluated ETS in five US states, using a pre/post/follow-up (4-6 weeks) non-randomized design, including a no intervention control group, and a 12-item outcome measure (knowledge, stereotypes, social distance, and help-seeking). Using repeated measures analysis of variance, results indicated positive changes at the immediate follow-up for ETS, though these changes appeared to gradually rebound at the 4-6 week follow-up. The largest changes for students who received ETS in this study were being able to recognize the warning signs of mental health conditions, and knowledge of what to do to seek help if experiencing a mental health condition. Items asking about recovery of people with mental illness (e.g., ability to get jobs) and about intended social distance (e.g., invite to home) returned to baseline levels at the 4-6 week follow-up.

### **Current Study**

The current study is the first randomized controlled trial (RCT) of ETS. This study also addresses other common limitations to youth stigma reduction research, including lack of follow-up, failure to account for socio-demographic covariates and other predictors of stigma, a lack of standardized and reliable stigma measures, a lack of attention paid to youth developmental processes (e.g., identity), and no explicit linkage of findings to a conceptual model of adolescent mental health stigma (Pinto-Foltz & Logsdon, 2009; Silke et al., 2016). We hypothesized that students who received ETS (v. active control) would show significant improvements in mental health knowledge, negative stereotypes, intended social distancing, negative emotional responses (affect), help-seeking attitudes, anticipated stigma, disclosure worry, and self-stigma, from Time 1 (baseline) to Time 2 (immediate follow-up after program). Effects were expected to be stronger at Time 2 and for primary outcome variables (i.e., mental health knowledge, negative stereotypes, intended social distancing, negative affect, help-seeking attitudes) than secondary outcome variables (i.e., anticipated stigma, disclosure worry, self-stigma).

### **Method**

**Participants.** Two hundred and thirty-two students from one New York City public high school were approached to take part in the study. Using a passive parent/guardian consent approach, 208 students (90%) assented to take part, but two of those 208 students returned opt-out forms, resulting in a sample

size of 206 students ( $M_{\text{age}} = 15.41$ ,  $SD = 0.94$ , range: 13-18). Demographic characteristics of the sample or presented in Table 1. The sample was predominantly female (56.2%) and participants were racially diverse, with significant proportions of students identifying as European-American (35.0%), African-American (20.9%), Latino/a/x (15.5%), Asian-American (13.6%). At the time of this study, the participating high school had not yet established a formal mental health curriculum for their students, although efforts are currently underway to do this in the state of New York (Kaufman, 2018).

[Table 1 here]

[CONSORT Figure 1 here]

**Procedure.** Several schools were offered the opportunity to participate in this study. Schools were selected in a non-randomized fashion, either via personal connection or recommendation by NAMI. One school agreed to have a representative group of students in fourteen classes participate in the study. Institutional Board Review (IRB) approval was received from the researchers' university IRB and the local Department of Education IRB. Inclusion criteria included being a high school student and speaking English well enough to complete the questionnaire. This study was completed between September 2017 and February 2018. Individual classrooms were visited at least five times (two visits to describe the study and collect assent/consent forms; one visit for the presentation; two final visits for follow-ups). After data collection was completed, teachers of each class were offered an in-person debriefing. Five research assistants were trained to assist with school visits and data collection.

Study participants completed questionnaires at four time points – baseline (Time 1), immediate post-test (Time 2), four-week follow-up (Time 3), and eight-week follow-up (Time 4). A pilot study was conducted (DeLuca, Evans, Reyes, & Yanos, 2016) to determine survey length, identify issues with survey implementation, and determine the appropriateness of items. The spacing out of Time 1 and Time 2 was designed to prevent any validity threats related to serial administration and to reduce the burden of completing two questionnaires and watching a presentation in one sitting. Questionnaires were also counterbalanced; four identical versions of the questionnaires were created (with measures randomly ordered) to control for order effects. Intervention and control group students completed identical

questionnaires. Participants' questionnaires were linked across time points by anonymous identification numbers.

This study followed the guidelines of the Consolidated Standards of Reporting Trials (CONSORT) for cluster randomized trials (Campbell, Piaggio, Elbourne, & Altman, 2012). In order to minimize imbalance across intervention and control groups, blocks were first stratified so that a similar range of grade levels would be represented in each condition. Overall, fourteen rows were created (separated into two stratified blocks of seven rows), each listing a randomized condition assignment (intervention or control) and a sequence of dates for the five study visits. The order of condition assignments in each block was generated by a computer algorithm. ([www.randomizer.org](http://www.randomizer.org)). As teachers responded to an online survey about availability, their classes were put into the first available slot of these stratified blocks.

**Presentations.** Participants in the intervention group received ETS conducted by two speakers from a local NAMI Affiliate. Both speakers were experienced and had given presentations for several years. All students in the intervention group received the ETS presentation from the same pair of speakers. For the current study, ETS presentations were shortened to account for the constraints of the school's 45 minute periods and the study's pre- and post-test evaluations. Typically, presentations lasted 35-40 minutes in this study, with half of the presentation dedicated to psychoeducation and half dedicated to a personal story from someone with lived experience. In regard to deviations from the standard ETS 50-minute program, the presenters in this study summarized some educational points/slides, omitted an educational video, and made the in-person story more concise. Efforts were made to balance the amount of education and contact, and to still have time for students to discuss the program.

Students in the active control group received a presentation of parallel length on "careers in psychology" (adapted from Wood & Wahl, 2006, p. 48). This presentation was unrelated to stigma, and included a series of videos from the American Psychological Association and facts on psychology careers, followed by a discussion lead by the principal investigator (one control group presentation was given by a trained research assistant, due to scheduling conflicts). As per Wood and Wahl's (2006) design,

in order to reduce the overt demand for changed responding and minimize potential confusion for control participants being asked to complete measures seemingly unrelated to their presentation about psychology careers, students were informed that they were being asked to participate in two major tasks: First, they were told that they were serving as audience members for a presentation on a psychology-related topic. Second, they were told that they were completing some questionnaires that are being pilot tested (i.e., “Some of the questionnaires you will complete are being pilot tested among adolescents and thus may not be directly relevant to the presentation you receive”), thereby framing the completion of instruments and the presentation as separate components. The true methodological connection between these components, however, were shared as part of the debriefing.

### Measures

Measures were selected that aligned with multidimensional conceptualizations of stigma (DeLuca, 2019; Evans-Lacko et al., 2010; Link & Phelan, 2001; Link, Yang, Phelan, & Collins, 2004; Pescosolido & Martin, 2015; Silke, Swords, & Heary, 2016). Measures that had been previously used in research with adolescents or young adults were prioritized for selection.

**Primary outcome variables.** The Attitudes about Mental Illness and Its Treatment Scale (AMIS; Kobau et al., 2010) was used to assess *negative stereotypes* toward persons with mental health problems. A 7-item AMIS scale was used in this study on a 5-point Likert scale. The 4-item Categorical Thinking subscale of the Attitudes Toward Serious Mental Illness-Adolescent Version (ATSMI-AV; Watson et al., 2005) was also used to further assess stereotypes (also a 5-point Likert scale). Internal consistency for AMIS was poor (Cronbach’s Alpha = 0.52 at Time 1). Internal consistency for ATSMI-AV scale was questionable (Cronbach’s Alpha = 0.68 at Time 1). The Reported and Intended Behavior Scale (RIBS; Evans-Lacko et al., 2011) was used to assess *intended social distancing* behaviors. This 4-item measure is rated on a 5-point Likert scale (1 = *agree strongly*, 5 = *disagree strongly*) and has been validated with adolescents (Mansfield, Humphrey, & Patalay, 2019). Internal consistency for the RIBS was acceptable

<sup>1</sup> Scales were coded so that higher scores indicated higher levels of that phenomenon (e.g., stigma, knowledge). Scales were transformed when necessary.

(Cronbach's Alpha = 0.79 at Time 1). The Mental Health Knowledge Schedule (MAKS; Evans-Lacko et al., 2010) was used to measure stigma-related *mental health knowledge*. The MAKS is a 12-item measure using a 5-point Likert scale. The MAKS is meant to be used in conjunction with attitude and behavior-related measures when assessing stigma reduction programs. Internal consistency for the MAKS was poor (Cronbach's Alpha = 0.27 at Time 1). The revised Attribution Questionnaire (r-AQ; Pinto, Hickman, Logsdon, & Burant, 2012; Watson et al., 2004), a 5-item measure using a 7-point Likert scale developed specifically for adolescents, was used to measure *emotional responses* toward a hypothetical student with mental illness. Internal consistency for the r-AQ was acceptable (Cronbach's Alpha = 0.71 at Time 1). The Intentions to Seek Counseling Inventory (ISCI; Cash, Begley, McCown, & Weise, 1975) was used to measure mental health *help-seeking intentions*. The ISCI, a 10-item measure on a 4-point Likert scale, consists of common problems that adolescents and young adults may seek counseling for (e.g., relationship difficulties, depression, concerns about sexuality), and asks participants how likely they would be to seek counseling for such problem. A two-item measure related to *peer support* intentions was also used in this study (Wong et al., 2015). Internal consistency for the ISCI was good (Cronbach's Alpha = 0.88 at Time 1). Internal consistency for the Peer Support scale was unacceptable (Cronbach's Alpha = 0.25 at Time 1).

**Secondary outcome variables.** The Perceptions of Stigmatization by Others for Seeking Help scale (PSOSH; Vogel, Wade, & Ascheman, 2009) assesses the *perceived stigma* persons anticipate from those they interact with. The PSOSH is a 5-item scale on a 5-point Likert scale. Internal consistency for the PSOSH was good (Cronbach's Alpha = 0.86 at Time 1). The Self-Stigma of Seeking Help scale (SSOSH; Vogel, Wade, & Haake, 2006) is a 10-item scale on a 5-point Likert scale consisting of items related to feelings of inadequacy and inferiority for seeking mental health treatment. Overall, SSOSH assesses threats to one's self-evaluation due to seeking help and *internalized stigma*. Internal consistency for the SSOSH was good (Cronbach's Alpha = 0.82 at Time 1). The Disclosure Expectations Scale (DES; Vogel & Wester, 2003) was used to directly assess *disclosure worries* about confidentiality in regard to mental health services. The DES includes eight questions using a 5-point Likert scale about the

anticipated utility and risk of disclosing personal information to a counselor. The DES comprises two subscales of four items each – Anticipated Risks (DES-AR) and Anticipated Benefits (DES-AB). Internal consistency was acceptable for both subscales (DES-AR Cronbach’s Alpha = 0.78 at Time 1; DES-AB Cronbach’s Alpha = 0.79 at Time 1).

**Predictor variables.** *Identity development* was measured via the Self-Concept Clarity Scale (SCCS; Campbell et al., 1996), which assesses the consistency and stability of adolescents’ self-beliefs. The SCCS is a 12-item scale, measured using a 5-item Likert scale. SCCS was only measured at Time 1. The SCCS was coded so that higher scores indicated a stronger, more cohesive self-concept. Internal consistency for the SCCS was good (Cronbach’s Alpha = 0.86 at Time 1). Given the relationship between mental health knowledge and other dimensions of stigma, the MAKS was used as a predictor during some data analyses. Other covariates included race/ethnicity, gender identity, grade level, age, and prior contact with mental illness (“Do you have a family member who is diagnosed with a mental health problem?” and “Do you have a close friend who is diagnosed with a mental health problem?”), consistent with past research showing that female adolescents and adolescents with prior contact endorse less stigma (e.g., Dolphin & Hennessy, 2016).

**Qualitative assessment.** At Time 3, participants in both groups were asked to respond to two open-ended questions: “What did you like best about the presentation?” and “What is one suggestion you have for making this presentation better?” These questions are similar to those included in NAMI’s usual satisfaction survey for ETS.

### **Data Analysis**

First, descriptive analyses were conducted to provide sample characteristics and to explore potential baseline differences between intervention and control group participants (using  $\chi^2$  analyses or t-tests). Next, analyses were completed to evaluate the longitudinal effects of a youth stigma reduction program. Mixed-effects multilevel modelling (MLM) using the SPSS MIXED procedure (in SPSS v25) was used to investigate main treatment effects and group by time interactions (i.e., the influence of randomized group membership on the multiple dimensions of stigma over time, controlling for

covariates). Mixed effects analyses were an appropriate statistical method for this repeated measure design, because these analyses consider correlated data (e.g., as would be expected between repeated time points) and unequal variances, accommodate for missing data (e.g., maximum likelihood estimates), and allow for the inclusion of random effects and fixed effects. Questionnaires were also reviewed for students who wrote in unusual responses (e.g., unusual gender identity, or an older age written down), or who completed the survey extremely quickly (two standard deviations below the mean). Overall, no cases were removed from the dataset based on these criteria. The apparent high quality of the data may have partly been a function of the in-person nature of the study and the presence of research assistants and teachers.

A power analysis was also specifically conducted for analyses of the clustered data (Campbell, Mollison, Steen, Grimshaw, & Eccles, 2000), considering three levels: 1) between-student differences, 2) within-student differences, and 3) between class differences. Since cluster power analysis requires a calculation of intraclass correlation coefficients (ICC), ICCs were calculated first. The ICC was calculated by using unconditional mean models for each outcome to estimate variance at each level (Shek & Ma, 2011). The average ICC in this study was 0.039 across outcome measures (range: 0.01 to 0.08), similar to prior, similarly designed stigma reduction studies (Chisholm et al., 2016; Winkler et al., 2017). This value means that approximately 4% of the variance in outcome measures was due to classroom effects. With this ICC and an average cluster size of 15, the power analysis indicated that a sample of 374 would be needed to detect moderate effects at an alpha level of .05 and a power level of .8. Since ICC results indicated that classroom explained only a small percentage (4% on average) of the variation in outcomes, and initial analyses found that the inclusion of classroom did not significantly change the estimates of the models, classroom was not included as a random effect in the mixed models and random effects were not used in the models presented below, for ease of presentation and interpretation.

Intent-to-treat analyses were conducted for all randomized students, regardless of “exposure” (as long as one time point was completed). All predictors were included and analyzed within models based on a priori hypotheses. Exposed only findings are not included here (i.e., removal of nineteen participants

who were absent at Time 2), since the results were identical to the intent-to-treat analyses. Fixed effects included randomized group and assessment time. Classroom was included as a random effect. Post-hoc, Bonferroni-adjusted analyses were utilized for multiple comparisons.

### **Qualitative Data Analysis**

Three coders (two research assistants and the principal investigator) on the research team analyzed the text data using a consensual qualitative research framework (CQR; Hill, Thompson, & Nutt Williams, 1997; Hill et al., 2005). All coders were trained in the CQR approach before starting this process. First, the reviewers independently reviewed the data to develop general topic areas, then expanded on each area with a brief summary of the domain and lastly, compared and contrasted the categories to identify overlap between categories and the potential for merging categories or creating sub-categories. Throughout this process, groups of text were placed into categories/domains, reviewed, and re-grouped in subcategories as necessary. Double coding of data was allowed in some cases, but efforts were made overall to merge categories and create specific domains (Hill et al., 1997). The coders met two times for consensual validation. During these meetings, coders discussed areas of agreement and disagreement, and coding differences were resolved. When differences could not be resolved, a senior auditor and stigma expert from the research team helped to resolve the difference. Following the consensus of all reviewers, categories and subcategories were derived and labeled with a name and description. A tabulation of the number of unique respondents corresponding to the related category was also provided.

### **Quantitative Results**

**Drop-out and treatment exposure.** After completing at least one time point, a total of 14 students opted out of the study (11 in the control group and 3 in the intervention group). This difference between randomized conditions was significant ( $p = .03$ , as per Fisher's Exact Probability Test). Participants who dropped out were more likely to have a family member with mental illness (54%,  $n = 7$ , compared to just 25% of the non-dropped out sample) ( $\chi^2 = 4.00$ ,  $df = 1$ ,  $p = .045$ ), and more likely to be Arab/Middle-Eastern (40% dropped out, though the Arab/Middle-Eastern sample was small) ( $\chi^2 = 14.06$ ,

$df = 5, p = .015$ ). Participants who dropped out did not differ from other participants in regard to stigma endorsement, self-concept clarity, or other socio-demographics. The majority of students (91%) were considered “exposed” to their randomized condition (i.e., were present for class and completed Time 2 survey). Most missing data were due to participant absence rather than attrition.

### **Intent-to-Treat Outcome Analyses**

The findings on the relationship between intervention assignment and change in outcomes over time are presented in Table 2. These analyses included all participants, regardless of whether they dropped out of the study or were absent during data collections. Various predictors were added to the models, including gender, contact with mental illness (family and friend), school grade, race/ethnicity, mean mental health knowledge across time points (MAKS), and baseline self-concept clarity (SCCS). Two-way interactions (group by time) were also included in the analyses (controlling for predictors/covariates) to determine if there were significant outcome changes over time that differed by randomized group. Significant effects of time are presented below, in addition to *between* and *within* group changes over time. As noted, post-hoc, Bonferroni-adjusted analyses were utilized to assess mean differences in outcome by group at each time point. Effect size was calculated using Cohen’s  $d$  to assess the magnitude of overall change from baseline to post-treatment in ETS versus the control group.

[Table 2 here]

### **Primary Outcomes**

For one of the negative stereotypes scales (AMIS), there was a significant group by time interaction ( $F = 3.55, df = 3, 481.12, p = .014$ ) with all predictors in the model, indicating that participants in the ETS group had a significant reduction in mental illness stereotypes over time in comparison to control group participants (while controlling for other predictors; see Figure 2). This significant change between groups was evident at Time 2 ( $p < .0005, 95\% \text{ CI} = -0.44 \text{ to } -0.17$ ) and at Time 3 ( $p = .024, 95\% \text{ CI} = -0.29 \text{ to } -0.02$ ), but not Time 1 ( $p = .23$ ) or Time 4 ( $p = .088$ ). Overall higher

mental health knowledge (MAKS) was a significant predictor<sup>2</sup> ( $p < .0005$ ,  $B = -0.33$ , 95% CI = -0.41 to -0.25) of lower negative stereotypes, as was family contact with mental illness<sup>3</sup> (no) ( $p = .004$ ,  $B = 0.16$ , 95% CI = 0.05 to 0.27). There was not a significant main effect of time in this model ( $F = 1.89$ ,  $df = 3$ , 487.10,  $p = .13$ ). In terms of within group differences from Time 1 to Time 4, the difference between the baseline AMIS score and final follow-up score for ETS participants was not significant (as per a paired samples t-test). The magnitude of the differences in the AMIS means between groups across all time points was small to medium (Cohen's  $d = .44$ ). Students who received ETS showed a 7% decrease in negative stereotypes from pre ( $M = 2.15$ ,  $SD = 0.46$ ) to immediate post-test ( $M = 1.99$ ,  $SD = 0.54$ ), whereas there was a nonsignificant increase for the control group from pre ( $M = 2.22$ ,  $SD = 0.43$ ) to immediate post-test ( $M = 2.30$ ,  $SD = 0.52$ ). There was no change from pre to 2-months post-test for students who saw ETS. There was not a significant group by time interaction for the categorical thinking-negative stereotypes scale (ATSMI-AV), with and without predictors in the model. However, the effect of time was significant with all predictors in the model ( $F = 3.67$ ,  $df = 3$ , 489.04,  $p = .012$ ), indicating a reduction in categorical thinking in both groups over time.

[Figure 2]

Although the group by time interaction for intended social distance (RIBS) was significant ( $F = 4.08$ ,  $df = 3$ , 512.39,  $p = .007$ ) without any predictors in the model, the model became non-significant with predictors added to the model ( $F = 2.20$ ,  $df = 3$ , 483.89,  $p = .087$ ). The effect of time was significant in this latter model ( $F = 5.08$ ,  $df = 3$ , 489.42,  $p = .002$ ). MAKS (more knowledge)<sup>4</sup> ( $p < .0005$ ,  $B = -0.30$ , 95% CI = -0.40 to -0.21), gender (female)<sup>5</sup> ( $p < .0005$ ,  $B = -0.31$ , 95% CI = -0.46 to -0.16), and family contact<sup>6</sup> (no) ( $p = .018$ ,  $B = 0.21$ , 95% CI = 0.04 to 0.39) were predictors of lower social distance.

Students who received ETS showed a 12% decrease in intended social distancing from pre ( $M = 2.02$ ,  $SD = 0.72$ ) to immediate post-test ( $M = 1.77$ ,  $SD = 0.68$ ), whereas there was a nonsignificant decrease for the

<sup>2</sup> MAKS was a significant predictor of AMIS at all timepoints

<sup>3</sup> Family contact was a significant predictor of AMIS at Time 1 and Time 3

<sup>4</sup> MAKS was a significant predictor of RIBS at all timepoints

<sup>5</sup> Gender was a significant predictor of RIBS at Time 1, Time 2, and Time 4

<sup>6</sup> Family contact was a significant predictor of RIBS at Time 3

control group from pre ( $M = 1.95$ ,  $SD = 0.68$ ) to immediate post-test ( $M = 1.90$ ,  $SD = 0.66$ ). Students who received ETS also showed a 6% decrease in intended social distancing from pre to 2-months post-test. The magnitude of the differences in the RIBS means between groups across all time points was quite small (Cohen's  $d = .06$ ).

The group by time interaction for mental health knowledge (MAKS) was significant ( $F = 3.10$ ,  $df = 3$ ,  $495.13$ ,  $p = .026$ ) with all predictors in the model (see Figure 2), indicating that participants in the ETS group had a significant increase in knowledge over time in comparison to control group participants (while controlling for other predictors; MAKS was not included as a covariate in this model). This significant change between groups was evident at all follow-up time points: Time 2 ( $p = .002$ , 95% CI = 0.07 to 0.33), Time 3 ( $p = .010$ , 95% CI = 0.04 to 0.30), and Time 4 ( $p = .034$ , 95% CI = 0.01 to 0.28). Time was also a predictor ( $F = 11.52$ ,  $df = 3$ ,  $495.08$ ,  $p < .0005$ ), and gender (female)<sup>7</sup> was a significant predictor ( $p = .020$ ,  $B = 0.11$ , 95% CI = 0.02 to 0.20) of higher knowledge, as was close friend contact with mental illness (no)<sup>8</sup> ( $p = .021$ ,  $B = -0.12$ , 95% CI = -0.23 to -0.02). Students who received ETS showed a 9% increase in knowledge from pre ( $M = 3.41$ ,  $SD = 0.44$ ) to immediate post-test ( $M = 3.71$ ,  $SD = 0.45$ ), whereas there was a nonsignificant increase for the control group from pre ( $M = 3.42$ ,  $SD = 0.43$ ) to immediate post-test ( $M = 3.51$ ,  $SD = 0.44$ ). Students who received ETS also showed a 6% increase in knowledge from pre to 2-months post-test. The magnitude of the differences in the MAKS means between groups across all time points was small to medium (Cohen's  $d = .24$ ).

Although the group by time interaction for negative affect (r-AQ) was significant ( $F = 2.92$ ,  $df = 3$ ,  $500.75$ ,  $p = .034$ ) without any predictors in the model, it became non-significant when predictors were added ( $F = 2.48$ ,  $df = 3$ ,  $480.14$ ,  $p = .061$ ). The effect of time was not significant in this latter model ( $F = 1.34$ ,  $df = 3$ ,  $486.23$ ,  $p = .260$ ). The magnitude of the differences in the r-AQ means between groups across all time points was small (Cohen's  $d = .16$ ). There was not a significant group by time interaction for intentions to seek counseling (ISCI), without and with predictors, but time was significant ( $F = 3.22$ ,

<sup>7</sup> Gender was a significant predictor of MAKS at Time 2 and 4

<sup>8</sup> Close friend contact was a significant predictor of MAKS at Time 1 and 3

$df = 3, 486.99, p = .023$ ) with predictors in the model, indicating improvements in both groups over time. Close friend contact (no)<sup>9</sup> ( $p = .028, B = -0.20, 95\% \text{ CI} = -0.38 \text{ to } -0.02$ ) and lower self-concept clarity<sup>10</sup> ( $p = .028, B = -0.12, 95\% \text{ CI} = -0.23 \text{ to } -0.01$ ) were predictors of help-seeking. Similarly, there was not a significant group by time interaction for the Peer Support scale (with and without predictors), but the effect of time was significant ( $F = 4.10, df = 3, 479.03, p = .007$ ) with predictors in the model. The magnitude of the differences in the ISCI and Peer Support means between groups across all time points was very small (ISCI Cohen's  $d = .003$  and Peer Support Cohen's  $d = .05$ ). Since internal consistency was particularly low for this scale, two additional analyses were conducted using each individual item from the Peer Support scale as an outcome variable. Findings were still similar; with and without predictors added, no significant interaction effects were observed.

### Secondary Outcomes

The group by time interaction for perceptions of stigma for seeking help (PSOSH) was significant ( $F = 2.96, df = 3, 482.91, p = .032$ ) with predictors in the model, as was the effect of time ( $F = 3.29, df = 3, 490.12, p = .020$ ), indicating that each group was changing over time in different ways. Based on the pattern of PSOSH changes by group, no significant differences were found at each time point. Other predictors of PSOSH included mental health knowledge<sup>11</sup> ( $p = .049, B = -0.13, 95\% \text{ CI} = -0.25 \text{ to } -0.001$ ), female gender<sup>12</sup> ( $p = .002, B = -0.23, 95\% \text{ CI} = -0.38 \text{ to } -0.09$ ), school grade<sup>13</sup> (9<sup>th</sup> and 10<sup>th</sup> grade) ( $p = .010, B = 0.19, 95\% \text{ CI} = 0.05 \text{ to } 0.34$ ), self-concept clarity<sup>14</sup> ( $p < .0005, B = -0.19, 95\% \text{ CI} = -0.29 \text{ to } -0.08$ ), and race/ethnicity<sup>15</sup> (identifying as Asian-American/Pacific Islander) ( $p < .0005, B = 0.41, 95\% \text{ CI} = 0.21 \text{ to } 0.61$ ). Students who received ETS showed an 8% decrease in perceptions of stigma from pre ( $M = 2.03, SD = 0.74$ ) to immediate post-test ( $M = 1.87, SD = 0.83$ ), and students in the control group showed a 10% decrease in perceptions of stigma from pre ( $M = 2.19, SD = 0.76$ ) to immediate post-test

<sup>9</sup> Close friend contact was a significant predictor of ISCI at Time 4

<sup>10</sup> Self-concept clarity was a significant predictor of ISCI at Time 1 and Time 3

<sup>11</sup> MAKS was a significant predictor of PSOSH at Time 4

<sup>12</sup> Gender was a significant predictor of PSOSH at Time 1, Time 2, and Time 3

<sup>13</sup> School grade was a significant predictor of PSOSH at Time 2

<sup>14</sup> Self-concept clarity was a significant predictor of PSOSH at Time 1, Time 2, and Time 4

<sup>15</sup> Race/ethnicity was a significant predictor of PSOSH at Time 1, Time 2, and Time 4

( $M = 1.98$ ,  $SD = 0.68$ ). There was a 2% increase in perceptions of stigma from pre to 2-months post-test for students who saw ETS, but an 11% decrease in such perceptions for the control group from pre to 2-months post-test. The magnitude of the differences in the PSOSH means between groups across all time points was very small (Cohen's  $d = .02$ ). The group by time interaction and time main effect for self-stigma of seeking help (SSOSH) were non-significant, without and with predictors. The magnitude of the differences in the SSOSH means between groups across all time points was small (Cohen's  $d = .16$ ).

The group by time interaction for disclosure worries: anticipated risk (DES-AR) was significant ( $F = 4.68$ ,  $df = 3$ ,  $481.54$ ,  $p = .003$ ) with predictors in the model, as was the effect of time ( $F = 3.42$ ,  $df = 3$ ,  $486.18$ ,  $p = .017$ ), indicating that each group was changing over time in different ways. This change between groups was significant at Time 4 only ( $p = .013$ , 95% CI = -0.65 to -0.08). Other predictors of anticipated risk included gender (female)<sup>16</sup> ( $p = .027$ ,  $B = 0.26$ , 95% CI = 0.03 to 0.48), school grade<sup>17</sup> (9<sup>th</sup> and 10<sup>th</sup>) ( $p = .017$ ,  $B = 0.28$ , 95% CI = 0.05 to 0.50), and self-concept clarity<sup>18</sup> ( $p < .0005$ ,  $B = -0.37$ , 95% CI = -0.52 to -0.21). Students who received ETS showed a 9% decrease in anticipated risks from pre ( $M = 3.53$ ,  $SD = 0.99$ ) to immediate post-test ( $M = 3.17$ ,  $SD = 0.97$ ), whereas there was a nonsignificant increase for the control group from pre ( $M = 3.39$ ,  $SD = 1.06$ ) to immediate post-test ( $M = 3.43$ ,  $SD = 1.03$ ). Students who received ETS also showed a 14% decrease in anticipated risks from pre to 2-months post-test. The group by time interaction and time main effect for anticipated benefits (DES-AB) was non-significant, with and without predictors in the model. The magnitude of the differences in the DES-AR and DES-AB means between groups across all time points was small (Cohen's  $d = .21$  and  $.23$ , respectively).

### Qualitative Results

The 95 participants who were present for Time 2 for the ETS presentation provided written feedback. The majority of these participants reported satisfaction with and positive feedback for the ETS

<sup>16</sup> Gender was a significant predictor of DES-AR at Time 1 and Time 2

<sup>17</sup> School grade was a significant predictor of DES-AR at Time 2 and Time 4

<sup>18</sup> Self-concept clarity was a significant predictor of DES-AR at all timepoints

presentation. Specific themes were identified within two sections: “Aspects Liked Best” and “Suggestions for Improvement” (see Table 3 for a summary). Regarding “Aspects Liked Best,” participants highlighted the importance of *personal stories and experiences* (e.g., “*The presenters really opened up to us about their personal life and struggles*”). Similarly, participants reported liking the *psychoeducation*, specifically the resources handed out (e.g., “*I liked the references we were given at the end for us to use*”), in addition to the *video/visual images* component of the presentation. Lastly, some students specifically highlighted the presenters’ *presentation style* (e.g., “*I felt the presentation was well organized and spoken*”) and expressed overall *positive emotion* toward the presentation. Regarding Suggestions for Improvement, students reported wanting *more psychoeducation and resources* (e.g., “*go into what differentiates certain mental illness*”) and wanting to hear *more personal stories and experiences*. A smaller number of students wanted more *videos and visuals*, with only four students suggesting the presentation be more *concise*. A larger number of students indicated that there should be more *interaction and discussion* (e.g., “*make it more interactive with students*”).

[Table 3 here]

### **Discussion**

Findings from the current study indicated that ETS (compared to the active control) had a small but significant impact on negative stereotypes and mental health knowledge, consistent with results from prior youth stigma reduction studies (Corrigan et al., 2012). Trends further indicated potential positive effects for ETS participants in regard to reduced intentions to socially distance from people with mental illness, reduced negative affect, and increased intentions to seek counseling. Consistent with the hypothesis, effects were typically the strongest at Time 2 (immediate follow-up).

The current study addressed gaps in the current research and had several strong design and methodological components. First, this study connected adolescent mental health stigma to a model and theory of stigma. Second, researchers partnered with a national organization and evaluated a standardized program that can be replicated, improved, and potentially dismantled in the future, in order to identify key ingredients. Third, this study used an RCT design with an active control group and three follow-up points,

along with controls for covariates. Studies of youth stigma reduction programs have rarely employed randomized design (including an active control group), and even fewer have used follow-ups beyond a pre- and post-test. Fourth, from a recruitment perspective, this study used passive parent/guardian consent, leading to a high enrollment rate in the study. In the future, researchers may consider advocating for passive parent/guardian consent or for mature minors' participation without caregiver permission (see American Psychological Association, 2018).

Contrary to hypotheses for primary outcomes, no changes were observed in regard to reduced negative stereotypes in terms of categorical thinking, or improved intentions to help a peer with a mental health problem, but the effects of time were significant for these models. For categorical thinking, it is possible that content in both presentations (ETS and active control) provided students with a more nuanced and realistic view of mental health. Additionally, it is possible that maturation, a threat to internal validity, occurred for all students, whereby normal developmental changes led to less dichotomous thinking about mental illness among students. In regard to intentions to provide peer support, it is possible that the ETS presentation needs to provide students with more concrete information on how to provide peer support. This was an area for improvement suggested in a prior post-test only evaluation of ETS (DeLuca et al., 2018).

In regard to secondary outcomes, effects were weaker overall compared to primary outcomes, consistent with hypotheses. It is unclear why perceptions of stigma for seeking help (PSOSH) generally decreased in the control group over time. Research using PSOSH as an outcome variable in stigma reduction programs is mixed (Hackler, 2011; Lopez, 2018; McGuire-Wise, 2016; Setti et al., 2019). Given this and also that perceived and anticipated stigma are among the strongest predictors of help-seeking (Clement et al., 2015; Gulliver et al., 2010), this is an important topic to target and evaluate in future studies. In regard to self-stigma of seeking help (SSOSH) as an outcome, no significant interaction was found in the current study. It is also possible that there was no effect on self-stigma, since ETS does not explicitly focus on self-stigma. Future studies should target and measure this aspect of stigma, since

meta-analyses and systematic reviews have found that self-stigma is one of the strongest predictors of help-seeking behaviors (e.g., Nam et al., 2013).

A significant group by time interaction was found for anticipated risks of disclosing to a counselor, whereby participants in the ETS group anticipated lower risk over time, which became significant at Time 4 between groups. Based on these results, students who saw the ETS presentation felt more comfortable—and less vulnerable—in potentially disclosing personal feelings and information to a mental health counselor. This is a potentially important finding, because past meta analyses have found that disclosure worries are predictors of help-seeking intentions (Nam et al., 2013). This is only the second study to measure disclosure worries as an outcome of a stigma reduction program (Demyan & Anderson, 2012). Male gender, being an 11<sup>th</sup> or 12<sup>th</sup> grade student, and having a stronger self-concept were predictors of lower anticipated risk. Adolescent males generally perceive less risk and are more willing to engage in riskier behaviors than adolescent females (Reniers, Murphy, Lin, Bartolomé, & Wood, 2016), which may partially explain this result, however mental health stigma tends to be higher among young males. More research is warranted in this area. More broadly, higher grade level was also a predictor lower stigma across several outcomes (ATSMI-AV, MAKS, DES-AR) and this variable should continue to be studied. In regard to gender, identifying as female was a predictor of lower stigma across many outcomes as well. Some researchers (Koller & Stuart, 2016) have suggested that future interventions may need to incorporate gender-specific stigma reduction programming. Compared to prior ETS studies, these results confirm the benefits of ETS in terms of reducing stereotypes and negative affect and improving knowledge (Taniyama, 2016; Wahl et al., 2018; Wong et al., 2015). Wong and colleagues (2015) similarly found no significant impact of the ETS intervention on peer support or help-seeking though, again, the results in regard to personal help-seeking intentions were trending. Similar to Wahl and colleagues' (2018) study, the effects of the intervention in the current study appeared to generally decrease over time for some measures.

**Qualitative results.** Participants who were audience members for the ETS presentation overall had positive impressions of the program. Students most enjoyed the personal story part of the

presentation, followed by the educational information. Students also believed the presenters were credible and competent, which is an important factor for programs (Cerully, Collins, Wong, Seelam, & Yu, 2018). In terms of suggestions, students believed that ETS could be improved by including more personal stories, education, and videos/visuals. Most importantly, many students suggested that future presentations incorporate more interaction and discussion. This suggestion is consistent with prior evaluations of ETS (DeLuca et al., 2018), which found that students wanted more encouragement from presenters to participate in the presentation. This suggestion is also consistent with calls for adolescent stigma reduction programs to consider cognitive and socio-emotional features of adolescent development (Newcomb-Anjo, 2018). Other researchers have suggested interactive interventions for youth via active learning strategies, incorporating youth stories, and promoting youth leadership (Ahmad et al., 2019; Austin & Schwartz, 2018; Bulanda, Bruhn, Byro-Johnson, & Zentmyer, 2014).

### **Limitations of Current Study and Future Directions**

The current study only sampled one high school in an urban area of the US and was underpowered as per a cluster randomized controlled trial power analysis. Although the demographics of this high school were generally reflective of NYC public high schools, it is possible that this sample was different in some ways from other schools (e.g., potentially having more baseline interest in mental health, given their agreement to participate in the study). In terms of design, although a randomized design with an active control group was used, it is possible that bias was unintentionally introduced by the researchers. To this end, a selection bias may have been present whereby teachers with mental health contact and/or strong beliefs about mental health education were more willing to participate. Further, given that only one school participated in this study, it is possible that students in different randomized groups spoke about the presentations after Time 2 (i.e., contamination), though efforts were made to conceal the true purpose of the study, and having a control and treatment group within the same school helped to control for disentangle internal validity factors (e.g., history, maturation) within a same-school context.

In terms of the presentation, although the same speakers and format were used for each class, some presentations were slightly shorter than others (e.g., due to starting late), and no presentation lasted the full 50 minutes (but instead 35-40 minutes). Though this aspect of the study may give more weight to the findings in regard to ecological validity, it is possible that this shortened presentation format decreased the impact of the intervention. Corrigan and colleagues (2010) have found that another NAMI stigma intervention (for adults) is equally effective in a 90-minute format (original design) and 30-minute format (pared down design), but more research is needed on adapting ETS. Relatedly, the speakers in this study primarily shared personal stories regarding depression and an eating disorder. There are specific stigmas toward eating disorders (e.g., beliefs about fragility and attention-seeking; see Roehrig & McLean, 2010), but also some common stigmas that are endorsed across mental health conditions (e.g., personal responsibility). Further, depression tends to be less stigmatized than other mental health experiences, such as psychosis (Pescosolido et al., 2013). It is possible that personal stories about other mental health diagnoses may have different effects on the outcome, though few studies collect this information and researchers have called for this to be an area of future investigation (Koller & Stuart, 2016). In terms of content, ETS' psychoeducation component is primarily psychosocial in nature (e.g., describing the effects of stress and environment on mental health, and how to use social support), but there is a brief discussion of biological aspects of mental health. The effect of stigma reduction programs may differ based on educational content and future studies should consider this (Ojio et al., 2020). The effect of stigma reduction programs can also differ based on multiple forms of contact (e.g., Deb et al., 2019) and other presenter factors. Lastly, to this end, although the two speakers were diverse in this study and there was one young presenter, future research should continue to monitor the impact of speaker demographics on outcomes, and try to match speaker demographics (e.g., age, race/ethnicity, language) with student demographics when possible (see Chen et al., 2016). ETS and other mental health awareness and stigma reduction presentations can also be studied and developed with elementary and middle school students. Overall, programs must also consider intersectionality more broadly and acknowledge how

mental health intersects with race/ethnicity, gender, age, class, and sexual orientation, in terms of both perception and personal experience (Corrigan, Rüscher, & Scior, 2018; DuPont-Reyes et al., 2019).

In terms of measurement, some scales had low internal consistency and results should be interpreted with this caveat. Moreover, some scale ranges in this study were relatively constricted, with students in this study skewing toward being relatively non-stigmatizing. Ceiling effects such as these have been noted in prior studies (Evans-Lacko et al., 2011) and multidimensional measures of stigma (as well as measures of social desirability bias) should continue to be incorporated in future research. Additionally, all scales were self-report and not diagnosis-specific, and no objective measures of behavior were included in the current study. Future studies should explore the effects of stigma reduction programs by evaluating stigma toward various mental health conditions, not just “mental health” or “mental illness” in general. Future studies should also employ in-depth pre-test assessments of mental health knowledge and conceptualizations, in order to determine what youth believe mental illness is.

### **Conclusions**

The results suggest that NAMI’s Ending the Silence is well-liked by youth and has positive effects on multiple stigma dimensions for high school youth. As a standardized program within a national organization, ETS can be developed further to continue improving mental health knowledge, reducing stigma, and increasing inclusion and help-seeking behaviors, and to maintain these effects over time. Instead of acting as a solo intervention, ETS may work best with booster sessions and in tandem with mental health school curriculum approaches (e.g., Milin et al., 2016), youth-involved community approaches (e.g., Ramey & Rose-Krasnor, 2015), youth-led stigma reduction and mental health promotion approaches (e.g., Bulanda et al., 2014; Eisenstein et al., 2019; Parikh et al., 2018), and with other youth social justice initiatives (e.g., Corrigan, Watson, Byrne, & Davis, 2005; Mayberry, 2013). Future investigations into the manifestations of stigma and ways to reduce stigma can lead to better understandings of the stigma process and improvements in life outcomes for youth.

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Table 1.

*Sociodemographic Characteristics of Participants at Baseline*

	ETS N = 105 N (%)	Control N = 101 N (%)	Total N = 206 N (%)	$\chi^2$	df	p
<b>Gender:</b>						
Male	46 (45)	41 (41)	87 (43)	.26	1	.61
Female	55 (54)	59 (58)	114 (56)			
Transgender	0 (0)	1 (1)	1 (.5)			
Gender Fluid	1 (1)	0 (0)	1 (.5)			
<b>Grade</b>						
9	0 (0)	17 (17)	17 (8)	26.87	3	<.0005
10	57 (54)	31 (31)	88 (43)			
11	31 (30)	41 (41)	72 (35)			
12	17 (16)	12 (12)	29 (14)			
<b>Race/Ethnicity:</b>						
African-American	21 (20)	22 (22)	43 (21)	5.03	5	.41
European-American	40 (38)	32 (32)	72 (35)			
Latino/a/x	19 (18)	13 (13)	32 (16)			
Asian-American	13 (12)	15 (15)	28 (14)			
Arab/Middle-Eastern	2 (2)	3 (3)	5 (2)			
Native American	0 (0)	0 (0)	0 (0)			
Multiethnic/racial	8 (8)	16 (16)	24 (12)			
Other	2 (2)	0 (0)	2 (1)			
<b>Close Friend Contact</b>						
Yes	37 (35)	31 (31)	68 (33)	.25	1	.62
No	68 (65)	69 (69)	137 (67)			
<b>Family Contact:</b>						
Yes	28 (27)	26 (26)	54 (26)	<.0005	1	.99
No	77 (73)	74 (74)	151 (74)			
	M (SD)	M (SD)	M (SD)	t	df	p
Age	15.3 (.86)	15.5 (1.01)	15.4 (.94)	-1.37	204	.17

*Note.* ETS refers to *Ending the Silence*. Some values do not add to 206 because of data cleaning, rounding, or missing responses.  $\chi^2$  analyses for race/ethnicity omitted the group “Other” and “Native American” since these groups violated the assumption of the analysis (< 5 cases).

Table 2.

*Estimated Marginal Means and Standard Errors for Mental Health Stigma Outcomes for Randomized Groups*

Measures	Randomized Group	Baseline n = 198		Immediate Post-Test n = 187		1-month n = 181		2-months n = 171		Group by Time Interaction			
		M	SD	M	SD	M	SD	M	SD	ES	F	df	p
		Negative Stereotypes (AMIS)	ETS	2.15	.46	1.99	.54	2.05	.49	2.15	.54	.44	3.55
	Control	2.22	.43	2.30	.52	2.21	.46	2.28	.50				
Categorical Thinking (ATSMI-AV)	ETS	1.93	.66	1.77	.62	1.84	.70	1.83	.62	.14	.207	3, 484	.892
	Control	2.01	.70	1.91	.67	1.97	.64	1.97	.62				
Intended Social Distance (RIBS)	ETS	2.02	.72	1.77	.68	1.82	.68	1.89	.77	.06	2.20	3, 484	.087
	Control	1.95	.68	1.90	.66	1.88	.67	2.00	.68				
Knowledge (MAKS)	ETS	3.41	.44	3.71	.45	3.61	.53	3.62	.48	.24	3.10	3, 495	.026
	Control	3.42	.43	3.51	.44	3.44	.44	3.47	.39				
Negative Affect (r- AQ)	ETS	2.01	.80	1.90	.75	2.12	.83	2.04	.79	.16	2.48	3, 480	.061
	Control	1.99	.81	1.97	.79	1.92	.75	1.94	.80				
Intentions to Seek Counseling (ISCI)	ETS	2.11	.64	2.10	.68	2.13	.66	2.20	.68	.003	1.89	3, 483	.131
	Control	2.22	.61	2.03	.71	2.02	.71	2.11	.80				

Intentions to Provide Peer Support (Peer)	ETS	4.03	.55	4.13	.66	3.92	.68	3.92	.68	.05	1.08	3,472	.356
	Control	4.12	.63	4.05	.61	3.95	.59	3.89	.71				
Perceptions of Stigma (PSOSH)	ETS	2.03	.74	1.87	.83	2.09	.77	2.07	.87	.02	2.96	3,483	.032
	Control	2.19	.76	1.98	.68	1.89	.69	1.96	.79				
Self-Stigma (SSOSH)	ETS	2.58	.68	2.53	.68	2.61	.66	2.57	.71	.16	1.51	3,479	.211
	Control	2.65	.67	2.69	.66	2.73	.72	2.81	.72				
Anticipated Risks (DES-AR)	ETS	3.53	.99	3.17	.97	3.20	.96	3.05	.99	.21	4.68	3,482	.003
	Control	3.39	1.06	3.43	1.03	3.41	1.14	3.41	1.08				
Anticipated Benefits (DES-AB)	ETS	3.15	.97	3.16	.94	3.18	.88	3.15	.81	.23	.313	3,466	.816
	Control	2.91	.86	3.02	.84	3.02	.84	3.02	.96				

*Note.* Higher AMIS and ATSMI-AV = higher negative stereotypes. Higher RIBS = higher intended social distance. Higher MAKS = higher mental health knowledge. Higher r-AQ = higher negative affect. Higher ISCI and Peer Support = higher intentions to seek help and help a peer, respectively. Higher PSOSH and SSOSH = higher perceptions of stigma and self-stigma, respectively. Higher DES-AR = higher anticipated risk. Higher DES-AB = higher anticipated benefits. SD refers to standard deviation. ES refers to effect size for overall mean score difference between ETS and control group (via Cohen’s *d*). Group by time interaction significance level refers to full models (i.e., all predictors included).

Table 3.

*Qualitative Feedback for Ending the Silence (N = 95)*

Domain	Percentage Endorsed	n
<u>Aspects Liked Best</u>		
<i>Personal stories and experiences</i>	31%	30
<i>Psychoeducation</i>	24%	23
<i>Videos and visual images</i>	11%	10
<i>Presentation Style</i>	6%	6
<i>Overall positive emotions</i>	6%	6
<u>Suggestions for Improvement</u>		
<i>More psychoeducation and resources</i>	14%	13
<i>More personal stories and experiences</i>	9%	9
<i>More videos and visuals</i>	7%	7
<i>More interaction and discussion</i>	24%	23
<i>More concise</i>	4%	4
<i>No suggestions</i>	20%	19

*Note.* Percentages are derived by: total domain responses/95. Some totals do not equal 95, since some participants did not provide qualitative feedback. For the category “No suggestions,” participants explicitly stated they had no suggestions.

Figure 1

Consolidated Standards of Reporting Trials (CONSORT) participant flow diagram.

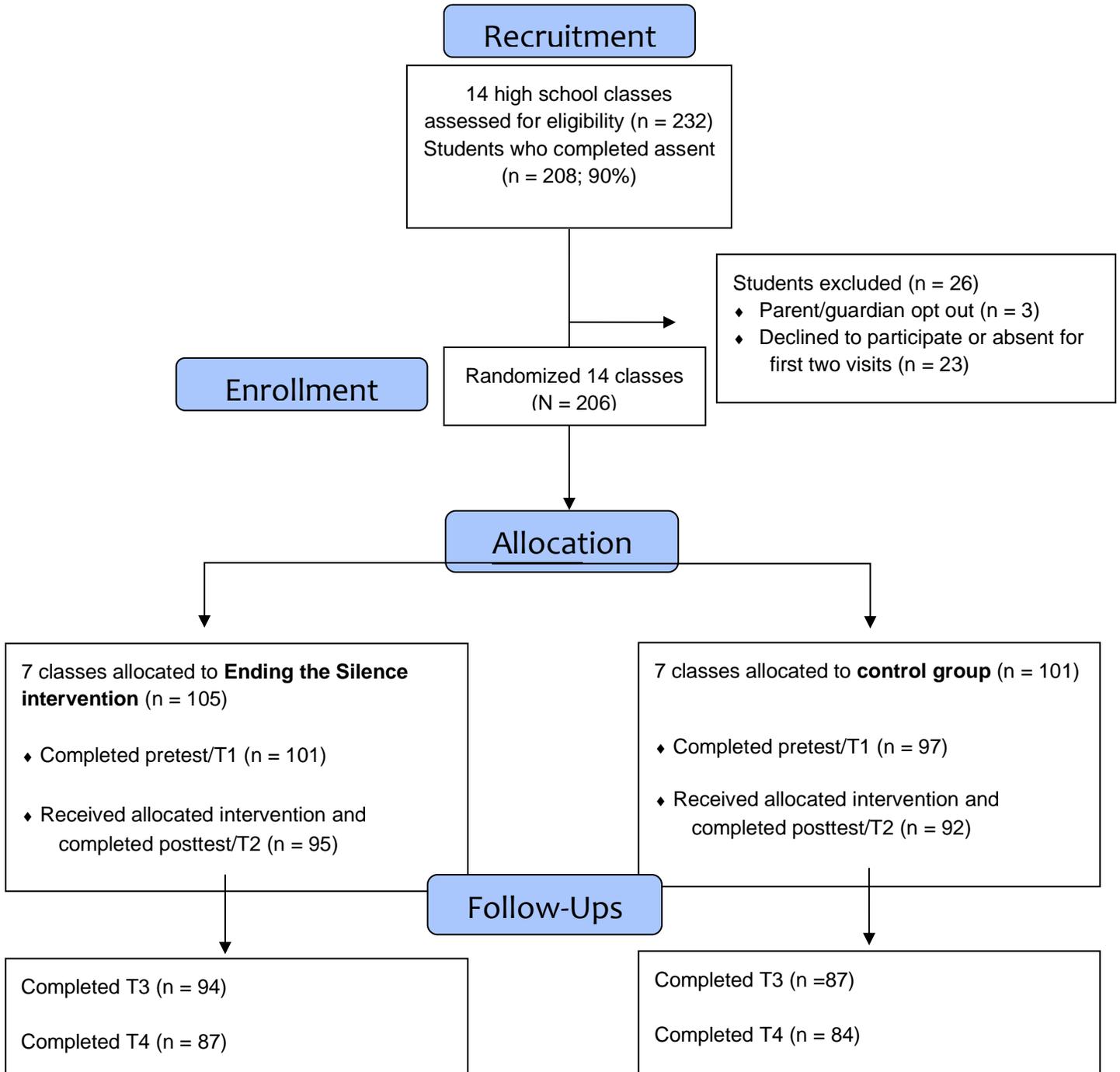


Figure 2.

*Estimated marginal means between groups for negative stereotypes (AMIS) and mental health knowledge (MAKS) over Time (Time 1 = baseline, Time 2 = immediate post-test, Time 3 = one month follow-up, Time 4 = two month follow-up).*

