

# Evidence-Based Practice in Child and Adolescent Mental Health

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## Pilot Evaluation of Preservice Teacher Training to Improve Preparedness and Confidence to Address Student Mental Health

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### ABSTRACT

Teachers have an important role in identifying, supporting, and referring students with mental health needs to school-based mental health providers. However, most teachers receive little or no preparation in this area. The present study examines the impact of one brief, single-session, online role-play simulation designed to prepare teachers to identify students in psychological distress, talk with them about their concerns, and, if necessary, refer them to school mental health services. Forty-six preservice teachers (i.e., undergraduate and graduate students training to be teachers) were randomized to complete either the role-play simulation or a control training. Participants who completed the simulation reported significant improvements in preparedness and confidence in their ability to identify and respond to student mental health needs, as compared to control group participants. These differences were maintained at 1-month follow-up, suggesting that the training had a positive effect on core outcomes related to preservice teacher attitudes regarding supporting student mental health. There were no significant group differences in ratings of mental health-related stigma. Results indicate that a brief, easily disseminated online training applied in preservice preparation settings may effectively improve preservice teacher attitudes about their preparedness and confidence to support student mental health.

### KEYWORDS

Teachers; mental health; schools; children; adolescents

Studies find that up to half of children and adolescents will meet criteria for a diagnosable mental disorder in their lifetime (Merikangas et al., 2010), and rates of childhood anxiety and depression are on the rise (Bitsko et al., 2018). Youth with mental disorders have increased risk for school attrition, lower likelihood of college enrollment, reduced earnings in adulthood, and increased likelihood of involvement with the criminal justice system (Breslau et al., 2009; Breslau, Miller, Chung, & Schweitzer, 2011; Bruffaerts et al., 2018; McLeod & Kaiser, 2004; Porche, Fortuna, Lin, & Alegria, 2011). Given that many disorders begin in childhood (Kessler et al., 2005; Merikangas et al., 2010), early identification and intervention have the potential to improve youth outcomes.

Considering that children in the U.S. spend more time at school than any other formal institutional structure, schools provide a unique platform for identifying and addressing mental health needs (Atkins, Cappella, Shernoff, Mehta, & Gustafson, 2017).

Studies find that schools are a primary provider of mental health services (Green et al., 2013) and are often the source of referrals to community-based services (Farmer, Burns, Phillips, Angold, & Costello, 2003). However, research also shows that most youth with mental health needs do not receive mental health services and that unmet need for services is greatest among traditionally marginalized youth (e.g., youth identifying as ethnic/racial minorities; Merikangas et al., 2011). Improving teachers' confidence and preparedness in identifying and responding to mental health needs has the potential to reduce these disparities.

Additional preparation in addressing student mental health might also contribute to reducing stigma related to mental health. In one study of adolescents with diagnosed mental disorders, one-third reported perceiving stigma from school staff; for example, believing that school staff feared, disliked, or avoided them (Moses, 2010). This issue is not unique to school staff; stigma against those with

mental disorders, such as social distancing (i.e., the tendency to avoid proximity to those with mental disorders), is widespread among the general population (Parcesepe & Cabassa, 2013). Students who perceive stigma by others are less likely to seek support and receive services; in fact, the most common barrier to seeking mental health services reported by adolescents is the perceived stigma associated with seeking help (Gulliver, Griffiths, & Christensen, 2010). Although the mechanisms underlying stigma (e.g., ignorance, prejudice, and discrimination) are complex and under-researched, evidence suggests that interventions that improve knowledge of mental health, such as large-scale public health campaigns (Jorm, Christensen, & Griffiths, 2005) and targeted school-based interventions (Kitchener & Jorm, 2006), can be effective in reducing stigma.

### **Teacher training in mental health**

Many states and districts have adopted standards for implementing prevention, identification, and intervention systems that support student emotional and behavioral wellbeing (e.g., Briesch, Chafouleas, Nissen, & Long, 2019). Some of these systems rely on teachers to play an active role in promoting social-emotional learning and to identify students in need of additional support (Sugai & Horner, 2006). Yet there seems to be a disconnect between policy and staff preparation (Schonert-Reichl, 2019). Although teachers are well-positioned to identify youth mental health needs as a function of their daily interactions with students, teachers report receiving limited training in *how* to identify and address student mental health needs (Walter, Gouze, & Lim, 2006). In one study, 78% of teachers reported that a major barrier to supporting student mental health needs was lack of adequate training (Reinke, Stormont, Herman, Puri, & Goel, 2011). A review of course syllabi from U.S. elementary teacher preparation programs also found little training in the areas of social, emotional, and behavioral development (State, Kern, Starosta, & Mukherjee, 2011). Yet, preservice preparation (i.e., university training for future teachers) might be an ideal time to disseminate training on student mental health, as preservice teachers are beginning to conceptualize student behavior and develop a schema for their role in addressing the needs of the whole child. Including this topic in preservice preparation might

therefore increase teacher preparedness and confidence in addressing student mental health and lead teachers to incorporate student emotional and behavioral wellbeing in their developing understanding of student needs (Phillippo & Kelly, 2014).

There are a number of programs designed to explicitly train in-service teachers (i.e., teachers currently practicing in school settings) in how to address student mental health (for example, Mental Health First Aid [Jorm, Kitchener, Sawyer, Scales, & Cvetkovski, 2010]; Question, Persuade, Refer [Wyman et al., 2008]); however, these programs have not been widely disseminated and are designed for administration by school districts. In the current study, we investigate whether a brief training in student mental health can change preservice teachers' knowledge, beliefs, and attitudes regarding student mental health, otherwise known as *Mental Health Literacy*. Mental health literacy refers to the constellation of knowledge, beliefs, and attitudes that people hold about mental disorders that can influence their detection and reaction to disorders (Jorm, 2000).

### **Intervention**

The training we evaluate is Kognito At-Risk for K-12 Educators. Kognito is a health simulation company that develops programs that use an interactive virtual environment to train professionals on health and mental health topics by having them practice role-plays with intelligent virtual humans. Kognito for K-12 Educators is online and self-administered, increasing its potential for broad dissemination. The theory behind Kognito is consistent with Gatekeeper models (Burnette, Ramchand, & Ayer, 2015), which posit that gatekeepers are individuals who come in regular contact with those in their community (in this case, the teachers who interact with their students almost daily) and thus have enhanced opportunity to connect others to needed services. In part, this is because individuals find comfort when sharing with someone they see on a regular basis (Anderson, Maile, & Fisher, 2010; Rotter, 1971). A recent study of the use of Kognito with in-service teachers found that those who completed the training reported greater improvements in both attitudes and behaviors related to mental health referrals in their schools, as compared to a wait-list control group (Long, Albright, McMillan, Shockley, & Price, 2018).

## Current study

In the current study we investigate whether a brief training in student mental health, Kognito At-Risk for K-12 Educators, can change preservice teachers' perceptions of 1) preparedness to address student mental health, 2) confidence in addressing student mental health needs, and 3) stigma related to mental health. We hypothesize that preservice teachers will report feeling 1) more prepared, and 2) more confident in responding to student mental health needs after completing the Kognito training, as compared to a control group. In addition, we hypothesize that the Kognito group will 3) report less stigma associated with mental health.

## Method

### Participants

Students in undergraduate and graduate preservice teacher programs at one northeastern United States

university ( $N = 367$ ) were invited by e-mail to participate in the study. Students who did not initially respond received up to three reminder e-mails (see Figure 1). Seventy-five students (20.4%) clicked on the link to enter the survey; however, 23 discontinued the survey prior to randomization (most often immediately following the consent form). The remaining 52 participants were randomized to a training and completed the first study session; 28 were assigned to the Kognito training and 24 were assigned to a control training. Of these, two participants did not complete the one-month follow-up survey, despite multiple reminders. In addition, data from Kognito indicated that three participants assigned to the Kognito intervention did not complete the training; they were therefore excluded from further analysis. Because of a technical error we were unable to verify Kognito completion for two additional participants; we therefore turned to scores on an assessment of knowledge gained from the intervention (described below). One participant correctly

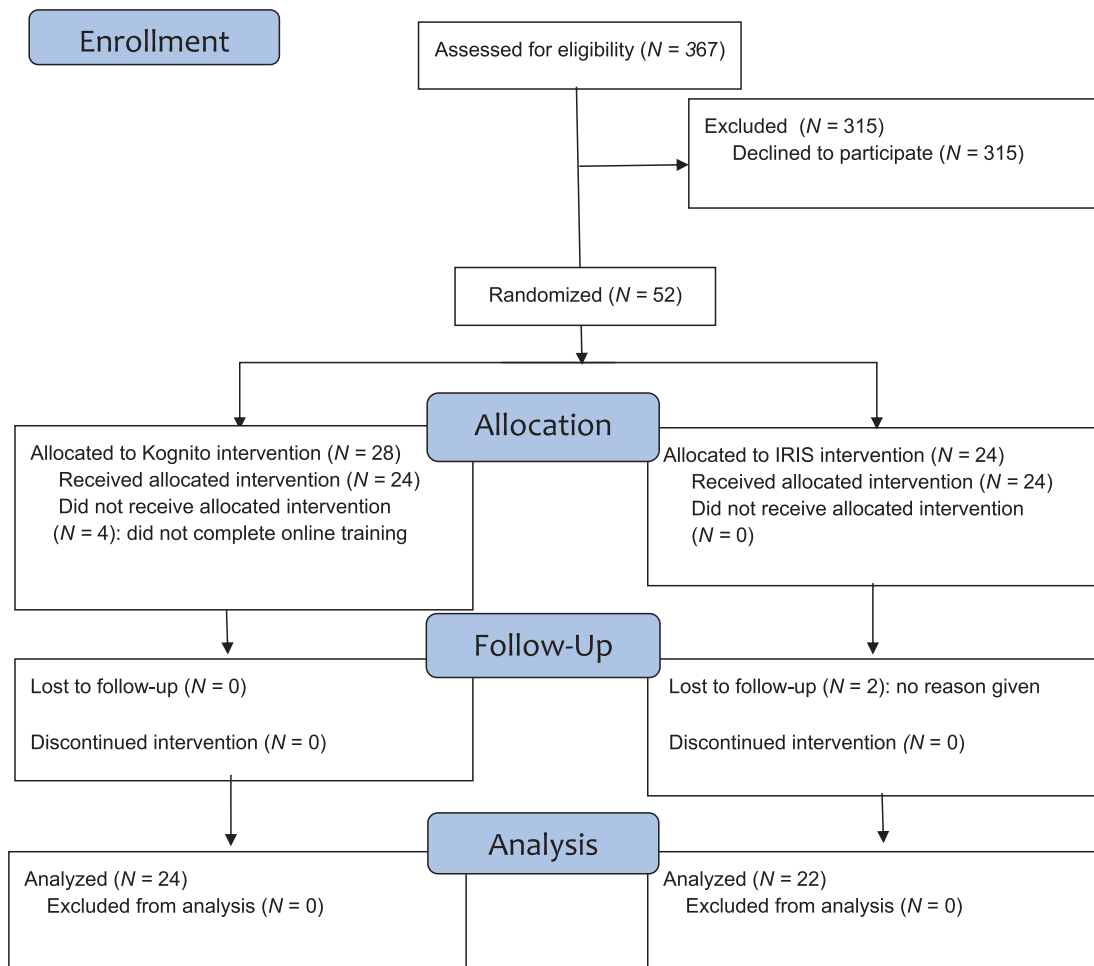


Figure 1. CONSORT flow diagram.

answered only 2 out of 5 questions, a lower score than any other participant in the study. Because we were uncertain if this person had completed the training, we excluded them from analysis. One participant, however, had a perfect score (5 out of 5 correct) on the assessment. Because of this score, we had some confidence that the participant had completed Kognito and therefore we retained the participant in our subsequent analysis. We also ran a sensitivity analysis without this participant and our results related to intervention and control group differences did not change when this participant was excluded from the sample.

The final sample consisted of 46 participants (12.5% response rate) enrolled in degree programs leading to teacher licensure, of which 24 were assigned to the Kognito training and 22 were assigned to the control training. Kognito participants primarily completed the high school (52.2%) or elementary (39.1%) modules, with 8.7% completing the middle school module. Half of the participants were between the ages of 18 to 20; 30.3% were between the ages of 21 to 25; and 19.6% were 26 or older. The majority (60.9%) were in an undergraduate degree program with the remainder in master's degree programs (M. Ed., 21.7%; M.A.T., 17.4%). Participants were asked to indicate their program specialty (or specialties) and most reported Elementary (32.6%), Math (17.4%), Special Education (17.4%), English (15.2%), and Science (15.2%).

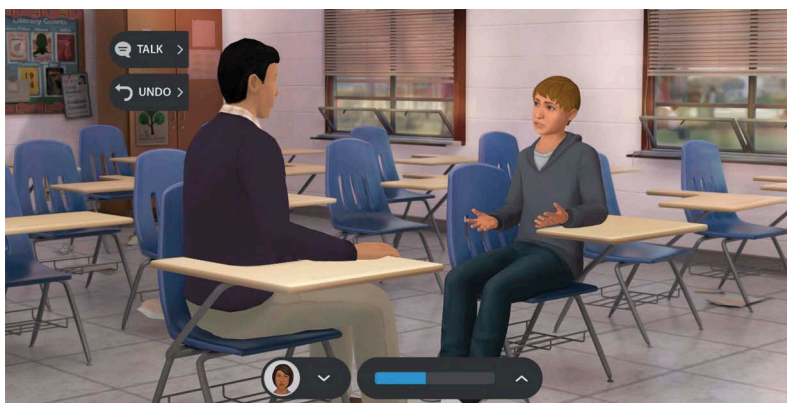
## Procedures

The study consisted of two online sessions that could be completed at a time and location of the participant's choosing. In the first session, participants completed a pre-survey, a one-hour training (either Kognito or a control training), and an immediate post-survey. The second session was a follow up survey that was administered one month later. Initially, participants were offered a \$30 gift card for completion of both sessions; however, to increase response rate, incentives were later increased to a total of \$50 (\$20 for completion of the first session and \$30 for completion of the second session). All study procedures were approved by the Boston University Institutional Review Board.

## Intervention training

The Kognito At-Risk for K-12 Educators training is focused on addressing student mental health by coaching teachers to identify signs of psychological distress, build trust with students, and motivate students to seek help. Through an interactive simulation (demo available at [www.kognito.com/demos](http://www.kognito.com/demos)), teachers learn specific strategies for discussing mental health with students and referring students to a school counselor.

Kognito for Elementary School Educators has been evaluated with in-service teachers (Long et al., 2018) and Kognito At-Risk for K-12 Educators is listed in the National Registry of Evidence-Based Programs and Practices (NREPP). Participants who completed the Kognito intervention could select whether they wanted to complete the elementary, middle, or high school module. They were assigned a unique ID which they used to log into the Kognito program, allowing researchers to verify completion of the training. The training begins by providing information about the prevalence of student mental health problems and signs of distress. Next, participants are directed through three virtual role-play conversations in which they receive information about virtual students and select from both effective and ineffective conversation tactics for interacting with the students (e.g., asking directly about the problem, asking how life is going generally, telling students they should get help). The virtual students have individual personalities, emotions and memories, and adapt their behaviors to the participants' conversation tactics throughout the role-play, providing the learner with a highly realistic experience (Figure 2). Within these conversations, participants practice evidence-based communication strategies such as those used in motivational interviewing, including asking open-ended questions or making affirmational statements, which are designed to actively engage students in identifying problems and increase motivation to change their behavior (Miller & Rollnick, 2012). A virtual coach provides ongoing positive feedback when the participant employs effective strategies and corrective feedback in response to less helpful strategies, such as being judgmental or critical. The virtual students react verbally and nonverbally to the conversation tactics the participant selects, thus providing immediate



**Figure 2.** Screenshot of a virtual role-play conversation where the learner assumes the role of an English teacher, Mr. Lyons, talking to student Rene in Kognito At-Risk for High School Educators.

feedback. Lastly, there is an “undo” option where participants can rewind a conversation and try another tactic. The participant completes the training by successfully helping each virtual student.

### Control training

In order to use an immediate posttest following the Kognito training, the study design required a training for the control group that was of comparable length and style. Therefore, the control group completed a training from the IRIS Center, an organization housed at Vanderbilt University that provides online resources to support the use of effective evidence-based practices and interventions for students, with a particular focus on students with disabilities (available at <http://iris.peabody.vanderbilt.edu>). Participants in the current study completed the module: *Accommodations: Instructional and Testing Supports for Students with Disabilities*. In this interactive training, participants learn the definition of accommodations, review primary types of accommodations (presentation, response, setting, and timing/scheduling), and learn how accommodations could be presented on Individualized Education Plans. The training consists of text, audio, links to resources, and includes examples of how to use accommodations with students with learning, intellectual, and physical disabilities. The IRIS training was chosen because (a) it was thought to be relevant and useful for preservice teachers in the control group, (b) it was a similar duration to the Kognito intervention, (c) it was online and interactive, and (d) it was not

specifically related to mental health, thus we did not anticipate that the training would contaminate the study results.

### Measures

#### Knowledge gained from intervention

To assess whether participants completed the trainings, we developed five questions to test knowledge gained from each intervention. These questions were specific to the trainings and not about mental health literacy in general (e.g., students were reminded that the training explains the approach “Identify, Approach, Refer” and then asked what “identify” means in this context). Questions were multiple-choice with four options per question. Each question was scored (correct/incorrect), and then all correct answers were summed to create a total knowledge score (0–5). The knowledge test was administered in session 1 after the assigned training. With the exception of the participant who was removed, all participants scored 3/5 or higher on the assessment of knowledge gained from the training they were assigned (Kognito:  $M = 4.57$ ,  $SD = 0.73$ ; IRIS:  $M = 4.50$ ,  $SD = 0.71$ ).

#### Gatekeeper Behavior scale

Two subscales from the Gatekeeper Behavior Scale (Albright, Davidson, Goldman, Shockley, & Timmons-Mitchell, 2016) were included in the current study. Subscales assessed preparedness to identify and respond to student psychological distress (5 items; e.g., “How would you rate your preparedness to ... recognize when a student’s behavior is a sign of

psychological distress”) and self-efficacy in responding to student mental health needs (4 items; e.g., “I feel confident in my ability to discuss my concern with a student exhibiting signs of psychological distress”). A third subscale assessing the likelihood to intervene was not included in the current study because of the relatively low reliability for scale items in the current sample ( $\alpha = .25-.69$ ), and because we anticipated that perceptions of the likelihood of intervening would not be meaningful for preservice teachers who were not yet working in a school context. The Gatekeeper Behavior Scale has demonstrated good internal reliability consistency and convergent validity (Albright et al., 2016), although prior studies have similarly found lower reliability for the likelihood subscale than the preparedness and self-efficacy subscales (Long et al., 2018). For the current study, the scale was administered three times: twice during session 1 (session 1 pre-survey, session 1 post-survey) and once during the 1-month follow-up. Internal consistency ranged from  $\alpha = .79-.87$  for preparedness (5 items) and  $\alpha = .73-.84$  for self-efficacy (4 items).

### **Teacher Mental Health Vignette Scale**

As a second assessment of confidence, participants were asked to read two vignettes from the Teacher Mental Health Vignette Scale (Green et al., 2018). These vignettes were adapted from the Center for Multicultural Health Research (Chavez, Shrout, Alegría, Lapatin, & Canino, 2010) and used in prior research on teacher mental health literacy (Green et al., 2018). One vignette presented a student with an internalizing disorder (depression) and the other a student with an externalizing disorder (oppositional defiant disorder). Each participant responded to both vignettes, which were randomized to present either male/internalizing, female/externalizing or male/externalizing, female/internalizing. Participants rated their confidence responding to students’ mental health needs on a scale of 1–10, with higher scores indicating greater confidence. Ratings for the two vignettes were averaged to provide a confidence score. Participants rated the vignettes at two time points: session 1 pre-survey and 1-month follow-up. During the 1-month follow-up survey, participants were assigned the same gender/condition vignette combination that they were assigned during session 1.

### **Reported and Intended Behavior Scale**

To assess stigma, participants completed the Reported and Intended Behavior Scale (RIBS; Evans-Lacko et al., 2011), an 8-item scale that measures mental health stigma related behavior. Participants are asked about experiences interacting with people with mental health problems (e.g., “Are you currently living with, or have you ever lived with, someone with a mental health problem?”), followed by their intention to interact with people with mental health problems (e.g., “In the future, I would be willing to live with someone with a mental health problem”). As indicated by scale developers, only items assessing intentions were scored. Participants rated their intentions on a 5-point Likert-type scale ranging from “agree strongly” to “disagree strongly” (score range = -5–20). The RIBS has demonstrated good internal consistency and test-retest reliability (Evans-Lacko et al., 2011). In the current study, the RIBS was administered at two time points: session 1 pre-survey ( $\alpha = .72$ ) and 1-month follow-up ( $\alpha = .85$ ).

### **Analysis**

Independent samples t-tests were conducted to compare participants in the Kognito and IRIS trainings on all outcome variables at baseline. To address the main research question, we next examined whether groups differed on outcomes from before to after the training, using a series of repeated measures ANOVAs. Indicators of preparedness, confidence, and stigma were dependent variables, Time was the repeated factor, and Group was the between-groups factor. Group included two levels (Kognito, control) and Time included two (session 1 pre-survey, 1-month follow-up) or three levels (session 1 pre-survey, session 1 post-survey, 1-month follow-up), depending on the variable. Except where noted, Mauchly’s test did not indicate a violation of sphericity for analysis. For main effects and interactions we report partial eta-squared ( $\eta^2$ ) effect sizes. Consistent with Cohen (1969),  $\eta^2$  values between 0.01 to  $< .059$  are considered small effects, values from  $.059$  to  $< .138$  are considered medium effects, and larger than  $.138$  are considered large effects. Where there were significant group differences, we calculated simple effects analysis. We stratified the sample by group and conducted repeated measures ANOVAs

to test for effects of time on each outcome and, where significant, estimated pairwise comparisons. We used a Bonferroni adjustment for multiple post-hoc pairwise comparisons.

## Results

### Baseline equivalence

A series of independent samples t-tests compared participants in the Kognito and the control group on study variables at baseline (Table 1). There were no significant differences between groups in program level (undergraduate vs. graduate) or year of study. There were no significant differences between the two groups on any of the outcome variables.

### Preparedness

Group differences in preparedness were examined using repeated measures ANOVAs (Table 2) to assess changes in the preparedness subscale of the Gatekeeper Behavior Scale. There was a significant Time X Group interaction ( $F_{(2,88)} = 4.40, p = .015, \eta^2 = .091$ ; Table 3). Results of a simple effects analysis indicated that for the Kognito group there was a significant linear increase in preparedness scores across the three time points ( $M_{\text{pre-survey}} = 3.29, M_{\text{post-survey}} = 3.52, M_{\text{follow-up}} = 3.85; F_{(2,46)} = 11.55, p < .001, \eta^2 = .334$ ). In contrast, for the control

**Table 1.** Demographic information for study participants.

|                  | Kognito<br>(n = 24) | Control<br>(n = 22) | Total<br>(N = 46) |
|------------------|---------------------|---------------------|-------------------|
| Degree           |                     |                     |                   |
| Undergrad        | 15 (65.2%)          | 13 (59.1%)          | 28 (60.9%)        |
| M.Ed.            | 5 (20.8%)           | 5 (22.7%)           | 10 (21.7%)        |
| M.A.T.           | 4 (16.7%)           | 4 (18.2%)           | 8 (17.4%)         |
| Year             |                     |                     |                   |
| First            | 12 (50%)            | 8 (36.4%)           | 20 (43.5%)        |
| Second           | 6 (25%)             | 8 (36.4%)           | 14 (30.4%)        |
| Third            | 2 (8.3%)            | 3 (13.6%)           | 5 (10.9%)         |
| Fourth           | 4 (16.7%)           | 3 (13.6%)           | 7 (15.2%)         |
| Specialization   |                     |                     |                   |
| Elementary       | 10 (41.6%)          | 5 (22.7%)           | 15 (32.6%)        |
| Special Ed       | 5 (20.8%)           | 3 (13.6%)           | 8 (17.4%)         |
| Math             | 5 (20.8%)           | 3 (13.6%)           | 8 (17.4%)         |
| English          | 3 (12.5%)           | 4 (18.2%)           | 7 (15.2%)         |
| Social Studies   | 0 (0.0%)            | 1 (4.5%)            | 1 (2.2%)          |
| Science          | 2 (8.3%)            | 5 (22.7%)           | 7 (15.2%)         |
| TESOL            | 3 (12.5%)           | 1 (4.5%)            | 4 (8.7%)          |
| Deaf             | 1 (4.2%)            | 1 (4.5%)            | 2 (4.3%)          |
| Foreign Language | 1 (4.2%)            | 2 (9.1%)            | 3 (6.5%)          |
| Bilingual        | 1 (4.2%)            | 0 (0.0%)            | 1 (2.2%)          |

**Table 2.** Descriptive information for study outcome variables.

| Measure (scale score range)                             | Kognito |      | Control |      |
|---|---------|------|---------|------|
|   | M       | SD   | M       | SD   |
| Preparedness (Gatekeeper Behavior Scale; 1–5)           |         |      |         |      |
| Pre-survey  | 3.29    | 0.63 | 3.45    | 0.80 |
| Post-survey   | 3.52    | 0.43 | 3.23    | 0.69 |
| 1-month follow-up                                       | 3.85    | 0.43 | 3.66    | 0.88 |
| Self-efficacy (Gatekeeper Behavior Scale; 1–4)          |         |      |         |      |
| Pre-survey  | 2.73    | 0.48 | 2.85    | 0.62 |
| Post-survey   | 3.27    | 0.47 | 2.95    | 0.68 |
| 1-month follow-up                                       | 3.16    | 0.31 | 2.89    | 0.66 |
| Confidence (Teacher Mental Health Vignette Scale; 0–10) |         |      |         |      |
| Pre-survey  | 6.10    | 1.69 | 6.39    | 1.48 |
| 1-month follow-up                                       | 7.81    | 0.92 | 6.80    | 1.94 |
| Mental health stigma (RIBS; 5–20)                       |         |      |         |      |
| Pre-survey  | 17.88   | 3.71 | 17.55   | 2.70 |
| 1-month follow-up                                       | 18.25   | 2.92 | 18.36   | 2.11 |

**Table 3.** Analysis of variance (ANOVA) testing changes in study outcome variables over time and by group.

| Source  | df   | MS    | F        | p     | Effect size |
|---|------|-------|----------|-------|-------------|
| Preparedness (Gatekeeper Behavior Scale)          |      |       |          |       |             |
| Time (A)  | 2,88 | 2.29  | 16.28*** | <.001 | .270        |
| Group (B)   | 1,44 | 0.40  | 0.39     | .536  | .009        |
| A × B   | 2,88 | 0.62  | 4.40*    | .015  | .091        |
| Self-Efficacy (Gatekeeper Behavior Scale)         |      |       |          |       |             |
| Time (A)  | 2,88 | 1.26  | 14.89*** | <.001 | .253        |
| Group (B)   | 1,44 | 0.82  | 1.14     | .292  | .025        |
| A × B   | 2,88 | 0.67  | 7.88**   | .001  | .152        |
| Confidence (Teacher Mental Health Vignette Scale) |      |       |          |       |             |
| Time (A)  | 1,44 | 25.73 | 35.79*** | <.001 | .449        |
| Group (B)   | 1,44 | 3.10  | 0.77     | .386  | .017        |
| A × B   | 1,44 | 9.69  | 13.47**  | .001  | .234        |
| Mental health stigma (RIBS)                       |      |       |          |       |             |
| Time (A)  | 1,44 | 8.78  | 11.41**  | .002  | .206        |
| Group (B)   | 1,44 | 0.05  | 0.02     | .883  | .000        |
| A × B   | 1,44 | 1.77  | 2.30     | .137  | .050        |

MS = Mean squares, effect size = partial  $\eta^2$ .

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

group, there was a significant quadratic relationship between time and preparedness. In particular, perceptions of preparedness decreased from the pre-survey to post-survey and then significantly increased from post-survey to follow-up ( $M_{\text{pre-survey}} = 3.45, M_{\text{post-survey}} = 3.23, M_{\text{follow-up}} = 3.66; F_{(2,42)} = 9.14, p = .001, \eta^2 = .303$ ). However, there was no significant difference between scores at pre-survey and at follow-up.

### Confidence

To assess group differences in confidence, we first examined the self-efficacy subscale of the Gatekeeper Behavior Scale. There was also a



significant Time X Group interaction ( $F_{(2,88)} = 7.88$ ,  $p = .001$ ,  $\eta^2 = .152$ ). Results of a simple effects analysis indicated that there was a significant effect of Time for the Kognito group ( $F_{(2,46)} = 16.98$ ,  $p < .001$ ,  $\eta^2 = .425$ ), by which perceptions of confidence increased significantly from pre-survey to post-survey and the increase was maintained at follow-up ( $M_{\text{pre-survey}} = 2.73$ ,  $M_{\text{post-survey}} = 3.27$ ,  $M_{\text{follow-up}} = 3.16$ ). In contrast, perceptions of confidence among those in the control group remained consistent across assessments ( $F_{(2,42)} = 1.15$ ,  $p = .325$ ,  $\eta^2 = .052$ ;  $M_{\text{pre-survey}} = 2.85$ ,  $M_{\text{post-survey}} = 2.95$ ,  $M_{\text{follow-up}} = 2.89$ ).

Second, we tested confidence ratings on the Teacher Mental Health Vignette Scale, which was administered at pre-survey and 1-month follow-up. There was a significant Time X Group interaction ( $F_{(1,44)} = 13.47$ ,  $p = .001$ ,  $\eta^2 = .234$ ). Results of a simple effects analysis indicated that there was a significant effect of Time for the Kognito group ( $F_{(1, 23)} = 37.07$ ,  $p < .001$ ,  $\eta^2 = .617$ ), by which ratings of confidence in responding to the student increased significantly from pre-survey to follow-up ( $M_{\text{pre-survey}} = 6.10$ ,  $M_{\text{follow-up}} = 7.81$  for the Kognito group). There was no similar increase for the control group ( $F_{(1, 21)} = 3.90$ ,  $p = .062$ ,  $\eta^2 = .157$ ;  $M_{\text{pre-survey}} = 6.39$ ,  $M_{\text{follow-up}} = 6.80$ ).

### Stigma

Finally, to assess group differences in stigma, we examined the RIBS. There were no significant main effects or Time X Group interactions for participant ratings on the RIBS.

### Intervention experiences

Participants who completed the Kognito training answered a series of questions about their experiences with the training. The majority of participants reported that they liked the program “A lot” (75.0%); 25.0% reported liking the program “A little” and none reported liking the program “Not at all.” The majority of participants indicated they learned “A lot” (70.8%); 29.2% reported learning “A little” and none reported learning “Not at all.” Finally, when asked if they would recommend the training to other preservice teachers, 87.5% reported they would recommend the program “A

lot,” 12.5% would recommend it “A little,” and none would recommend it “Not at all.”

### Discussion

This study provides initial support for the use of Kognito with preservice teachers. As compared to a control group, preservice teachers who completed the training reported feeling more prepared to address the mental health needs of students and having greater confidence in their abilities. These differences were maintained at 1-month follow-up, suggesting that Kognito had a positive effect on teacher attitudes regarding student mental health. These results are consistent with those of Long et al. (2018) who similarly found that in-service teachers who completed Kognito had significantly greater gains in reported preparedness and confidence than a wait-list control group.

In contrast, participants in both the Kognito and control groups reported slightly decreased stigma from pre- to posttest, with no significant differences between groups. There are several possible reasons for this finding. It might be that both the Kognito and the control training contributed to reducing stigma, as both interventions were focused on individualized approaches to students with special needs. It might also be that the measure of stigma used in the current study, which focused on social distancing in multiple areas of life (e.g., living, working), but not teaching, was not sufficiently relevant to the attitudes targeted by the current training. Prior studies have found that trainings with the specific goal of stigma reduction are effective at reducing mental health-related stigma (Gillespie-Lynch et al., 2015; Li et al., 2019). If future versions of Kognito explicitly addressed stigma, it may be that the program would be able to influence this outcome as well.

Online simulations such as Kognito have a number of advantages for training preservice professionals. Most notably, they allow trainees to role play different strategies for responding to realistic scenarios, make mistakes without consequences, and receive real-time feedback (Dieker, Rodriguez, Lignugaris-Kraft, Hynes, & Hughes, 2014; Long et al., 2018). Simulation-based education in the medical field has been shown to improve clinical skills and have long-term positive effects on patient health

(McGaghie, Issenberg, Barsuk, & Wayne, 2014). Some simulations use virtual or mixed reality environments, operating in labs constructed to look like real classrooms or using actors and professors to modify the user experience for participants in real-time (e.g., Mursion; Neutzling, 2016; TeachLive; Dieker et al., 2014). Kognito is a less intensive training experience and has the advantage of being self-administered. It is therefore a relatively easy way to train preservice professionals, potentially on a large scale. Preservice teachers who completed the Kognito training were positive about their experiences; in the current study, all (100%) liked the program and the vast majority (87.5%) indicated that they would recommend the program to other preservice teachers. Although more research is needed on the feasibility of dissemination of Kognito to preservice teachers, the scope of its dissemination in in-service settings (Long et al., 2018) suggests that it would similarly be a good candidate for broad dissemination during preservice training.

The current study has several limitations. First, the response rate was low. The 2-hour time commitment was likely a barrier to participation. It is also possible that some preservice teachers did not perceive this training to be sufficiently important or relevant. Those who did participate may have already been interested in supporting student mental health. Second, the small sample size prevented us from testing potential moderating factors, including the extent to which participants had themselves received mental health services or were experiencing psychological distress. These experiences might interact with participant perceptions of the material. Third, we selected a control training that was similar in duration to the Kognito training, was provided online at no cost, and was interactive (e.g., not just a video or text to read). We hoped the control training would be interesting and important for preservice teachers, without providing specific information about mental health. However, it is possible that this training about supporting students with disabilities engaged participants in similar ways as Kognito in thinking about individualizing student supports and connecting students with resources, such that the control group also showed improvement on a number of outcome measures. Fourth, the sample in the current study consisted of students from one university enrolled in a number of different

preservice training programs. Future research should engage a larger and broader sample (i.e., from multiple universities) and consider focusing on a specific teacher specialty (e.g., secondary general education). However, the finding of group differences, even with a sample of participants in multiple degree programs and with a potentially overlapping control training, provides additional support for Kognito as a promising intervention for preservice teachers. Fifth, participants in this study were enrolled in both undergraduate and graduate degree programs. We did not collect data on the extent to which they had prior experiences in classrooms and schools. Such data could have implications for understanding how participants perceived the Kognito intervention.

Future research is needed to determine whether the outcomes associated with the Kognito intervention differ for participants at different stages in their training and to identify the optimal point in training at which to introduce interventions like Kognito. This study did not assess whether increases in preparedness and confidence translate to changes in behavior. Ultimately it will be important to determine whether receiving the Kognito intervention impacts the extent to which teachers have conversations with students about their mental health and facilitate appropriate student mental health referrals, either during preservice placements or once teachers are employed in schools.

By providing information about student mental health and teaching skills for facilitating conversations about mental health concerns, Kognito has the potential to shift how preservice teachers perceive their role in identifying and addressing student mental health needs. This, and similar brief online programs, might make it possible to ensure that all preservice teachers receive preparation to support student mental health and social/emotional well-being. With adequate training, teachers may feel more prepared and confident to address mental health issues in their classrooms, thereby increasing support and services for students in need.

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