

## ORIGINAL ARTICLE

# Do stigma and efficacy mediate the association between training and suicide prevention behavior among Army noncommissioned officers?

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## Abstract

**Introduction:** Rates of suicide in the Active Component of the military have significantly increased since 2010, with particularly high rates among Army service members. One element of the Army's approach to suicide prevention relies on noncommissioned officers (NCOs) as gatekeepers who have regular contact with soldiers. NCOs receive suicide prevention training, but there is limited evidence that such training leads to behavior change.

**Methods:** We surveyed 2468 Army NCOs participating in leadership development courses to determine (a) if training on suicide prevention and soft skills (e.g., active listening) was associated with gatekeeper behavior and use of soft skills; and (b) whether that association was explained by two potential barriers, stigma and perceptions of efficacy.

**Results:** Both the number of suicide prevention training topics and soft skills trained were associated with increased gatekeeper behavior; these relationships were explained in part by lower stigma and higher efficacy for use of soft skills. The use of interactive training methods and receiving coaching after training were not associated with stigma or efficacy, though both methods were associated with more frequent use of soft skills.

**Conclusion:** Results suggest that the content and format of training is important to preparing NCOs to fulfill a gatekeeper role.

## KEYWORDS

Army, efficacy, gatekeeper, mediation, military, prevention, soft skills, stigma, suicide prevention, training

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## INTRODUCTION

Rates of suicide in the Active Component of the military have significantly increased over the last few years, rising from 20.3 to 28.7 suicides per 100,000 service members between 2015 and 2020 (Department of Defense, 2021). Though rates appear to be somewhat more stable in the Reserve and National Guard, rates of suicide remain concerning at 21.7 and 27.0 suicides per 100,000 service members reported in 2020, respectively, almost double the civilian suicide rate (Centers for Disease Control and Prevention, 2021). Moreover, based on 2020 data, Army service members have especially high rates of suicide (36.4 per 100,000 Active Component service members; Department of Defense, 2021).

The Army has a multipronged approach to suicide prevention. Part of this strategy includes relying on individuals—sometimes referred to as *gatekeepers* (National Strategy for Suicide Prevention, n.d.)—who have regular contact with service members and might be in a position to identify soldiers who are at risk to ensure their safety and help facilitate professional care. In the military, noncommissioned officers (NCOs) are a key group of gatekeepers (Ramchand et al., 2015). NCOs are frontline leaders who have a key role in coaching, supervising, and training their soldiers (Department of the Army, 2020). NCOs are well-positioned to serve as gatekeepers because they have regular contact with their soldiers, including counseling their soldiers about their performance and professional growth, as well as following up with soldiers after significant events (e.g., if a crisis has taken place) (Department of the Army, 2020). Because they work closely alongside their soldiers, they are also well-positioned to learn about challenges that soldiers might be facing that are risk factors for suicide.

To ensure that NCOs have the necessary skills, the Army offers them a range of suicide prevention trainings. NCOs participate in annual required trainings (see Chapter 1), and the Army is continuously developing and testing new training approaches. An important aspect of these programs is risk identification and intervention skills (Ramchand et al., 2015). In addition, the Army has expanded its training focus, not only teaching NCOs how to detect suicide risk factors and make the appropriate referrals, but also shifting to teaching NCOs the skills needed to discuss a range of sensitive topics with soldiers, such as financial distress or relationship problems. These are the types of “everyday” stressors that NCOs are especially well-positioned to identify and manage; moreover, these factors have been associated with downstream suicide risk (Elbogen et al., 2020; Hyman et al., 2012; Pruitt et al., 2019). Therefore, equipping NCOs with the skills to navigate these sensitive discussions is key.

However, research from military and civilian contexts raises questions as to the effectiveness of these types of training efforts on actually preventing suicide (Burnette et al., 2015). Therefore, it is important to understand not only whether training increases intervention behavior, but also the pathways by which it might do so.

## Pathways from training to behavior change

In Burnette et al., 2015, Burnette and colleagues proposed a model by which suicide prevention training leads to intervention behavior among gatekeepers. Based in part on Bandura's social cognitive theory (Bandura, 2001), this model proposed four factors that can influence whether an individual intervenes when they believe that a person is at risk for suicidal behavior. These included (a) knowledge about suicide; (b) beliefs and attitudes about prevention; (c) reluctance or stigma, and (d) self-efficacy to intervene (Burnette et al., 2015). To the extent that training might address these four factors, it might then be expected to increase intervention behavior.

This model also acknowledged the role of the social context or systemic factors that might influence whether someone intervenes; in the military, this might include organizational culture as well as logistical factors, such as having opportunities to intervene (e.g., space available to have private discussions with an individual suspected to be at risk). However, typical suicide prevention trainings would not necessarily be expected to affect those systemic factors. Similarly, the model also incorporates individual characteristics, such as gender or job duties (e.g., whether someone is in a clinical role), which might contribute to someone's knowledge or beliefs regarding suicide prevention.

Though this model is grounded in theory, it is important to note that the empirical support for certain aspects of this model has been mixed. For example, though suicide prevention training can increase knowledge about suicide or self-efficacy to intervene (Tompkins et al., 2010; Tompkins & Witt, 2009; Wyman et al., 2008), there is limited evidence that increasing someone's knowledge or changing their attitudes about suicide has a substantial effect on intervention behavior (Yonemoto et al., 2019), and what evidence exists has been mixed (e.g., Gould et al., 2013).

This model was developed in the context of suicide prevention and gatekeeper behavior, but likely applies to the identification and management of a broader range of difficult situations that NCOs are well-positioned to address, such as financial distress or relationship problems. However, one element not reflected in this model is role of “soft skills”—that is, skills such as active listening,

reflecting an individual's thoughts and emotions, forming rapport, and attending to nonverbal behaviors. An important goal of training programs might be to increase the use of these soft skills across a range of difficult conversations, and to do so by building an individual's self-efficacy for use of these skills.

There have been at least two studies examining the original model within the military suicide prevention context. Ayer et al. (2016) surveyed Army and Marine NCOs and constructed a structural equation model to explain the relationship between training, potential barriers to intervention, and intervention behavior. They found that more hours of training was associated with higher efficacy, which was associated with both a greater likelihood of intervening and more frequent intervention behavior. Higher reluctance was associated with a lower likelihood of intervening; however, training was not associated with reluctance, suggesting that more training does not necessarily make service members more willing to engage in suicide prevention activities. A second study with Army chaplains yielded similar findings, in that more of hours of training were associated with increased efficacy and decreased stigma, and therefore increased intervention behavior (Ramchand et al., 2016).

However, these cross-sectional studies had a somewhat limited operational definition of training, in that they focused on hours of training. Though volume of training might be one important aspect of suicide prevention training, it is important to recognize that not all trainings are created equal. Research has suggested that trainings are more likely to be effective when they are substantively relevant, include interactive components, and provide trainees with supervision or coaching on how to implement the skills after the training (Beidas & Kendall, 2010; Hepner et al., 2018; Lyon et al., 2011). However, there remains a need for more empirical research examining whether these training features lead to behavior change. These studies also did not explore the role of soft skills, including efficacy for applying soft skills and actual use of soft skills when discussing sensitive topics with soldiers.

## Present study

The present study builds on these previous findings to examine a wider range of training features, with the goal of determining whether training is associated with intervention behaviors.

In an earlier phase of this project, we sought to understand whether training experiences and behavior differ across subgroups of Army NCOs (e.g., pay grade and military component; Ayer et al., 2023). We found that nearly three-quarters of Army NCOs had received 11 or more

hours of suicide prevention training, with Reserve and Guard soldiers receiving more training than their Active Duty counterparts. Moreover, 64% of NCOs reported knowing someone who had died by suicide. Though they reported relatively high levels of efficacy for having difficult conversations, actual application of the soft skills learned through training was somewhat low, and certain groups were more likely to use these skills than others (e.g., those who had received some formal coursework in mental health). However, we did not formally explore the association between training, efficacy, and behaviors, nor were we able to examine the nature of the training received—that is whether they used interactive elements, consistent with best practices in training (e.g., Hepner et al., 2018).

Therefore, to extend the findings of this earlier analysis, we set out to examine four features of training: (1) how many suicide prevention topics NCOs have been trained on; (2) how many “soft skills” (e.g., active listening) NCOs have been trained on; (3) whether interactive elements were included in soft skills trainings; and (4) whether coaching or supervision were included in soft skills training. We aimed to answer the following questions: (1) Is the content and method of training NCOs associated with increased gatekeeper behaviors and increased use of soft skills? and (2) Is this association explained by reductions in stigma and increases in efficacy for use of soft skills?

## MATERIALS AND METHODS

### Procedure

We fielded a survey to NCOs participating in professional development courses for soldiers ranked E4–E9. To recruit NCOs, we coordinated with course leaders from 10 installations to identify courses that took place between November 2 and December 9, 2021. We offered two options for survey completion. The first and preferred option was for a member of the research team to join a training course virtually, read a verbal consent script, and then display a QR code and short link that NCOs could use to access and complete the survey. The research team member stayed available within the course to answer any questions during administration. The second option was offered to course leaders who noted logistical constraints that prevented live administration of the survey (e.g., scheduling issues and lack of internet connection in a course classroom). These courses were provided with a prerecorded video of the consent script along with the survey link and QR code. The survey was about 15 min in length and completely anonymous. Participation in the survey was voluntary, and individuals within the chain of command of

course participants were asked to leave the room to reduce the likelihood of coercion. All procedures were approved by the RAND Corporation Institutional Review Board as well as the Army Human Research Protections Office.

## Sample

In total, 2965 NCOs completed at least one survey item. We restricted our analyses to respondents who had complete data on key survey questions (e.g., occupational specialty), resulting in an analytic sample of 2468 NCOs. Table 1 provides a summary of basic demographic characteristics. More detail on this sample is available in Ayer et al. (2023).

## Measures

### Training features

In this study, we focused on the following training-related features:

#### *Number of suicide prevention topics trained*

Respondents were first asked to indicate how many hours of suicide prevention training they had received as a soldier, using an item from a previous survey of suicide

prevention training in Army and Marine Corps NCOs (Ayer et al., 2016). Those who reported at least 1 h of training ( $n = 2397$ ) were then asked to report on the topics that had been covered in suicide prevention trainings they received (e.g., suicide warning signs, how to ask someone about their suicidal thoughts, and available resources for people who are suicidal). Respondents could check as many items as they felt applied, and the total number of topics selected was summed. Scores on this scale ranged from 0 to 8 (Cronbach's  $\alpha = 0.82$ ).

#### *Number of soft skills trained*

Respondents also reported on the specific soft skills they had received training on, including active listening, reflection of feelings, and monitoring a soldier's emotions and nonverbal behaviors. This item was developed for this survey and was based on our review of other studies focused on communication and therapeutic skills in other contexts (e.g., training programs for counselors or medical providers (e.g., Kuntze et al., 2009; Rickles et al., 2009)). Items were selected for their relevance to the Army NCO context. Respondents checked all options that applied, and the total number of skills was summed, ranging from 0 to 6 (Cronbach's  $\alpha = 0.84$ ). Those respondents who indicated that they never received training on soft skills were coded as a 0 for this variable.

#### *Training methods*

Respondents who had been trained on at least one soft skill were also asked about the teaching techniques that were used in soft skills trainings, using an item developed for this survey. The item included 10 potential training methods (e.g., classroom presentations, quizzes or knowledge checks, supervision/consultation/mentoring/coaching after the initial training), which were based on a systematic review related to therapist skills training (Beidas & Kendall, 2010) and a tool developed to assess if training in therapy skills is consistent with the research evidence (Hepner et al., 2018). We derived two binary variables from this question. The first indicated whether any *interactive* training methods had been used (yes/no), which included role plays or getting feedback from an instructor/supervisor on use of the skills, and the second indicated whether *coaching or supervision* had been provided after the initial training (yes/no), as both training techniques have been associated with greater behavior change (Hepner et al., 2018).

### Barriers to having difficult conversations

We focused on two potential barriers that NCOs might face in discussing sensitive topics with their soldiers:

TABLE 1 NCO characteristics ( $n = 2468$ ).

|   | Percent |
|---|---------|
| Sex                                       |         |
| Male                                      | 85.45   |
| Female                                    | 14.55   |
| Rank                                      |         |
| E7–E9                                     | 8.87    |
| E6  | 18.80   |
| E5  | 28.48   |
| E4  | 43.72   |
| Other                                     | 0.12    |
| Active Duty Status                        |         |
| Active Duty                               | 89.79   |
| National Guard/Army Reserves              | 10.21   |
| Occupational Division                     |         |
| Operations Division (OD)                  | 44.20   |
| Operations Support Division (OSD)         | 19.77   |
| Force Sustainment Division (FSD)          | 28.61   |
| Health Care Specialist (68W)              | 7.41    |
| Completed formal mental health coursework | 22.33   |

### Stigma

Stigma was measured with seven items adapted from a study of stigma and barriers to care for psychological treatment (Britt et al., 2008). The scale asked respondents to indicate the expected consequences of bringing up a sensitive topic with a fellow soldier, with items such as “It would be embarrassing for my Fellow soldier,” “It would not be kept confidential,” and “They would be seen as weak.” Responses were made on a four-point scale ranging from 1 (strongly disagree) to 4 (strongly agree). To create a scale, items were summed with overall scores ranging from 7 to 18 (Cronbach’s alpha = 0.92).

### Perceptions of efficacy

Perceptions of efficacy (referred to as “efficacy” in the Results section below) were measured with four items adapted from a study of communication skills in health care contexts (Meyer et al., 2009). Items included “In general, how prepared are you to have difficult discussions with soldiers?” and “In general, how confident are you when having difficult discussions with soldiers?” Response options ranged from 1 (not at all) to 4 (very). We created a scale by reverse coding items as needed and summing responses, with overall scores ranging from 4 to 16 (Cronbach’s alpha = 0.85 in this sample).

### Intervention behaviors

We examined two categories of intervention behaviors:

#### Gatekeeper behaviors

Respondents indicated how often they engaged in each of 11 behaviors after suspecting or knowing that a soldier was having trouble with a sensitive issue, such as suicide risk, mental health or substance use problems, or financial, legal, or relationship problems. Items included “Asked the soldier about it,” “Escorted a soldier to a counselor or other resource,” and “Left them alone until they felt better.” Items were adapted from two previous studies of suicide prevention training programs in educational settings (Tompkins & Witt, 2009; Vieland et al., 1991). Response options ranged from 1 (never) to 4 (always), though respondents could also indicate if an item was not applicable. Items were reverse scored as relevant and summed, with scores ranging from 11 to 44 and higher scores indicating more desirable gatekeeper behaviors (Cronbach’s alpha = 0.85). Respondents who responded “not applicable” to all 11 items were excluded from the sum score ( $n = 313$ ).

#### Use of soft skills

We asked a single item developed for this study about how often in the past 12 months respondents used the soft skills

they were taught in training. Though some research has suggested that social desirability can influence self-report measures of communication skills, this research has focused on measuring specific components of those skills (e.g., being empathic and clarifying statements; Lawson & Winkelman, 2003), rather than the frequency of skill use. Recent research focused on Army ROTC cadets also suggested that even if respondents provide higher ratings on self-evaluations of soft skills after active listening training, self-reports are roughly correlated with the results of objective observers, suggesting that self-report can be used to measure use of soft skills (Bjornestad et al., 2021). Response options ranged from 1 (never) to 6 (more than 20 times). Individuals who reported on the previous items that they had not received soft skills training were excluded ( $n = 287$ ).

### Covariates

In our models, we controlled for demographic and military characteristics that we expected to be associated with the mediating and outcome variables of interest. This included gender, rank, occupational division, active or reserve component, and whether the NCO had completed formal coursework in a mental health area (e.g., chaplaincy, counseling, psychology, and social work).

### Analysis

We conducted a series of analyses in an effort to build our mediation models. The general conceptual model that we were exploring appears in Figure 1.

We began by examining bivariate correlations among the primary variables of interest, including the training features, barriers, and intervention behaviors. For these bivariate correlations, we included all NCOs who had complete data on the two variables of interest for each correlation, though the specific sample size varied across analyses. For instance, only those who were trained in soft

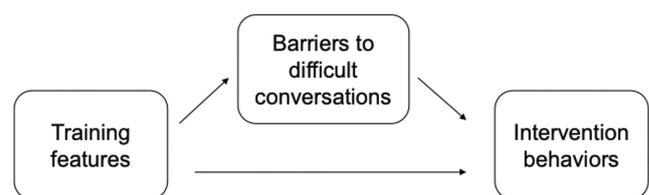


FIGURE 1 Conceptual model of the association between training, barriers to difficult conversations, and intervention behaviors.

skills were included in correlations between frequency of soft skill use and other variables.

Next, we conducted a series of regression analyses examining the association between each training feature and the hypothesized mediators (stigma and efficacy) and outcomes (gatekeeper behaviors and use of soft skills). Our goal was to identify nonzero associations to hone the mediation models that we tested in our final stage of analysis—we had less interest in and were less able to identify mediators when the overall effect of the training feature is very small. These regressions included gender, rank, occupational division, active duty status, and whether someone had a mental health background as covariates. In addition, because the four training variables were correlated with each other and with the barrier and behavior variables of interest, we also included the remaining training features as covariates in each model.

Finally, we examined a series of statistical mediation models. Each model focused on one independent variable, one mediating variable, and one outcome variable (see Figure 1 for our hypothesized model). We built these models based on the results of the adjusted regression analyses, focusing on the training features, barrier variables, and outcome variables that emerged as significantly associated in the regressions. We controlled for the same set of covariates as in the regression models described above. This allowed us to measure how much of the effect of the primary training predictor variable was mediated by a particular barrier after controlling for other training features. Statistical mediation models were analyzed using the CAUSALMED procedure for SAS (version 9.4) with 1000 bootstrap samples. In order to have complete data on all variables of interest, our analyses included 2092 respondents (71 were excluded because they had not received suicide prevention training, 287 were excluded because they had not received soft skills training, and 313 respondents were excluded because they reported “not applicable” to all gatekeeper behaviors, as detailed above; note that these groups are not mutually exclusive). Our final analytic sample had a higher percentage of NCOs ranked E5 and above and a higher percentage who had completed some mental health-related coursework (for demographic characteristics of the complete sample, please see Ayer et al., 2023).

## RESULTS

Table 2 summarizes responses for each of the variables of interest. On average, participants received training on six of the eight suicide prevention topics and 3.5 of the six soft skills. Regarding training method, 61% of respondents said they had received trainings that incorporated interactive

components and 28% had received coaching. Mean efficacy scores suggest fairly high levels of self-reported efficacy for discussing sensitive topics, and scores on the stigma scale suggest low to moderate endorsement of stigma for discussing sensitive topics. Regarding intervention behavior, mean scores on the gatekeeper behavior scale suggest that many NCOs are demonstrating desirable gatekeeper behaviors when they are concerned about a soldier. However, use of soft skills appeared to be less frequent.

## Bivariate unadjusted associations

In Table 3, we present the bivariate associations among the training features, barriers, and intervention behaviors. There were small to medium associations among all variables, though the largest correlations were among training variables.

## Adjusted associations between training features, barriers, and intervention behaviors

Initial regression analyses adjusting for relevant covariates demonstrated that the number of suicide prevention training topics and number of soft skills trained were significantly associated with both barriers—stigma and efficacy (Table 4). In addition, they were significantly associated with the outcome of gatekeeper behaviors, though not with soft skills use.

TABLE 2 Descriptive statistics for training features, barriers, and intervention behaviors.

| Variable                               | Mean (SD)<br>or % (n) |
|--|-----------------------|
| # of suicide prevention topics trained | 6.07 (2.20)           |
| # of soft skills trained               | 3.53 (2.14)           |
| Received interactive training          | 61% (1498)            |
| Received coaching/supervision          | 28% (694)             |
| Stigma                                 | 13.83 (4.46)          |
| Self-efficacy                          | 12.48 (2.54)          |
| Gatekeeper behavior                    | 32.23 (7.34)          |
| Use of soft skills                     |                       |
| Never                                  | 36.50 (796)           |
| Once or twice                          | 40.44 (882)           |
| Three to five times                    | 13.53 (295)           |
| Six to ten times                       | 4.59 (100)            |
| Eleven to twenty times                 | 2.06 (45)             |
| More than twenty times                 | 2.89 (63)             |

Abbreviation: SD, standard deviation.

TABLE 3 Bivariate correlations among training features, barriers, and intervention behaviors.

|  | Training features                   |                       |                               |                               | Barriers |               | Intervention behaviors |                    |
|--|-------------------------------------|-----------------------|-------------------------------|-------------------------------|----------|---------------|------------------------|--------------------|
|  | # suicide prevention topics trained | # soft skills trained | Received interactive training | Received coaching/supervision | Stigma   | Self-efficacy | Gatekeeper behavior    | Use of soft skills |
| # of suicide prevention topics trained | –                                   | 0.57***               | 0.39***                       | 0.30***                       | –0.21*** | 0.22***       | 0.20***                | 0.09***            |
| # of soft skills trained               |                                     | –                     | 0.51***                       | 0.47***                       | –0.18*** | 0.30***       | 0.22***                | 0.14***            |
| Received interactive training          |                                     |                       | –                             | 0.36***                       | –0.12*** | 0.17***       | 0.15***                | 0.18***            |
| Received coaching/supervision          |                                     |                       |                               | –                             | –0.07*** | 0.16***       | 0.10***                | 0.20***            |
| Stigma                                 |                                     |                       |                               |                               | –        | –0.26***      | –0.17***               | –0.05*             |
| Self-efficacy                          |                                     |                       |                               |                               |          | –             | 0.26***                | 0.16***            |
| Gatekeeper behavior                    |                                     |                       |                               |                               |          |               | –                      | 0.15***            |
| Use of soft skills                     |                                     |                       |                               |                               |          |               |                        | –                  |

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

By contrast, the use of interactive training methods and having received coaching after a training were not associated with stigma or efficacy barriers, and were not associated with gatekeeper behaviors. However, both training methods were associated with the outcome of use of soft skills.

## Mediation models

Based on the findings from the initial regression analyses, we built statistical mediation models. Because interactive training methods and coaching after training were not associated with stigma or efficacy, we did not compute mediation models for those predictors. In addition, number of suicide prevention training topics and number of soft skills trained were not associated with use of soft skills, so we did not explore that outcome further. Therefore, our models focused on the association between number of suicide prevention training topics and number of soft skills trained as the predictors; stigma and efficacy as the mediating variables; and gatekeeper behaviors as the outcome variable.

### Mediation models focused on number of suicide prevention training topics and gatekeeper behaviors

Table 5 and Figure 2 present two mediation models. For each model, we present the regression coefficient of the training feature (i.e., number of suicide prevention topics), which serves as the independent variable in the mediation

models, and the barriers (stigma, efficacy), which serve as the proposed mediating variables. For each model, we present the magnitude of the indirect effect and the percent of the main effect of number of suicide prevention topics that is mediated.

We found evidence that both stigma and efficacy serve as mediators of the relationship between the number of suicide prevention topics trained and gatekeeper behaviors. The first model examines stigma as a mediator of the association between suicide prevention training topics and gatekeeper behaviors. NCOs who reported being trained on more suicide prevention topics reported lower stigma, which in turn was associated with more gatekeeper behavior. In this model, the direct effect of suicide prevention training topics was 0.24 (SE=0.09), and the indirect effect was 0.05 (SE=0.02), with stigma mediating 18.40% of the association between suicide prevention topics and gatekeeper behavior.

The second model focuses on efficacy as the mediating variable. In this model, NCOs who reported being trained on more suicide prevention topics also reported greater efficacy, which was associated with more gatekeeper behavior. In the second model, the direct effect of suicide prevention topics was 0.23 (SE=0.09) and the indirect effect was 0.06 (SE=0.02), with efficacy mediating 20.83% of the association.

### Mediation models focused on number of soft skills trained and gatekeeper behaviors

Table 6 and Figure 3 present two mediation models examining stigma and efficacy as mediators of the

TABLE 4 Adjusted associations between training features and hypothesized mediators and outcomes.

|   | Barriers |          |      | Efficacy |          |      | Intervention behaviors |          |      |                 |          |      |
|---|----------|----------|------|----------|----------|------|------------------------|----------|------|-----------------|----------|------|
|   | Stigma   |          |      |          |          |      | Gatekeeper behaviors   |          |      | Soft skills use |          |      |
|   | $\beta$  | <i>b</i> | SE   | $\beta$  | <i>b</i> | SE   | $\beta$                | <i>b</i> | SE   | $\beta$         | <i>b</i> | SE   |
| # of suicide prevention training topics | -0.07*** | -0.29    | 0.05 | 0.03**   | 0.08     | 0.03 | 0.04***                | 0.30     | 0.09 | -0.004          | -0.004   | 0.01 |
| # of soft skills trained                | -0.04*** | -0.20    | 0.06 | 0.11***  | 0.29     | 0.03 | 0.07***                | 0.52     | 0.10 | 0.01            | 0.02     | 0.02 |
| Interactive training methods            | -0.03    | -0.15    | 0.22 | -0.003   | -0.01    | 0.12 | 0.06                   | 0.41     | 0.37 | 0.27***         | 0.31     | 0.06 |
| Coaching after training                 | 0.05     | 0.20     | 0.23 | 0.04     | 0.10     | 0.13 | -0.01                  | -0.10    | 0.38 | 0.29***         | 0.33     | 0.06 |

Note: All regression models control for gender, rank, occupational division, active duty status, history of mental health education, and the other respective training features.

Abbreviations: *b*, unstandardized regression coefficient; SE, standard error.

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

relationship between number of soft skills trained and gatekeeper behaviors. Similar to the previous findings, both stigma and efficacy were significant statistical mediators. Our models indicated that NCOs who had been trained on more soft skills reported lower stigma and higher efficacy, which was associated with more gatekeeper behaviors. In the stigma model, the direct effect of soft skills trained was 0.48 (SE = 0.10) and the indirect effect was 0.04 (SE = 0.01). In the efficacy model, the direct effect of soft skills trained was 0.37 (SE = 0.10) and the indirect effect was 0.16 (SE = 0.03). A greater percentage of the association was mediated by efficacy (29.56%) than stigma (7.87%).

## DISCUSSION

Our study examined whether NCO training experiences are associated with gatekeeper behaviors and use of soft skills. Though training is generally hypothesized to contribute to behavior change, relatively limited research has actually examined the association between training and behaviors (Yonemoto et al., 2019). Our study also builds upon prior research by examining multiple aspects of training, including the content and methods by which training was delivered, and examining two barriers—stigma and efficacy—as potential mediators of the association. Key strengths of this study include our large sample of military NCOs, as well as our focus on trainee *behavior*, not simply knowledge or confidence.

Regarding gatekeeper behaviors, we found that NCOs who reported receiving training on more suicide prevention topics and more soft skills also reported more gatekeeper behavior. This suggests that it can be valuable to train NCOs on suicide-specific topics, such as risk factors for suicide, available resources, and how to refer a suicidal person to treatment, as well as the skills that are needed to approach these sensitive topics—things like active listening, reflecting an individual's feelings when having a discussion, and monitoring nonverbal behaviors.

In addition, we found that this association is partially explained by stigma and efficacy. More specifically, NCOs trained on more suicide prevention topics and soft skills reported lower mental health stigma and higher efficacy for soft skills, both of which were in turn associated with more gatekeeper behavior. This is consistent with prior research finding that stigma and efficacy may explain the relationship between the number of hours of training and intervention behavior (Ayer et al., 2016; Ramchand et al., 2016), and suggests that targeting these factors may improve the effectiveness of NCO training. For example, this might include efforts to explicitly address stigma and

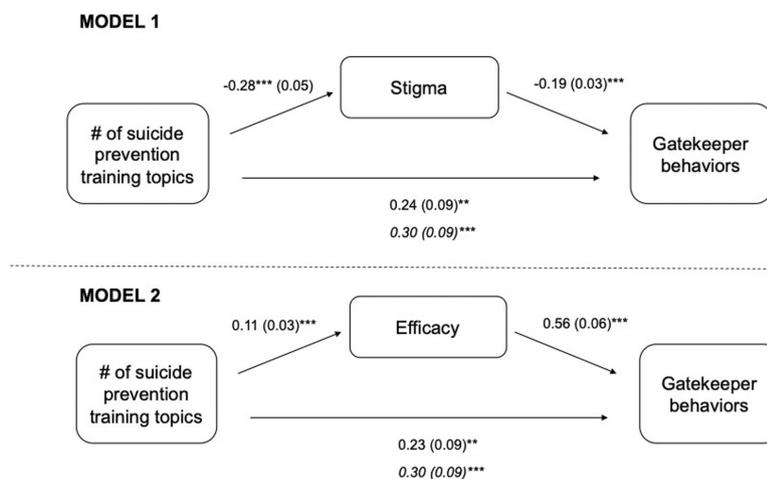
**TABLE 5** Mediation models focused on number of suicide prevention training topics and gatekeeper behaviors ( $n = 2092$ ).

| Model 1: Stigma as mediator   |         |        |             | Model 2: Efficacy as mediator |         |      |            |
|-------------------------------|---------|--------|-------------|-------------------------------|---------|------|------------|
|                               | $\beta$ | $b$    | 95% CI      |                               | $\beta$ | $b$  | 95% CI     |
| # suicide prevention topics** | 0.03    | 0.24   | 0.07, 0.41  | # suicide prevention topics** | 0.03    | 0.23 | 0.06, 0.41 |
| Stigma***                     | -0.03   | -0.19  | -0.26, 0.12 | Efficacy***                   | 0.08    | 0.56 | 0.43, 0.68 |
| Indirect effect***            | 0.01    | 0.05   | 0.02, 0.08  | Indirect effect***            | 0.01    | 0.06 | 0.02, 0.10 |
| Percentage mediated           | 18.40%  | 18.40% |             | Percentage mediated           | 20.83%  |      |            |

Note: All models control for gender, rank, occupational division, active duty status, history of mental health education, and the other respective training features.

Abbreviations:  $b$ , unstandardized regression coefficient; CI, confidence interval.

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

**FIGURE 2** Mediation models focused on number of suicide prevention training topics and gatekeeper behaviors.

**TABLE 6** Number of soft skills trained and gatekeeper behaviors ( $n = 2092$ ).

| Model 3: Stigma as mediator |         |       |               | Model 4: Efficacy as mediator |         |      |              |
|-----------------------------|---------|-------|---------------|-------------------------------|---------|------|--------------|
|                             | $\beta$ | $b$   | (95% CI)      |                               | $\beta$ | $b$  | (95% CI)     |
| # soft skills trained***    | 0.07    | 0.48  | (0.28, 0.68)  | # soft skills trained***      | 0.05    | 0.37 | (0.17, 0.57) |
| Stigma***                   | -0.03   | -0.19 | (-0.26, 0.12) | Efficacy***                   | 0.08    | 0.56 | (0.43, 0.68) |
| Indirect effect**           | 0.01    | 0.04  | (0.01, 0.07)  | Indirect effect***            | 0.02    | 0.16 | (0.10, 0.21) |
| Percentage mediated         | 7.87%   |       |               | Percentage mediated           | 29.56%  |      |              |

Note: All models control for gender, rank, occupational division, active duty status, history of mental health education, and the other respective training features.

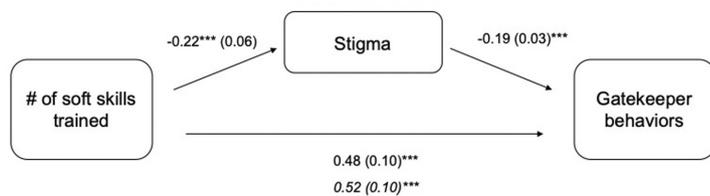
Abbreviations:  $b$ , unstandardized regression coefficient; CI, confidence interval.

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

assumptions regarding help-seeking behavior. It might also include training exercises to build NCO confidence to intervene. In fact, a recent qualitative study focused on how Army NCOs are trained to have difficult conversations and intervene with their soldiers highlighted that training opportunities with more applied practice and interactive elements were perceived as most effective for skill development (Chapter 1).

Based on previous training research and these qualitative findings from NCOs, we expected that the method of training would be associated with stigma and efficacy. More specifically, we hypothesized that role plays, feedback from trainers, and ongoing coaching might result in increased NCO confidence. However, we did not find a significant effect of training method on these potential barriers to difficult conversations.

MODEL 3



MODEL 4

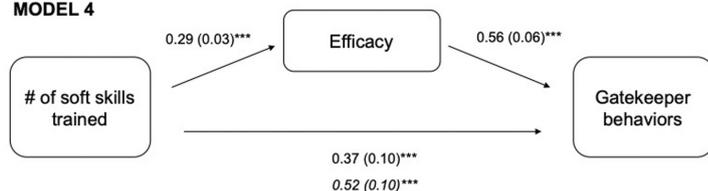


FIGURE 3 Mediation models focused on number of soft skills trained and gatekeeper behaviors.

Despite this finding, the training literature does suggest that interactive methods and ongoing supervision or support can increase trainee efficacy, as can applied examples and demonstrations (e.g., Beidas & Kendall, 2010; Hepner et al., 2018; Karlin et al., 2012; Ravitz et al., 2013). It may be that we did not find a significant effect due to the way this training feature was operationalized in our study. Specifically, respondents were simply asked to indicate what teaching techniques were used across all the soft skills trainings they had participated in; therefore, even if a role play was used in only a single training, they would have been coded as having received interactive training. It seems likely that role plays and other interactive elements would need to be a consistent feature of NCO trainings to improve trainee efficacy and contribute to behavior change. Therefore, it will be important for future research to continue to clarify the role of training methods with this population, such as through the evaluation of individual training programs.

The potential Importance of training method is also highlighted by the finding that NCOs who reported receiving interactive training or post-training coaching also reported more frequent use of soft skills. It may not be surprising that training methods were not associated with gatekeeper behaviors, given the nature of the items on the gatekeeper behavior scale. Though some items related more to the way the NCO interacted with the soldier they were concerned about (e.g., whether they asked the soldier about it or spent time listening to the soldier), most of the items related to making a warm handoff to counselors or other resources, providing information about relevant resources, or reporting the information to the soldier's chain of command—factors that are more dictated by Army policy and procedures than by soft skill abilities. By contrast, soft skills trainings are designed to build NCO skills in how to effectively discuss or raise a sensitive topic with the soldier,

rather than simply making referrals, and these types of skills likely require more applied practice.

There are certain limitations to this study. First, though we examined statistical mediation models, our survey was cross-sectional in nature and therefore we cannot determine whether there is a causal association between training and intervention behaviors. Second, we asked NCOs to reflect across all of their training experiences, rather than focusing on a specific training program. Therefore, we were unable to assess how frequently individual training courses used interactive approaches or provided coaching and whether there might be a certain “dosage” of these training elements needed to create behavior change (e.g., should there be a certain number of interactive elements in a given training? How long should coaching or supervision be provided)? In addition, it is important to note that trainings are not randomly allocated to NCOs; rather, more advanced, interactive trainings on how to have difficult conversations tend to be provided to NCOs at higher ranks or who demonstrate a particular interest in receiving such training (Chapters 1 and 2). Therefore, it is not clear that our findings related to these specific training features would apply to individuals at lower ranks or who were not self-selected. For example, individuals with less experience or proclivity to engage in difficult conversations might benefit more from evidence-based training approaches, like role plays and post-training supervision. This is an important direction for future research. In addition, we measured NCO behavior through self-report. Future research should consider more objective ways of measuring behavior change as a result of training. Finally, our sample of NCOs was a convenience sample recruited from training courses and may not be representative of the larger population of Army NCOs.

That said, our study also had significant strengths, in addition to our focus on exploring NCO behavior as a training outcome. This included our focus on testing both

aspects of the content *and* methods used in training programs. In addition, other research on NCOs has been more narrowly focused on whether NCOs intervened when they thought a soldier may be at risk for suicide (e.g., Ayer et al., 2016; Ramchand et al., 2016). By contrast, we had a broader focus on NCO ability to have difficult conversations about a range of sensitive topics, include mental health concerns, financial distress, and relationship problems. These are challenges that NCOs are especially well-positioned to identify in their day-to-day interactions with their soldiers, and may be managed through a conversation with an NCO rather than requiring a referral to an outside resource. If the Army continues to view NCOs as important gatekeepers and contributors to its overall suicide prevention strategy, ensuring that they are equipped with the necessary training and skills should be a top priority.

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### CONFLICT OF INTEREST STATEMENT

The authors have no conflict of interest to report.

### DATA AVAILABILITY STATEMENT

Research data are not shared.

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