Do Resident Advisors Serve as Mental Health Gatekeepers?: Evidence from a Natural Experiment on College Campuses

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Abstract

Social networks have been shown to affect mental health service utilization in both positive and negative ways. For adolescents and young adults, understanding the impact of social networks, particularly peer influences, on help-seeking is important given the age of onset, prevalence, and low rates of service utilization for commonly occurring mental health problems in this population. College campuses represent a significant setting to assess how young people affect one another's help-seeking for mental health. With increasing numbers of young people enrolled in colleges and universities across the U.S, campus residence halls present a significant setting in which to assess social network effects. In residence halls, resident advisors (RAs) are opportunely positioned to provide frontline mental health support to their student residents. The present study examines the impact of RAs on their first-year undergraduates at two academically competitive research universities in the U.S. We use the natural experiment in which residents are randomly assigned to RAs, conditional on factors that we can control for, to estimate causal effects. Data come from surveys completed by RAs and residents (N=4,775). We find that only a small proportion of first-year students with apparent mental health problems speak about mental health concerns with RAs. Also, RAs' baseline mental health knowledge and their self-efficacy to respond to students in crisis is not predictive of student help-seeking at follow-up, but RAs' own experiences with mental health services is positively associated with students seeking the advice and support of these RAs. Our findings also suggest that within a residence hall area assigned to an RA, having a critical mass of student residents with mental health problems is positively associated with RAs' helping behaviors. To our knowledge, this is the first study to estimate causal effects of RAs, as key helpers in campus residential networks, on student help-seeking. Our findings suggest that the potential impact of RAs is not being realized.

Keywords: Mental health; College students; Residential life; Natural experiment

Introduction

It is widely recognized that social networks, the "basic building blocks of human experience," have a profound impact on mental health [1]. Social networks can influence mental health directly [2], and they can influence whether, when, and how people seek help for mental health problems [3]. Understanding the role of social networks for help-seeking is especially important in adolescent and young adult populations. For this age group, mental illness accounts for a larger burden of disease than any other class of health conditions [4]. Nearly three-quarters of mental disorders have first onset by the mid-20s [5], and disorders presenting in adolescence are associated with significantly longer treatment delays [6].

While adolescence and young adulthood are associated with increasing independence and autonomy, young people are still highly influenced by social contacts, particularly peers. For the following reasons, peers may be especially influential in shaping help-seeking attitudes and behaviors: adolescents and young adults are more likely to communicate mental health issues to peers than to anyone else [7], peers often actively provide support, advice, and information [8] and adolescents and young adults report that their peers' behaviors and attitudes related to mental health influence their own behaviors and attitudes [8]. Thus, adolescents and young adults can naturally serve as peer 'gatekeepers'.

The term 'gatekeeper' was first defined in a 1971 article published by John Synder in the *Bulletin of Suicidology* [9] to be "any person to whom

troubled people are turning for help". The gatekeeper model posits that individuals may find greater intimacy and comfort sharing their feelings with those they see on a regular basis and with whom they have built relationships over time [10]. The model recognizes that informal social exchange happens more frequently than formal service utilization, often placing certain community members in a better position to recognize mental health problems than the medical professionals trained to do so. At colleges and universities, this community is comprised primarily of student peers.

In particular, resident advisors (RAs) are opportunely positioned to serve as gatekeepers on campus. RAs operate within a unique space that enables them to shape student culture both as role model and authority figure. RAs can deliver mental health resources and support in ways otherwise impossible for campus administrators and mental health professionals [11]. Accordingly, RAs have long been relied on to serve as a bridge between students and university officials [11].

Although RAs are naturally positioned and often formally trained to function as gatekeepers, their impact on student help-seeking for mental health has not been rigorously assessed. To our knowledge, there have been no published studies that have addressed this question, despite the availability at many institutions of a natural experiment in which student residents are assigned to RAs in a random process. Using this natural experiment, we address four key questions:

1. How frequently do RAs discuss mental health issues with residents and how frequently do they refer residents to professional services?

2. How do RAs' knowledge, self-efficacy, and experiences around mental health services affect the irresidents' help-seeking? We hypothesize that RAs with higher knowledge, self-efficacy, and experiences with services are more likely to discuss mental health issues with residents, which in turn leads to higher service utilization.

3. How do the mental health problems and service utilization of resident groups within a hall area affect the knowledge and helping behaviors of their RA? We hypothesize that RAs gain knowledge and engage in more helping behaviors in hall areas with disproportionate numbers of residents with mental health problems.

4. How does RA support for a resident with mental health problems vary based on the prevalence of mental health problems among other residents assigned to that RA? Specifically, does a resident with mental health problems suffer as a result of within group 'competition' for RA support or do residents with mental health problems confer mutual benefits by enhancing RA knowledge and skills? We do not have a clear a priori hypothesis for which of these potentially offsetting factors is stronger.

To our knowledge, the data from this study are the only of their kind, allowing for the first estimation of causal effects of RAs on resident help-seeking.

Methods

Participants and data

Participants are first-year undergraduates and their RAs (2nd-4th year undergraduates) at two U.S. universities. One university ("University A") is a large, public university in the Midwest, and the other is a medium-sized private university in the Northeast ("University B"). Within the data, we matched residents to RAs using information from the universities; in most cases, an RA is responsible for students on his or her floor within a residence. We excluded students if they were under the age of 18 at follow-up. All research was approved by the University of Michigan Health Sciences and Behavioral Sciences Institutional Review Board and the Cornell University Institutional Review Board for Human Participants.

At both universities, students are assigned to residences based on preferences submitted in housing applications. The key preferences that determine a student's residence are room type (double, triple, quad) and corridor type (same sex, co-ed), because these factors vary across residences on both campuses. Housing officials use only the information in the applications to make residence assignments. Therefore, once we control for these preferences (using data obtained from housing officials), any remaining variation in residence assignment (and therefore RA) is random.

We recruited students for the baseline and follow-up surveys by sending an introductory letter with a $10 bill and then sending reminder emails to non-responders. Emails included a link to the online survey and a unique login for each student; written consent was obtained from all study subjects. The baseline survey was fielded during the three weeks preceding the start of the academic year (August , 2009), and the follow-up survey was fielded during a three-week period near the end of the academic year (March-April, 2010). Baseline response rates for residents and RAs were 68.0% and 59.0%, respectively, resulting in a baseline sample of 4,588 residents and 187 RAs. Of those who completed the baseline survey, 59.0% of residents and 71.0% of RAs completed the follow-up survey.

At baseline, residents are approximately 18 years of age on average (mean=18.4), there is a roughly equal split of males and females (female=49.1%), 17.8% are first-generation college students, and about two-thirds are white (69.9%), while 3.9% identify as African American, 15.7% as Asian, 4.3% as Latino/a, and 6.3% classified as "other race" or "multi-racial". Over one-third have apparent mental health problems (37.5%) while just 16.5% have used services and/or have a diagnosed mental illness. RAs are approximately 21 years of age on average (mean=20.8), just over half are female (56.7%), and just over half are white (54.6%), while 13.4% identify as African American, 16.6% as Asian, 4.8% as Latino/a, and 10.7% classified as "other race" or "multi-racial". About one-quarter of RAs are serving in this role for the first time (26.5%). Nearly one-fifth of RAs (19.9%) have used services and/or have a diagnosed mental illness and over two-thirds perceive their knowledge of mental health to be 'well above' or 'above average'(65.1%).

Measures

For residents, there are two primary outcomes at follow-up, both operationalized as binary measures. (1) Discussions with RA about mental health concerns is measured by the following survey item: *"During this school year, how many times have you discussed your mental or emotional health with your resident advisor?"* (coded as 0=none, 1=once or more). (2) Service utilization is measured using the following items: *"In the past six months, have you received counseling or therapy for your mental or emotional health from a health professional (such as a psychiatrist, psychologist, social worker, or primary care doctor?"*, and *"In the past six months, have you taken any of the following types of medications?"* (with responses including a list of the most common types of psychiatric medications), (coded as 0=none, 1=any counseling, therapy, medication). A secondary outcome for residents is perceived need, measured by the following item: *"In the past six months, did you ever think you needed help for emotional or mental health problems such as feeling sad, blue, anxious, or nervous?"* (coded as 0=no, 1=yes).

For RAs, there are two primary outcomes at follow-up. (1) Knowledge is measured by the following survey item: *"Relative to the average person, how knowledgeable are you about mental illnesses and their treatments?"* (coded as 1=well below, 2=below, 3=average, 4=above, 5=well above). (2) Helping behaviors is measured by the following survey item: *"During this academic year, how often have you provided advice or support to students for issues related to their mental or emotional health?"* We analyze this variable as both a binary measure (1=once or twice per month, or more often) and an ordinal measure.

When looking at effects of RA characteristics, we focus on three key independent variables measured in the baseline survey. (1)Self-efficacy is a factor derived from three items measured on a scale of 0-4: *"I have a good idea how to recognize that a student is in emotional or mental distress"*, *"Relative to other RAs, how competent would you say you are at identifying students with significant emotional or mental distress?"*, and *"Relative to other RAs, how competent would you say you are at helping students receive the appropriate services for significant emotional or mental distress?"* (Cronbach's Alpha=0.8). (2) Knowledge is operationalized as described earlier. (3) Service utilization/diagnosis is measured using the items listed above (for service utilization) and one additional item: *"Have you ever been diagnosed with any of the following conditions by a health professional (e.g., primary care doctor, psychiatrist, psychologist, etc.)?"*(with answer choices including a list of mental health conditions), (coded as 0=none, 1=any counseling, therapy, medication, diagnosis).

When looking at the effects of residents' characteristics, we focus on two key independent variables measured in the baseline surveys. These measures are aggregated to the mean at the hall area (the area for which the assigned RA has responsibility). (1) Mental health problems is a binary measure coded as 1 if the student screened positive for or reported any of the following: depression (Patient Health Questionnaire-2 [12], psychological distress (K-6) [13], an eating disorder (SCOFF) [14],

non-suicidal self-injury, and/or suicidal ideation (past six months and/or lifetime); it is included as the proportion of residents within a given hall area (RA assignment area) who have any apparent mental health problem at baseline. (2) Service utilization/diagnosis is measured as described earlier; as an independent variable, it is included as the proportion of residents who have any service utilization/diagnosis assigned to an RA.

The following individual characteristics for residents and RAs are included as covariates: age, gender, race/ethnicity (white, black, Asian, Hispanic, other/multi race), parental education (less than a bachelor's, bachelor's, graduate degree), and for RAs, experience in the role of RA (first time *vs* returning). We also control for a set of housing preference variables used to make residents' room assignments.

Data analysis

We conduct analyses corresponding to the four primary research questions stated above. Our first question, regarding the frequency of RAs helping behaviors is purely descriptive (results presented in the following section). The other questions are addressed with regressions in which the dependent variables are measured in the follow-up survey and the independent variables at baseline. Limiting the independent variables to baseline measures avoids any problems with endogeneity, in which the independent variables could be affected by the dependent variable (reverse causality) or correlated with unmeasured factors that influence the dependent variable (confounders).

To address our second question, looking at the effects of RAs' baseline knowledge, self-efficacy, and service utilization/diagnoses on their residents 'help-seeking at follow-up (service utilization, discussions with RA), we estimate logistic regressions of the form:

Equation 1:

$$\ln\left(\frac{\Pr(ResHS_{t+1})}{1-\Pr(ResHS_{t+1})}\right) = \beta_0 + \beta_1 ResHS_t + \beta_2 RAKnowledge_t + \beta_3 RASelfEfficacy_t$$
$$+ \beta_4 RAServicesDX_t + \beta_5 ResChar_t + \beta_6 RAChar_t + \beta_7 Prefs_t + \beta_8 Campus_t + \varepsilon_{t+1}$$

In equations 1-4, measures with the prefix *Res* indicate that that respondent level is the student resident, while the prefix *RA* refers to measures from resident advisors. In these models, as in all other models described here, subscript *t* denotes a measurement in the baseline survey, whereas *t+1* denotes a measurement in the follow-up survey, *Prefs* is a vector of housing preference variables, *ResChar* and *RAChar* are vectors of individual characteristics (age, gender, race, parental education, and for RAs, experience in role), and *Campus* is a dummy variable for university. In equation 1, $ResHS_{t+1}$ is a measure of residents' help-seeking at follow-up. In the model for service utilization, $ResHS_{t+1}$ represents the baseline measure for the outcome (discussions with RAs were not applicable at baseline, when residents had yet to move into residences). The key coefficients are on *RAKnowledge* (dummy variables for each of the five categories, with "well above average" as the reference category), *RASelfEfficacy* (dummy variables for each of the five categories, with the lowest level of self-efficacy as the reference category), and *RAServicesDX*, which represent the effects of RAs' baseline characteristics on their residents' help-seeking at follow-up. To account for potential intra correlation of outcomes within hall areas (residents grouped with the same RA(s)), standard errors are clustered by hall area (RA group).

To examine how the mental health problems and service utilization of residents within a hall area affect the knowledge and helping behaviors of their RAs (question 3), we estimate ordinal and logistic regressions of the forms:

Equation 2:

$$RAKnowledge_{t+1}^* = \beta_0 + \beta_1 RAKnowledge_t + \beta_2 ResGroupServicesDX_t$$
$$+ \beta_3 ResGroupMH_t + \beta_4 RAChar_t + \varepsilon_{t+1}$$

$$RAKnowledge_{t+1}^* = \begin{cases} 0 & \text{if} \quad RAKnowledge_{t+1}^* \leq \mu_1 \\ 1 & \text{if} \quad \mu_1 < RAKnowledge_{t+1}^* \leq \mu_2 \\ 2 & \text{if} \quad \mu_2 < RAKnowledge_{t+1}^* \leq \mu_3 \\ 3 & \text{if} \quad \mu_3 < RAKnowledge_{t+1}^* \leq \mu_4 \\ 4 & \text{if} \quad \mu_4 < RAKnowledge_{t+1}^* \end{cases}$$

Equation 3:

$$\ln\left(\frac{\Pr(RAHelp_{t+1})}{1-\Pr(RAHelp_{t+1})}\right) = \beta_0 + \beta_1 ResGroupServicesDX_t + \beta_2 ResGroupMH_t + \beta_3 RAChar_t + \varepsilon_{t+1}$$

For the ordinal regressions estimated in equation 2, the dependent variable *RA Knowledge* is an ordinal measure of RAs' perceived mental health knowledge; as an independent variable in these models, *RA Knowledge* is included as a set of dummy variables (as described above). For the logistic regressions estimated in equation 3, *RAHelp* is a dichotomous measure of helping behavior (mental health support/advice offered by RAs at least once or twice per month to residents, *vs* less often or none); this outcome is measured only at follow-up. We also operationalize *RAHelp* as an ordinal measure, using ordinal logistic regression as a sensitivity check. From equations 2 and 3, the key coefficients are on *ResGroupServicesDX* and *ResGroupMH*, which represent the effects of baseline mental health problems and service utilization/diagnoses, each aggregated to the mean for residents within a given hall area, on that RA's mental health knowledge and helping behaviors at follow-up. To address potential nonlinearity between the proportion of residents with mental health issues and RAs' mental health knowledge, we also ran equation 2 with *ResGroupServicesDXQuar* and *ResGroupMHQuar* as the key independent variables in a sensitivity analysis, representing the baseline proportion, in quartiles, of residents with service utilization/diagnoses and mental health problems within resident groups assigned to an RA, respectively. In equations 2 and 3, standard errors are clustered by residence hall.

Finally, to assess the impact of aggregate resident group mental health and service utilization on the individual resident's contact with the RA regarding mental health concerns, we estimate logistic regressions of the form:

Equation 4:

$$\ln\left(\frac{\Pr(ResDisc_{t+1})}{1-\Pr(ResDisc_{t+1})}\right) = \beta_0 + \beta_1 ResGroupServicesDXQuar_t + \beta_2 ResGroupMHQuar_t +$$
$$\beta_3 ResServicesDX_t + \beta_4 ResMH_t + \beta_5 ResChar_t + \beta_6 Prefs_t + \beta_7 Campus_t + \varepsilon_{t+1}$$

In equation 4, the outcome of interest is discussions with the RA (any *vs* none) about the resident's mental health (*ResDisc*). *ResServicesDX* and *ResMH* are dichotomous baseline measures at the individual student-level of any mental health service utilization/diagnosis and any mental health problems, respectively. The key independent variables are *ResGroupServicesDXQuar* and *ResGroupMHQuar*, which represent the baseline proportion, in quartiles, of residents with service utilization/ diagnoses and mental health problems within resident groups assigned to an RA, respectively. Dummy variables represent each quartile; the reference group is the first quartile (the lowest proportion of resident group service utilization/diagnoses and mental health problems). We examine quartiles because there are reasons to expect a nonlinear relationship between

the proportion of residents with mental health issues and the likelihood that any given resident has discussions with an RA; for example, having a certain number of peers with mental health issues might be helpful in drawing the RA's attention to mental health, but beyond some point the RA might not have the capacity to help all residents in need. For these analyses, standard errors are clustered by RA group. Sensitivity analyses with fixed effects for residence halls are conducted for each of the analyses described above (equations 1-4). All analyses were conducted in Stata.

Results

Tables 1a and 1b show the extent to which RAs provided help and support to residents about mental health, based on residents' reports and RAs' reports at follow-up. Only 7.7% of residents report any discussions with RAs about mental health, and an even smaller number (1.4%) report more than one or two discussions. Among residents with serious mental

	Among residents with >1 mental health problem	Among residents with serious mental health problems
Discussions with RA about mental or emotional health concerns		
5 or more times	0.50%	0.70%
3-4 times	1.00%	1.50%
1-2 times	6.30%	5.10%
None	92.30%	92.80%
Helpfulness of discussions with RA		
Very helpful	33.20%	50.00%
Somewhat helpful	44.00%	30.00%
Not very helpful	16.60%	20.00%
Not at all helpful	6.20%	0.00%

Table 1a: Residents' discussions with RAs about mental or emotional health at follow-Up (reported by residents).

Provided advice or support to residents for issues related to their mental or emotional health	
Several times per week	3.30%
Once or twice per week	13.20%
Once or twice per month	33.50%
A couple times total	45.10%
None	5.00%
Self-perceived success in providing mental or emotional support for residents	
Very successful	14.80%
Somewhat successful	68.10%
Not very successful	10.40%
Not at all successful	0.00%
Not applicable (have not had the occasion to try this)	6.60%
Referred residents to professional mental health services	
Several times per week	0.00%
Once or twice per week	1.10%
Once or twice per month	14.80%
A couple times total	61.50%
None	22.50%
Self-perceived success in referring residents to treatment or other resources	
Very successful	11.00%
Somewhat successful	55.00%
Not very successful	17.60%
Not at all successful	2.20%
Not applicable (have not had the occasion to try this)	14.30%

Table 1b: RAs' helping behavior at follow-up (reported by RAs).

health problems at baseline (defined as ≥ 5 on the PHQ-2, ≥ 13 on the K6, and/or past 6 month suicidal ideation), the proportion seeking help from RAs remains similarly low; 7.3% report any discussions and 2.2% report more than one or two discussions. The majority (95.0%) of RAs, report providing advice or support related to mental health at least a couple times during the academic year, but only 16.5% of RAs report providing this advice or support at least once or twice per week. In terms of referring students to professional mental health services, 77.5% of RAs report making some referrals but most report doing so 'a couple times total' throughout the academic year. Combined with the fact that 37.5% of residents have an apparent mental health problem at baseline, these results indicate that only a small fraction of residents with mental health problems discuss these issues with their RA, and most of those discussions occur only once or twice.

Regarding our second research question, we find some evidence (Table 2) that residents are more likely to discuss mental health with RAs who have personal experience (through their own prior utilization and/or diagnosis) (OR: 1.88, p=0.04). There is no evidence, however, that RAs' baseline knowledge and self-efficacy affect the likelihood of residents discussing mental health concerns with their RAs, and no evidence that any of the RA characteristics considered here affect the likelihood that residents perceive a need for help (results not shown) or utilize services. The significant result noted above should also be viewed as tentative, because it would not remain significant after adjusting for type I error (e.g., Bonferroni correction).

Surprisingly, the effect on RAs' perceived knowledge of having more residents with mental health problems appears to be negative, if anything (Table 3, OR=0.13, p=0.07). Results remain consistent in magnitude and direction in a sensitivity analysis with *ResGroupServicesDXQuar* and *ResGroupMHQuar* as the baseline proportion, in quartiles, of residents with service utilization/diagnoses and mental health problems within resident groups assigned to an RA, respectively. Also surprisingly, there is no evidence that the likelihood of RAs' helping behaviors is affected by the proportion of residents with mental health problems or prior service use; this remains consistent in a sensitivity analysis using ordinal logistic regression for *RAHelp*.

Finally, we examine whether peers with mental health problems (or prior service use) in hall areas appear to be 'competitors' or 'complements' to each other, in terms of winning the attention of RAs (Table 4). Results suggest that it is optimal for residents to be in the second quartile in the distribution across hall areas of prevalence of mental health problems. Sensitivity analyses with hall fixed effects reveal that the main pattern of results remains consistent.

Discussion

To our knowledge, this is the first study to estimate causal effects of RAs on resident help-seeking. In theory, RAs are ideally situated to play an important role in recognizing mental health problems and facilitating access to services. In practice, however, our findings suggest that RAs are playing a modest role. In the present study, only a small proportion of residents with mental health problems are even discussing problems with RAs, let alone accessing services as a result of those discussions. This is surprising considering that RAs at both study sites receive several hours of training related to mental health. The low prevalence (7.7%) of residents reporting discussions about mental health with RAs might appear to be at odds with the high proportion (95.0%) of RAs who report discussing mental health at least once or twice with residents. It is important to keep in mind, however, that each RA typically has 15-30 residents in his or her hall. Evidently, most RAs discuss mental health problems with only a couple of their students.

It is also surprising that RAs' perceived knowledge and self-efficacy for helping with mental health issues does not predict the likelihood that residents have discussions with RAs or utilize services. On the other hand, RAs' own experience with mental health services positively predicts the likelihood of residents having discussions about mental health with their RAs. These findings are interesting in light of a randomized trial of a gatekeeper training, Mental Health First Aid (MHFA), delivered to RAs at 32 U.S. campuses [15]. The trial found MHFA increased RAs' self-efficacy at 2-3 month follow-up, but did not increase RAs' actual helping behaviors in terms of discussions with residents or referrals to services (nor did it increase actual service utilization by residents). Thus, the present study is consistent with this trial in the implication that perceived knowledge and self-efficacy are insufficient for producing desired behavioral changes. On the other hand, the trial found that MHFA increased RAs' likelihood of using mental health services for themselves. That finding, paired with the present study's finding that RAs' own service utilization predicts more discussions with residents, suggests that gatekeeper trainings might actually produce a small impact on helping behaviors with a lag (beyond the time frame of the MHFA trial), through the indirect channel of increasing RAs' own help-seeking.

Another interesting finding is the relationship between the proportion of residents in a hall area with baseline problems and the likelihood of

	Effects on residents at follow-up															
	Discussions with RA								Service utilization							
	Model 1a		Model 1b		Model 1c		Model 1d		Model 2a		Model 2b		Model 2c		Model 2d	
RAs' baseline	OR (SE)	p	OR (SE)	p	OR (SE)	p	OR (SE)	p	OR (SE)	p	OR (SE)	p	OR (SE)	p	OR (SE)	p
Knowledge, above	1.75 (0.58)	0.09					1.83 (0.67)	0.10	1.81 (0.39)	0.006					1.78 (0.37)	0.005
Knowledge, average	1.52 (0.55)	0.24					1.75 (0.73)	0.18	1.56 (0.41)	0.09					1.72 (0.50)	0.06
Knowledge, below	0.93 (0.60)	0.91					1.21 (0.94)	0.81	1.75 (1.09)	0.36					1.70 (1.08)	0.41
Knowledge, well below	1.98 (1.99)	0.50					1.67 (1.79)	0.63	1.12 (0.41)	0.75					1.31 (0.61)	0.57
Self-efficacy, 0			1.15 (0.41)	0.70			1.06 (0.40)	0.88			0.78 (0.23)	0.39			0.97 (0.35)	0.94
Self-efficacy, 1			0.59 (0.20)	0.13			0.60 (0.21)	0.15			0.65 (0.20)	0.17			0.77 (0.25)	0.42
Self-efficacy, 2			1.23 (0.43)	0.55			1.18 (0.43)	0.65			0.66 (0.21)	0.19			0.68 (0.22)	0.23
Self-efficacy, 3			0.78 (0.30)	0.53			0.81 (0.32)	0.60			0.54 (0.18)	0.06			0.60 (0.20)	0.12
Service utilization/ diagnosis					1.64 (0.51)	0.12	1.88 (0.56)	0.04					0.83 (0.19)	0.42	0.84 (0.23)	0.53
N	1,475		1,448		1,475		1,448		1,532		1,505		1,532		1,505	
Pseudo-R²	0.12		0.12		0.12		0.13		0.26		0.27		0.26		0.27	
Log pseudo-likelihood	-416.88		-410.36		-417.00		-406.86		-571.06		-508.17		-519.69		-505.18	

Table 2: Effect of RAs' baseline characteristics on residents' help-seeking at follow-up (logistic regressions).
Note: Each column corresponds to a separate logistic regression-only the estimate for the key coefficient on the RA variable is shown. For RAs' baseline knowledge, the reference category is "well above average"; for RAs' baseline self-efficacy, the reference category is "4". All models control for residents' individual characteristics (age, gender, race, parental education), RAs' individual characteristics (age, gender, race, parental education, experience), variables used for housing assignments, and campus. Standard errors are clustered by RA group.

	Effects on RAs at follow-up											
	Knowledge (ordinal)						Helping behaviors (logistic)					
	Model 3a		Model 3b		Model 3c		Model 4a		Model 4b		Model 4c	
	OR (SE)	p	OR (SE)	p	OR (SE)	p	OR (SE)	p	OR (SE)	p	OR (SE)	p
Resident group's baseline												
Proportion with mental health problem	0.13 (0.15)	0.07			0.13 (0.16)	0.08	0.92 (0.43)	0.86			0.95 (0.44)	0.90
Proportion used services/diagnosed			0.61 (0.61)	0.62	0.95 (0.85)	0.95			0.79 (0.93)	0.84	0.80 (0.95)	0.85
N	125		125		125		125		125		125	
Pseudo-R²	0.14		0.12		0.14		0.02		0.02		0.02	
Log pseudo-likelihood	-113.22		-115.06		-113.22		-84.45		-84.44		-84.44	

Table 3: Effects of residents' baseline mental health on knowledge and helping behaviors of RAs at follow-up (ordinal and logistic regressions).
Note: Each column corresponds to a separate regression-only the estimate for the key coefficient on the resident group variable is shown. All models control for RAs' individual characteristics (age, gender, race, parental education, experience). Model 3 also controls for RAs' baseline knowledge, operationalized as a set of dummy variables. Helping behaviors is a dichotomous measure of advice/support offered to residents once or more per month *vs* less than once per month. Standard errors are clustered by residence hall. Sample sizes are smaller than in Table 1 because the analyses here require complete data from RAs are both follow-up and baseline.

	Effects on individual student resident at follow-up					
	Any discussions with RA about mental health					
	Model 5a		Model 5b		Model 5c	
	OR (SE)	p	OR (SE)	p	OR (SE)	p
Resident group's baseline						
Proportion with mental health problem						
2nd quartile	1.37 (0.37)	0.24			1.31 (0.34)	0.29
3rd quartile	0.76 (0.21)	0.32			0.77 (0.21)	0.34
4th quartile	0.76 (0.21)	0.31			0.74 (0.21)	0.29
Proportion used services/diagnosed						
2nd quartile			1.60 (0.39)	0.05	1.59 (0.37)	0.05
3rd quartile			0.91 (0.24)	0.70	0.92 (0.25)	0.76
4th quartile			0.86 (0.24)	0.57	1.00 (0.28)	0.99
N	2,422		2,421		2,415	
Pseudo-R²	0.08		0.09		0.09	
Log pseudo-likelihood	-639.19		-631.70		-626.74	

Table 4: Effects of the prevalence of mental Health issues among hallmates on likelihood of contact with RAs about mental health (logistic regressions). **Note:** Each column corresponds to a separate logistic regression-only the estimate for the key coefficient on the resident group variable is shown. For "Proportion with mental health problem" and "Proportion used services/diagnosed", the reference category is the first quartile. All iterations of the model control for residents' individual characteristics (age, gender, race, parental education), individual resident's baseline response to the independent variable(s), variables used for housing assignments, and campus. Standard errors are clustered by RA group.

having a discussion with the RA about mental health. Our findings suggest that being in a hall area with a low, but not too low, number of residents with problems is most conducive to gaining RA attention. This suggests that it is helpful to have a critical mass of residents with mental health problems, but beyond that point, residents might be competing for RA attention.

Limitations

The present study is strengthened by the availability of a natural experiment to estimate causal effects and the unique nature of the data set, but it also has important limitations. First, the data do not contain key information about social networks such as friendship ties, which are known to play an important part in determining help-seeking preferences and behaviors. Thus, while we are able to estimate the causal effects of RAs, we cannot examine how RA effects are situated within a comprehensive network of social ties. Second, while the study includes a large sample of residents, we have only a modest number of RAs; thus there may be small effects that we are not powered to detect. Additionally, the study's generalizability is limited by the fact that it was conducted at two academically competitive universities, which are not necessarily representative of schools nationwide or in other countries.

Implications

Our overarching conclusion from the present study is that more needs to be done to 'activate' positive effects on help-seeking behavior across

social ties. These effects do not seem to occur automatically even under ideal circumstances (i.e., RAs with high knowledge and self-efficacy living alongside students with mental health problems). Our findings suggest that there are significant opportunities to increase the role of RAs as mental health gatekeepers in residential communities. Programs such as gatekeeper trainings need to find ways to increase the frequency by which RAs discuss mental health and also to increase the helpfulness of those discussions when they occur. This might require expanding on the current model of gatekeeper training for RAs, in which trainings are largely 'one shot' deals at the beginning of the year (with ongoing 'booster' or 'refresher' sessions). It seems that more intensive efforts will be required if RAs are to make a substantial impact on the large numbers of students with untreated problems.

That RAs' own mental health service utilization is associated with increased contact with residents about mental health suggests that RAs who address their own problems may serve as role models for their residents and/or make students feel more comfortable discussing concerns. Another possible implication of our findings is that campuses should consider other gatekeepers, beyond RAs. Indeed, many institutions are pursuing this route by training faculty and staff. However, in light of the power of peers, it might be even more useful to provide knowledge and skills to all students, or a large proportion of students, so that even those without formal helper roles can provide information and support to fellow students. This 'saturation' approach could potentially lead to entire shifts in campus cultures around mental illness and services, alleviating some of the stigma that prevents help-seeking [16].

Conclusion

Late adolescence and young adulthood are periods of intensive investment in education, job skills, and work experience. A college education is increasingly important in today's information and service-based economy. Mental health problems, however, can pose substantial impediments, and most young people with mental disorders do not receive treatment. Key people within social networks have great potential to facilitate access to mental health services. Our results indicate, however, that even under seemingly ideal circumstances-RAs with official responsibilities and training to facilitate access to mental health care, in settings with substantial resources-this social network approach is having modest impacts. More intensive and innovative approaches are needed to take fuller advantage of this opportunity.

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Conflict of Interest

The authors have no conflict of interest.

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