

Original Research

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Undergraduate Students' Onlooker Response Prior to Arrival of Emergency Medical Services: An Assessment of Willingness to Respond

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Abstract

Objectives: This study sought to assess undergraduate students' knowledge and attitudes surrounding perceived self-efficacy and threats in various common emergencies in communities of higher education.

Methods: Self-reported perceptions of knowledge and skills, as well as attitudes and beliefs regarding education and training, obligation to respond, safety, psychological readiness, efficacy, personal preparedness, and willingness to respond were investigated through 3 representative scenarios via a web-based survey.

Results: Among 970 respondents, approximately 60% reported their university had adequately prepared them for various emergencies while 84% reported the university should provide such training. Respondents with high self-efficacy were significantly more likely than those with low self-efficacy to be willing to respond in whatever capacity needed across all scenarios.

Conclusions: There is a gap between perceived student preparedness for emergencies and training received. Students with high self-efficacy were the most likely to be willing to respond, which may be useful for future training initiatives.

The true “first responder” is believed to be the layperson who most immediately recognizes and responds to an emergency, with a bystander commonly defined as a “person at the scene of an event who voluntarily steps forward to help.”¹ Bystanders exert a tremendous effect on the ability to direct the balance of the response. As such, there is a growing impetus to train and assess the role of interventions performed by bystanders during acute situations. Indeed, bystander intervention training has successfully been applied to cardiopulmonary resuscitation (CPR),^{2–4} the Stop the Bleed campaign,^{5–8} sexual assault prevention,^{9–13} and general medical emergencies, among others.¹⁴

Bystander intervention, nevertheless, remains highly variable. The intervention rate prior to the arrival of emergency medical services (EMS) is estimated at only 11% of emergencies.¹⁵ The collegiate environment has risen in prominence in the bid to cultivate higher rates of bystander intervention. Undergraduate students, themselves at varying levels of emotional, physical, and intellectual development, are frequently placed in proximity for the first time in living and studying environments when they enroll in university. New freedoms compounded by rapidly fluctuating social dynamics and ready access to alcohol and other intoxicants^{16–18} create a platform with a seemingly greater natural predilection for emergencies than would typically be observed in the general population. Binge drinking is common on college campuses. Ngo et al. reported an overall incidence rate of 59/10 000 person-years for at least 1 emergency department visit related to alcohol use among first-year college students.¹⁹

In view of these specific considerations, early and immediate intervention by bystanders in the university setting may represent a critical opportunity to save lives and summon appropriately

trained responders. Prior research in disaster preparedness has sought to explain why and how people react to various types of emergencies and has proposed methods to increase intervention. Based largely on the Extended Parallel Process Model (EPPM),²⁰ health care and public health professionals' willingness to respond (WTR) largely depends on how threatening a disaster is perceived to be and the perceived self-efficacy of the potential responder in "their ability to perform the recommended response."²¹ Therefore, the most effective responders are those who believe the threat is both *highly likely* and their response would be *highly effective*. In the emergency response domain, the EPPM has been applied to various other types of responders and scenarios, including local health department workers,²² hospital staff,^{23–25} Medical Reserve Corps volunteers,²⁶ and EMS providers.²⁷ EPPM-based interventions have similarly been extended to college students in the context of COVID-19 social distancing,^{28,29} other infectious disease,^{30,31} and the dangers of e-cigarettes.³²

To distinguish between traditional bystander intervention focused on sexual assault and substance misuse, the term "emergency onlooker response" in the collegiate setting more aptly describes the broader environment where bystanders observe and consider intervening prior to the arrival of trained first responders in a potential medical emergency. Given the success in shifting lifesaving interventions as far upstream as possible to the point of injury or illness,² universities represent an understudied area for greater emergency onlooker response intervention research. Little is known about the self-efficacy and perceived threats of undergraduate students in various common emergencies. To that end, this study sought to assess perceptions of knowledge, attitudes, and beliefs of undergraduate students to better understand their WTR in various potential emergency scenarios and to assess their thoughts regarding education concerning bystander intervention and emergency onlooker response.

Methods

We developed a cross-sectional web-based survey and distributed it to all full-time undergraduate students at West Virginia University (WVU), a public, land-grant university with its main campus in Morgantown, West Virginia. In the Fall 2019 semester, the institution reported a total undergraduate student count of 21 086.³³ The custom survey instrument was developed iteratively using the EPPM as a framework for assessing self-efficacy and perceived behaviors in real-world fear-inducing situations. Based on the key domains of *response-efficacy* and *self-efficacy*, the survey sought to evaluate attitudes and beliefs as well as WTR to 3 representative potential emergency scenarios: Scenario 1, a college student "found down" at a large (200+ person) party; Scenario 2, a new associate member of a fraternity/sorority collapses at an initiation event; and Scenario 3, a community member "found down" at a grocery store. When a person is found unresponsive with no clear etiology, the emergency department often triages the patient diagnosis as "found down."³⁴

The final survey tool was built using Qualtrics (Qualtrics, Provo, Utah, USA) and included 88 questions. After providing basic demographic data, respondents addressed the 3 representative vignettes and then answered general questions about emergency preparedness. The survey instrument assessed self-reported perceptions of knowledge and skills, as well as attitudes and beliefs regarding the following: education and training, obligation, safety, psychological readiness, efficacy, personal preparedness, and WTR.

The survey tool used a combination of a 9-point Likert scale, binary questions, a single-open-answer question and a select all that apply question. The full survey tool is available in [Supplemental 1](#).

A link to the survey was sent via the student news platform "U-News" operated by University Relations and Enrollment Management and was intended for all undergraduate students in the fall semester of 2019. Similarly, invitations to participate were sent electronically via the WVU Engage student organization platform (operated by CampusLabs) to student email accounts associated with the Office of Student Engagement and Leadership. The survey was available online from September to December 2019 and all responses were submitted anonymously. Fifty 20-dollar gift cards were offered for completion of the survey. The WVU Institutional Review Board approved this study and deemed it exempt from the informed consent requirement.

Statistical Analysis

Continuous variables were summarized by their means or medians. Categorical variables were summarized as proportions, often represented as a percentage. Likert-style questions were broken into binary responses, with 1–4 representing agreement, 5–9 denoting disagreement, and an option to indicate being unsure. Incomplete surveys were utilized to the extent they were completed and "unsure" responses to specific questions were excluded from that analysis. Attitudes and beliefs between scenarios were compared using McNemar's Exact test when the respondent answered both questions. Additionally, 95% Clopper-Pearson exact confidence intervals were calculated for percent agreement. The relationship between self-described WTR and involvement in student activities, athletics, fraternity/sorority/Greek life, or desire to pursue a health care career was also assessed and differences were tabulated using Chi-square tests. Logistic regression models were run for each of the WTR questions in order to measure the association by EPPM quadrant (i.e., low perceived threat/low perceived efficacy; low perceived threat/high perceived efficacy; high perceived threat/low perceived efficacy; high perceived threat/high perceived efficacy). This article adheres to best practices in conducting and reporting survey research.³⁶ Data analysis was performed using SAS, Version 9.4 (SAS, Cary, NC, USA).

Results

At the close of the survey period, 970 student responses were received, with 75.3% (730/970) fully completing the survey. The median age of respondents was 20 years old (IQR 18–21), with 65% of respondents identifying as female and 95% as full-time students (enrolled in 12 or more credit hours). Students were roughly evenly distributed among year of education, with 28.8% being freshmen, 23.2% sophomores, 21.3% juniors, and 17.8% seniors. Intended majors were distributed throughout the university's departments, with an overrepresentation of health and biological sciences at 28.4%. Students reported a variety of activities, including no student groups (35.7%), multiple activities (12.6%), and fraternity/sorority/Greek life participation (13.6%). Students predominantly lived off-campus (54.8%) and 88.7% and 77.1% responded that they had received training in emergency procedures during orientation and during their undergraduate education, respectively. The full student respondent demographics are displayed in [Table 1](#).

Overall, most students responding to the survey reported that each scenario would have severe life consequences for the person in

Table 1. Basic demographics of undergraduate students responding to an emergency onlooker response survey

Demographics		Overall (n = 970)
Age, years, median (IQR)		20 (18 – 21)
Gender, Female, n (%)		627 (65.0%)
Full-time undergraduate student, n (%)		921 (95.2%)
Current year of undergraduate training, n (%)	First year	277 (28.8%)
	Second year	223 (23.2%)
	Third year	205 (21.3%)
	Fourth year	171 (17.8%)
	Greater than 4 years	87 (9.0%)
Intended major, n (%)	Health and Biological Sciences	270 (28.4%)
	Business, Economics, and Communication	145 (15.2%)
	Engineering and Architecture	132 (13.9%)
	Human Studies	92 (9.7%)
	Environmental and Agricultural	73 (7.7%)
	Other Majors or None Recorded	240 (25.2%)
Selected activities, n (%)	No Student Activities	270 (35.7%)
	Multiple Student Activities	95 (12.6%)
	STEM and Medical Organizations	112 (14.8%)
	Greek Life	103 (13.6%)
	Culture and Identity Related Organizations	52 (6.9%)
	Other (e.g. Hobbies, Student Government, Sports, Pre-Professional)	125 (16.5%)
	Residence, n (%)	Off Campus/Other
	Residence Hall	249 (25.9%)
	University Apartment	117 (12.2%)
	Living Learning Community	32 (3.3%)
	Fraternity/Sorority House	37 (3.8%)
Emergency training during orientation, n (%)		638 (88.7%)
Emergency training during undergraduate curriculum, n (%)		554 (77.1%)
Familiar with University medical amnesty policy		397 (55.3%)

question. However, Scenarios 2 (new associate member of a fraternity/sorority collapses at an initiation event) and 3 (community member “found down” at a grocery store) garnered a greater degree of concern for the long-term consequences with 75%, 82%, and 83% agreeing with that sentiment for each scenario, respectively, with $P < 0.0001$ comparing Scenario 1 (college student “found down” at a large party) to 2 and 3, individually. However, pre-event training and preparedness for such a situation were considerably lower with only 56%, 60%, and 58% believing their university adequately prepared

them for each scenario, respectively. This was the case despite 84%, 82%, and 82%, respectively, reporting that their university should provide pre-event training for a similar scenario (Figure 1). Notably, only 67% were willing to respond to a student “found down” at a large party if that was their primary role in the response (Scenario 1), while 78% were willing to take on the same role for a new associate member of a fraternity/sorority collapsing at an initiation event (Scenario 2) and 83% were willing to assist a community member “found down” at a grocery store (Scenario 3). Finally, students were nearly equally willing to respond to each scenario regardless of any potential negative consequences for the patient. The full results of student attitudes and beliefs are displayed in Table 2.

In subgroup analysis, students’ interests and activities were stratified to compare WTR and attitudes and beliefs. The full results of the subgroup analysis are displayed in Table 3. Overall, students involved in at least 1 student activity or interested in a career in health care were more likely to respond in whatever capacity they might be needed ($P = 0.0478$ and $P = 0.0266$, respectively). Students participating in fraternity/sorority/Greek life reported a greater obligation to respond to a student “found down” at a large party compared to their non-fraternity/sorority/Greek counterparts (97.6% vs 89.0%, $P = 0.0158$).

Finally, Table 4 applies the EPPM to compare high and low efficacy to high and low threats. Respondents with self-perceived high self-efficacy were significantly more likely than those with low self-efficacy to be willing to respond in whatever capacity needed across all 3 scenarios (Scenario 1: OR 29.7 [95% CI: 7.2, 122.7]; Scenario 2: OR 66.6 [95% CI: 9.18, 483.7]; Scenario 3: OR 19.4 [95% CI: 4.65, 81.2]). Similarly, those with high efficacy and high threat levels were significantly more likely to feel obligated to respond to someone “found down” than comparable low efficacy and low threat students, across all 3 scenarios (Scenario 1: OR 37.7 [95% CI: 5.17, 275.2]; Scenario 2: OR 34.6 [95% CI: 8.34, 143.4]; Scenario 3: OR 49.3 [95% CI: 6.74, 361]).

A non-response bias analysis was performed with a standardized difference greater than 10% considered a significant difference. Those who completed the survey were more likely to be female and younger than was observed within the WVU campus that same year with a standardized difference of 32.4% and 12.3%, respectively, as displayed in Table 5.

Discussion

Emergency onlooker response remains a critical aspect of ensuring timely medical care for those in need. The results of this study show that most undergraduate students at a single, large public university reported that they have a role in responding to a person found unresponsive in a variety of social settings. While a nearly uniform 81%-82% of respondents reported feeling sufficiently skilled to respond, depending on the scenario, only 56%-60% reported that their university had adequately prepared them for those situations. In order to maximize the likelihood of a response, past research suggests that the responder must feel the scenario is highly likely and they can be highly effective in their role.²¹ This presents an opportunity for universities to tailor their trainings and interventions to both promote lifesaving skills, self-efficacy in those skills, and awareness about possible emergency situations. For example, prior research into college students’ intention to perform CPR postulated that the training would be more useful if it included both technical skills and an expectation that these skills should be utilized.³⁵

College students attitudes and beliefs towards various emergency scenarios

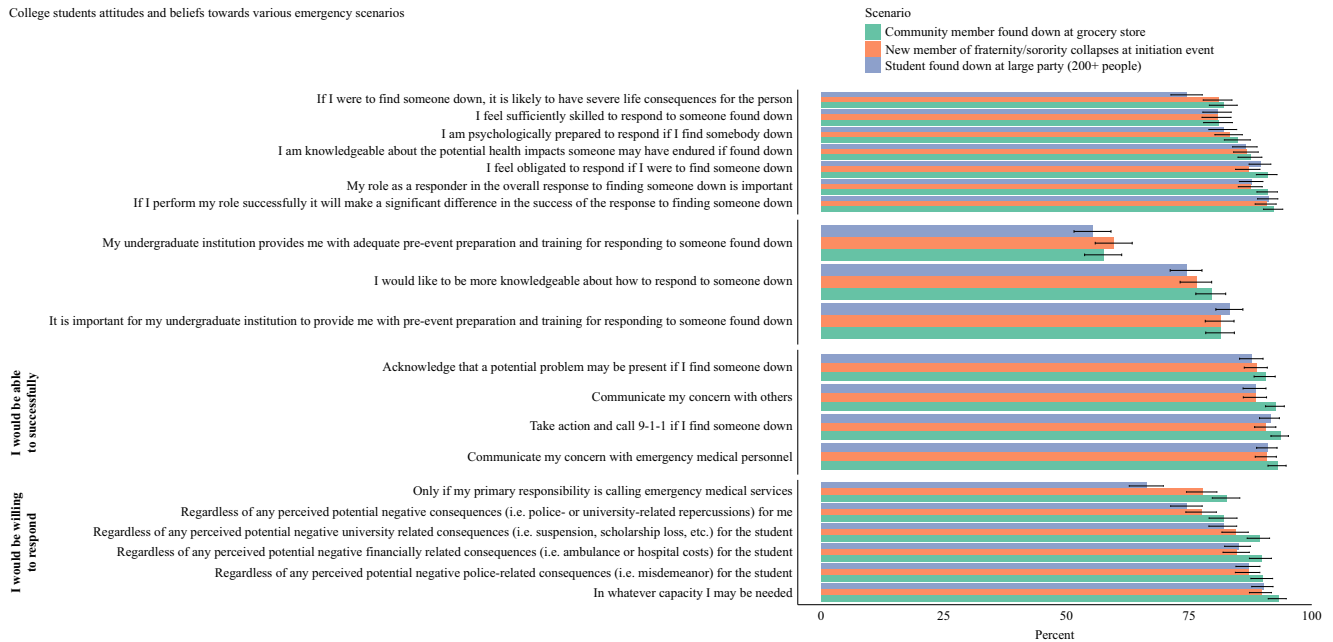


Figure 1. College students attitudes and beliefs towards various emergency scenarios.

Nationwide, a focus has existed toward bystander intervention training pertaining to alcohol misuse and sexual assault. While these topics are critical and timely, an opportunity remains to broaden the scope of training beyond these specific topics to include a more expansive scope of emergencies that can occur in the collegiate setting. The findings of this survey show students who reported that a threat is highly likely, and they would be highly efficacious in their response, had 34.6-49.3 higher odds of responding in any capacity needed compared to their low threat and low efficacy counterparts, depending on the scenario. Given the potential for a college student to be present when someone collapses at a large party, fraternity or sorority event, or even at a grocery store, promoting an understanding that such a threat is both likely and that the student would have the self-efficacy to respond is key to creating a vast first responder safety net. This is a natural extension of this survey's results where a plurality of students indicated that 1 hour per month would be the ideal amount of time to spend on emergency training.

Medical Amnesty

In an effort across the United States to promote ensuring adequate medical care when needed, medical amnesty policies in society generally and collegiate settings specifically have been enacted. As of January 2019, 47 states and Washington D.C. have some variation of a medical amnesty law.³⁷ Medical amnesty laws, frequently referred to as "Good Samaritan laws," are designed to encourage bystanders to contact authorities for assistance during emergencies by providing provisions such as immunity from criminal action.³⁷ While settings of higher education may have differing prevailing rules and consequences related to alcohol and substance misuse (e.g., administrative actions versus criminal sanctions), ensuring broad knowledge and trust in these policies is key to effective utilization.³⁸ In this study, WTR decreased across all 3 scenarios when asked to consider possible negative consequences for the student responder compared to the person in distress. In the context of only 55% of the sample reporting familiarity with their

university's amnesty policy, this may represent a key area for intervention. Past research into promoting safe alcohol practices among fraternity/sorority/Greek-life-involved college students has increased understanding about local medical amnesty policies as well as safer alcohol consumption practices, especially when these efforts are peer-led.³⁹

Limitations

This study is subject to several limitations. While the survey was distributed to 21 086 students over a 4-month period, only 970 partial or complete responses were submitted for analysis. Accordingly, a non-response bias analysis was conducted to compare survey respondents to the general student population. Compared to the general student body, females and younger students were more likely to have completed the survey. The non-response bias analysis, nevertheless, revealed that the results of the study were largely an accurate reflection of the broader university student body and legitimized our inferences. Second, this study was cross-sectional; thus, causal relationships could not be interpreted. Third, this study was conducted at a single site, potentially limiting generalizability to other centers of higher education and broader communities. Fourth, participation was voluntary which may introduce a self-selection bias.

Conclusion

Emergency onlooker response remains a key aspect and unmet need among undergraduate students. Further efforts are needed to promote the understanding that various community emergencies may occur near college students. With the acquisition of some basic lifesaving intervention training and education, they would possess the skills and intent to respond. In the collegiate environment, specific protections, such as medical amnesty policies, need to be further emphasized and straightforward to understand to further promote a bystander response.

Table 2. Undergraduate students' attitudes and beliefs and willingness to respond in various emergency scenarios (*n* = 970)

	Scenario 1: A student found down at a large (200+) person party	Scenario 2: A new member collapses at a fraternity/sorority initiation event	Scenario 3: A community member found down at a grocery store	Scenario 1 vs. 2	Scenario 1 vs. 3	Scenario 2 vs. 3
Attitudes and beliefs	Percent agreement (95% CI)			P value		
This scenario would be likely to have severe life consequences for the person	75.1 (71.77–78.24)	81.5 (78.41–84.33)	82.7 (79.67–85.40)	<0.0001	<0.0001	0.6173
I am knowledgeable about the potential health impacts someone may have endured if found down	87.1 (84.43–89.49)	87.3 (84.64–89.72)	88.2 (85.54–90.46)	0.4350	0.0079	0.0003
I am psychologically prepared to respond	82.6 (79.57–85.28)	83.8 (80.80–86.44)	85.6 (82.75–88.09)	<0.0001	<0.0001	0.0001
My role as a responder in the overall response to finding someone down is important	88.4 (85.83–90.66)	88.2 (85.61–90.53)	91.7 (89.42–93.65)	0.7163	0.0748	0.5471
I would be able to successfully acknowledge that a potential problem may be present if I find someone down	88.4 (85.87–90.69)	89.4 (86.84–91.56)	91.2 (88.85–93.18)	0.5811	0.0012	0.0003
I would be able to successfully communicate my concern with others	89.1 (86.59–91.29)	89.2 (86.64–91.40)	93.3 (91.21–95.05)	0.0821	<0.0001	0.0003
I would be able to successfully communicate my concern with emergency medical personnel	91.6 (89.37–93.56)	91.4 (89.09–93.42)	93.8 (91.70–95.42)	0.0675	<0.0001	0.001
I would be able to successfully take action and call 9–1–1 if I find someone down	92.2 (89.96–94.04)	91.3 (88.96–93.31)	94.3 (92.31–95.89)	0.0414	0.2806	0.0005
If I perform my role successfully it will make a significant difference in the success of the response to finding someone down	91.8 (89.55–93.73)	91.4 (89.06–93.40)	93.0 (90.79–94.74)	0.9007	0.5104	0.8151
My undergraduate institution provides me with adequate pre-event preparation and training for responding to someone found down	55.7 (51.90–59.49)	60.1 (56.25–63.84)	57.9 (54.07–61.68)	0.8043	0.0639	0.1882
It is important for my undergraduate institution to provide me with pre-event preparation and training for responding to someone found down	83.9 (81.01–86.55)	81.9 (78.84–84.73)	82.0 (78.93–84.80)	0.8013	0.0103	0.0054
I feel sufficiently skilled to respond to someone found down	81.4 (78.32–84.16)	81.3 (78.16–84.12)	81.6 (78.50–84.40)	0.6147	0.0444	0.1034
I would like to be more knowledgeable about how to respond to someone down	75.0 (71.63–78.16)	77.0 (73.67–80.14)	80.1 (76.89–83.02)	0.9007	0.0006	<0.0001
Willingness to respond						
... In whatever capacity I may be needed	90.7 (88.37–92.74)	90.3 (87.90–92.41)	93.8 (91.76–95.46)	0.7709	0.0725	0.0095
... Only if my primary responsibility is calling emergency medical services	66.8 (63.23–70.25)	78.2 (74.97–81.23)	83.2 (80.27–85.93)	0.3240	0.0139	0.0009
... Regardless of any perceived potential negative police-related consequences (i.e., misdemeanor) for the student	87.7 (85.12–90.05)	87.7 (85.01–90.03)	90.6 (88.19–92.65)	0.8899	0.3916	0.1114
... Regardless of any perceived potential negative financially related consequences (i.e., ambulance or hospital costs) for the student	85.6 (82.80–88.09)	85.3 (82.47–87.87)	90.3 (87.90–92.41)	0.0103	0.3153	0.1374
... Regardless of any perceived potential negative university related consequences (i.e., suspension, scholarship loss, etc.) for the student	82.6 (79.57–85.28)	85.1 (82.24–87.66)	89.9 (87.43–92.03)	0.0464	0.1302	1.0000
... Regardless of any perceived potential negative consequences (i.e., police- or university-related repercussions) for me	75.1 (71.72–78.21)	78.1 (74.83–81.12)	82.6 (79.61–85.35)	0.8099	1.0000	1.0000
I feel obligated to respond if I were to find someone down	90.2 (87.81–92.30)	87.7 (85.05–90.05)	91.6 (89.32–93.56)	0.2836	0.002	0.0567

P values calculated via McNemar's Exact test and restricted to respondents who answered both questions.

Table 3. Undergraduate students agreement with emergency onlooker response questions stratified by student activities

	Overall <i>n</i> (%)	No Student Activities <i>n</i> (%)	At Least 1 Student Activity <i>n</i> (%)	<i>P</i> value	Non- Athlete <i>n</i> (%)	Athletic involvement <i>n</i> (%)	<i>p</i> -value	No Greek life involvement <i>n</i> (%)	Greek life involvement <i>n</i> (%)	<i>p</i> -value	No Interest in Healthcare Career <i>n</i> (%)	Interest in Healthcare Career <i>n</i> (%)	Unsure <i>n</i> (%)	<i>p</i> -value
	757 (100%)	270 (35.7%)	487 (64.3%)		716 (94.6%)	41 (5.4%)		629 (83.1%)	128 (16.9%)		574	297	93	
Scenario 1: A student found down at a large (200+) person party														
... In whatever capacity I may be needed	515 (90.4%)	183 (87.1%)	332 (92.2%)	0.0478	486 (90.0%)	29 (96.7%)	0.2291	435 (89.3%)	80 (96.4%)	0.0441	373 (90.8%)	216 (92.3%)	66 (86.8%)	0.3557
... Only if my primary responsibility is calling emergency medical services	378 (66.8%)	130 (62.5%)	248 (69.3%)	0.0993	357 (66.6%)	21 (70.0%)	0.7010	315 (65.2%)	63 (75.9%)	0.0564	273 (67.1%)	153 (65.7%)	52 (68.4%)	0.8877
... Regardless of any perceived potential negative police-related consequences (i.e., misdemeanor) for the student	498 (88.1%)	176 (85.0%)	322 (89.9%)	0.0816	470 (87.9%)	28 (93.3%)	0.3665	422 (87.4%)	76 (92.7%)	0.1693	351 (86.0%)	215 (91.1%)	63 (86.3%)	0.1556
... Regardless of any perceived potential negative financially related consequences (i.e., ambulance or hospital costs) for the student	484 (85.7%)	173 (84.0%)	311 (86.6%)	0.3876	457 (85.3%)	27 (93.1%)	0.2409	413 (85.7%)	71 (85.5%)	0.9727	339 (83.3%)	212 (90.2%)	61 (84.7%)	0.0528
... Regardless of any perceived potential negative university related consequences (i.e., suspension, scholarship loss, etc.) for the student	461 (82.5%)	168 (80.8%)	293 (83.5%)	0.4164	439 (82.7%)	22 (78.6%)	0.5782	392 (82.4%)	69 (83.1%)	0.8633	333 (82.0%)	195 (84.8%)	59 (79.7%)	0.5269
... Regardless of any perceived potential negative consequences (i.e., police- or university-related repercussions) for me	424 (75.7%)	154 (74.4%)	270 (76.5%)	0.5778	404 (75.9%)	20 (71.4%)	0.5877	358 (74.7%)	66 (81.5%)	0.1910	299 (74.4%)	177 (76.3%)	57 (76.0%)	0.8525
I feel obligated to respond if I were to find someone down	509 (90.3%)	182 (87.9%)	327 (91.6%)	0.1567	482 (90.1%)	27 (93.1%)	0.5949	429 (89.0%)	80 (97.6%)	0.0158	364 (89.9%)	217 (92.7%)	65 (85.5%)	0.1609
Scenario 2: A pledge (new member) collapses at a fraternity/sorority initiation event														
... In whatever capacity I may be needed	504 (91.1%)	183 (90.2%)	321 (91.7%)	0.5325	480 (91.4%)	24 (85.7%)	0.3003	428 (90.5%)	76 (95.0%)	0.1893	357 (89.7%)	216 (93.9%)	62 (83.8%)	0.0266
... Only if my primary responsibility is calling emergency medical services	428 (78.0%)	149 (74.1%)	279 (80.2%)	0.1002	402 (77.3%)	26 (90.0%)	0.1188	360 (76.8%)	68 (85.0%)	0.1006	308 (77.8%)	183 (80.6%)	55 (74.3%)	0.4800
... Regardless of any perceived potential negative police-related consequences (i.e., misdemeanor) for the student	481 (87.8%)	177 (88.5%)	304 (87.4%)	0.6943	457 (88.1%)	24 (82.8%)	0.3973	407 (87.0%)	74 (92.5%)	0.1630	348 (87.4%)	206 (90.4%)	58 (81.7%)	0.1420
... Regardless of any perceived potential negative financially related consequences (i.e., ambulance or hospital costs) for the student	468 (85.9%)	171 (85.9%)	297 (85.8%)	0.9765	448 (86.5%)	20 (74.1%)	0.0713	396 (85.2%)	72 (90.0%)	0.2515	337 (85.3%)	202 (88.6%)	54 (76.1%)	0.0326

(Continued)

Table 3. (Continued)

	Overall n (%)	No Student Activities n (%)	At Least 1 Student Activity n (%)	P value	Non- Athlete n (%)	Athletic involvement n (%)	p-value	No Greek life involvement n (%)	Greek life involvement n (%)	p-value	No Interest in Healthcare Career n (%)	Interest in Healthcare Career n (%)	Unsure n (%)	p-value
... Regardless of any perceived potential negative university related consequences (i.e., suspension, scholarship loss, etc.) for the student	473 (86.3%)	170 (85.0%)	303 (87.1%)	0.4979	450 (86.5%)	23 (82.1%)	0.5101	401 (85.7%)	72 (90.0%)	0.2997	337 (85.1%)	202 (88.2%)	55 (76.4%)	0.0478
... Regardless of any perceived potential negative consequences (i.e., police- or university-related repercussions) for me	429 (78.6%)	155 (77.5%)	274 (79.2%)	0.6430	409 (79.0%)	20 (71.4%)	0.3447	361 (77.5%)	68 (85.0%)	0.1297	301 (76.6%)	187 (82.4%)	54 (74.0%)	0.1585
I feel obligated to respond if I were to find someone down	484 (88.0%)	175 (86.6%)	309 (88.8%)	0.4529	459 (88.1%)	25 (86.2%)	0.7603	409 (87.0%)	75 (93.8%)	0.0872	341 (86.3%)	211 (91.7%)	62 (83.8%)	0.0724
Scenario 3: A community member found down at a grocery store														
... In whatever capacity I may be needed	528 (94.5%)	196 (94.7%)	332 (94.3%)	0.8546	501 (94.2%)	27 (100.0%)	0.1972	451 (94.4%)	77 (95.1%)	0.7964	375 (94.0%)	221 (94.4%)	69 (92.0%)	0.7410
... Only if my primary responsibility is calling emergency medical services	457 (82.3%)	165 (80.5%)	292 (83.4%)	0.3810	432 (82.0%)	25 (89.3%)	0.3232	382 (80.6%)	75 (92.6%)	0.0089	334 (83.9%)	192 (83.1%)	60 (81.1%)	0.8285
... Regardless of any perceived potential negative police-related consequences (i.e., misdemeanor) for the student	504 (90.8%)	185 (90.7%)	319 (90.9%)	0.9383	478 (90.7%)	26 (92.9%)	0.7007	429 (90.5%)	75 (92.6%)	0.5484	367 (91.5%)	208 (90.4%)	61 (87.1%)	0.4988
... Regardless of any perceived potential negative financially related consequences (i.e., ambulance or hospital costs) for the student	502 (90.6%)	186 (91.2%)	316 (90.3%)	0.7290	477 (90.5%)	25 (92.6%)	0.7180	427 (90.3%)	75 (92.6%)	0.5091	364 (90.8%)	211 (91.0%)	60 (87.0%)	0.5801
... Regardless of any perceived potential negative university related consequences (i.e., suspension, scholarship loss, etc.) for the student	499 (90.1%)	180 (88.7%)	319 (90.9%)	0.4017	475 (90.1%)	24 (88.9%)	0.8332	426 (90.1%)	73 (90.1%)	0.9867	358 (89.5%)	213 (92.2%)	61 (85.9%)	0.2618
... Regardless of any perceived potential negative consequences (i.e., police- or university-related repercussions) for me	461 (83.1%)	171 (83.4%)	290 (82.9%)	0.8659	439 (83.1%)	22 (81.5%)	0.8224	387 (81.7%)	74 (91.4%)	0.0314	328 (82.6%)	196 (84.9%)	56 (76.7%)	0.2757
I feel obligated to respond if I were to find someone down	508 (91.5%)	188 (92.2%)	320 (91.2%)	0.6869	481 (91.3%)	27 (96.4%)	0.3399	432 (91.0%)	76 (95.0%)	0.2288	365 (91.7%)	215 (92.8%)	65 (89.0%)	0.6163

Table 4. Willingness to respond by perceived threat and self-efficacy for undergraduate students in various scenarios

Willingness to respond	Effect	Scenario 1	Scenario 2	Scenario 3
		A student found down at a large (200+) person party	A new member collapses at a fraternity/sorority initiation event	A community member found down at a grocery store
		OR (95% CI)	OR (95% CI)	OR (95% CI)
In Whatever Capacity I May Be Needed	HE vs LE	29.7 (7.2, 122.7)	66.6 (9.18, 483.7)	19.4 (4.65, 81.18)
	HT vs LT	8.0 (2.85, 22.21)	8.5 (3.8, 18.90)	21.1 (5.05, 88.06)
	LT/HE vs LT/LE	15.3 (4.22, 55.34)	56.4 (3.41, 933.6)	6.2 (1.68, 23.14)
	HT/LE vs LT/LE	3.9 (1.41, 10.48)	4.3 (1.82, 9.98)	7.1 (1.93, 26.39)
	HT/HE vs LT/LE	70.9 (4.31, 1167)	41.7 (8.12, 214.3)	79.1 (4.80, 1304)
Only If My Primary Responsibility Is Calling Emergency Medical Services	HE vs LE	1.0 (0.70, 1.32)	1.4 (0.96, 2.01)	1.3 (0.85, 1.94)
	HT vs LT	1.3 (0.93, 1.85)	1.6 (1.11, 2.34)	1.6 (1.06, 2.45)
	LT/HE vs LT/LE	1.0 (0.66, 1.47)	1.3 (0.75, 2.27)	1.3 (0.69, 2.43)
	HT/LE vs LT/LE	1.6 (0.94, 2.88)	1.7 (0.95, 2.96)	2.0 (0.99, 3.82)
	HT/HE vs LT/LE	1.2 (0.77, 1.77)	1.8 (1.13, 2.75)	1.6 (0.99, 2.66)
Regardless Of Any Perceived Potential Negative Police-Related Consequences for The Student	HE vs LE	11.6 (5.27, 25.64)	9.0 (4.44, 18.41)	6.7 (3.12, 14.26)
	HT vs LT	4.7 (2.33, 9.67)	4.2 (2.39, 7.30)	5.6 (2.80, 11.28)
	LT/HE vs LT/LE	8.3 (3.5, 19.54)	10.7 (3.28, 35.06)	21.8 (2.97, 160.4)
	HT/LE vs LT/LE	2.7 (1.24, 5.9)	2.8 (1.42, 5.64)	8.4 (2.56, 27.63)
	HT/HE vs LT/LE	46.6 (6.4, 339.3)	12.0 (5.05, 28.26)	7.7 (3.41, 17.38)
Regardless Of Any Perceived Potential Negative Financially Related Consequences for The Student	HE vs LE	4.8 (2.79, 8.14)	7.5 (4.1, 13.8)	6.3 (3.06, 12.97)
	HT vs LT	2.6 (1.49, 4.37)	3.6 (2.19, 5.90)	5.5 (2.80, 10.62)
	LT/HE vs LT/LE	4.6 (2.35, 8.95)	6.0 (2.51, 14.36)	11.3 (2.69, 47.29)
	HT/LE vs LT/LE	2.0 (0.99, 3.95)	2.1 (1.16, 3.85)	6.5 (2.30, 18.56)
	HT/HE vs LT/LE	6.7 (2.98, 14.91)	11.7 (5.26, 26.19)	8.1 (3.59, 18.21)
Regardless Of Any Perceived Potential Negative University Related Consequences for The Student	HE vs LE	5.0 (3.06, 8.18)	4.8 (2.86, 8.18)	4.1 (2.18, 7.63)
	HT vs LT	3.0 (1.78, 4.93)	3.2 (1.97, 5.09)	3.7 (2.05, 6.77)
	LT/HE vs LT/LE	4.7 (2.56, 8.55)	4.3 (1.96, 9.22)	6.8 (2.06, 22.39)
	HT/LE vs LT/LE	2.3 (1.19, 4.49)	2.2 (1.19, 4.05)	4.7 (1.83, 12.25)
	HT/HE vs LT/LE	7.8 (3.65, 16.53)	7.1 (3.62, 13.77)	5.1 (2.53, 10.40)
Regardless Of Any Perceived Potential Negative Consequences for Me	HE vs LE	3.3 (2.27, 4.92)	3.8 (2.53, 5.82)	3.1 (1.95, 4.76)
	HT vs LT	2.1 (1.41, 3.18)	2.4 (1.64, 3.56)	3.2 (2.05, 4.98)
	LT/HE vs LT/LE	3.8 (2.32, 6.31)	3.7 (1.93, 6.93)	2.4 (1.27, 4.62)
	HT/LE vs LT/LE	2.2 (1.23, 3.98)	1.8 (1.04, 2.94)	2.6 (1.40, 4.88)
	HT/HE vs LT/LE	4.0 (2.34, 6.74)	5.0 (2.97, 8.27)	4.9 (2.81, 8.68)
I Feel Obligated to Respond If I Were to Find Someone Down	HE vs LE	15.4 (5.54, 43.00)	14.1 (6.03, 32.83)	12.5 (4.47, 35.13)
	HT vs LT	8.7 (3.13, 24.28)	4.1 (2.33, 7.11)	10.7 (4.19, 27.13)
	LT/HE vs LT/LE	13.4 (4.13, 43.55)	7.5 (2.66, 21.37)	6.4 (1.94, 21.20)
	HT/LE vs LT/LE	6.3 (1.90, 20.54)	1.9 (1.01, 3.50)	5.5 (1.93, 15.76)
	HT/HE vs LT/LE	37.7 (5.17, 275.2)	34.6 (8.34, 143.40)	49.3 (6.74, 361)

HE = High Efficacy; LE = Low Efficacy; HT = High Threat; LT = Low Threat; OR = Odds Ratio; CI = Confidence Interval.

Table 5. Non-response bias analysis assessing demographic characteristics of those who responded to the survey versus all full-time undergraduate students, fall 2019

Characteristic	Responded (%)	WVU Campus (%)	Standardized difference (%)
Sex			
Female	65.7	49.9	32.4
Age			
17–18	25.1	20.0	12.3
19	18.9	20.8	−4.7
20	19.4	19.4	−0.09
21	16.2	18.7	−6.6
22	7.1	10.7	−12.7
23+	13.3	10.4	9.0
Grade year			
Freshman	31.6	31.6	0.08
Sophomore	25.5	21.9	8.3
Junior	23.4	20.2	7.8
Senior	19.5	26.3	−16.2

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