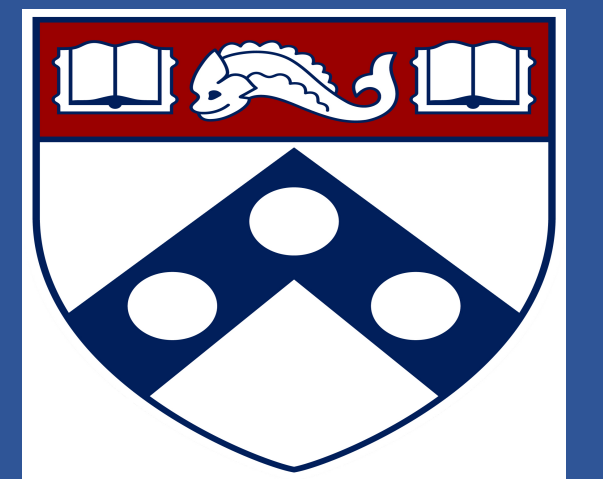


Sources of Distress and Stress Among Undergraduate Computer Science Students



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Abstract

An increasing number of undergraduate students are demonstrating issues with their mental health, particularly anxiety and depression. The American College Health Association found a significant increase in psychological problems on college campuses in recent years, including 28.4% of students reporting being so depressed that it was difficult to function. Other researchers have shown that computer science undergraduate students demonstrate higher levels of anxiety and depression than students pursuing other subjects. This project seeks to get an understanding of the causes of computer science student stress and distress, and to identify ways computer science instructors can address those causes. To investigate these topics, we conducted a study on a large, private R1 university in which we analyzed survey responses from 213 students in an undergraduate software engineering course, and interviewed 15 computer science students and 8 computer science instructors. Our investigation revealed that undergraduate students experience distress based on the frequency of problem sets, a competitive job market, and competition against classmates in the classroom, among other factors. Students in our study expressed a desire to collaborate more in the classroom as a way of reducing stress, and the faculty interviewees found many benefits of increasing collaboration, but have a few concerns that must be addressed first.

Introduction

Student mental health is becoming a more prevalent concern as an increasing number of students experience symptoms of a mental health issue during their undergraduate college career. A study conducted with 6,000 full time, undergraduate students determined that physical health, mental health, and academic performance, including lower GPA, less physical activity, poorer physical health, and higher levels of depressive symptoms were all causes that led to 63.6% of the respondents experiencing moderate or severe levels of perceived stress.

Recent research has proven that mental health service utilization, rates of treatment, and rates of diagnosed mental health conditions have increased for college students, indicating that the problem is getting worse. A particular study conducted with a large, national undergraduate sample demonstrated an increased burden on campus counseling centers. A study conducted by the college counseling center of directors discovered that 96% of college counseling center directors believed the number of students with significant psychological problems was a growing concern on their campus.

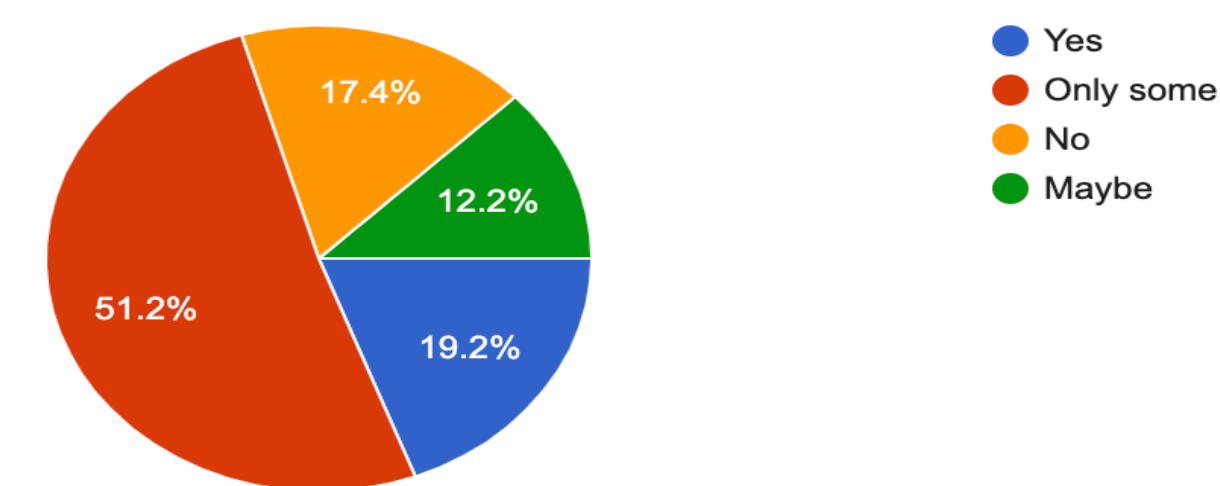
Previous work has shown that Computer Science students are more likely to exhibit symptoms of mental health issues than students in other disciplines.

Survey

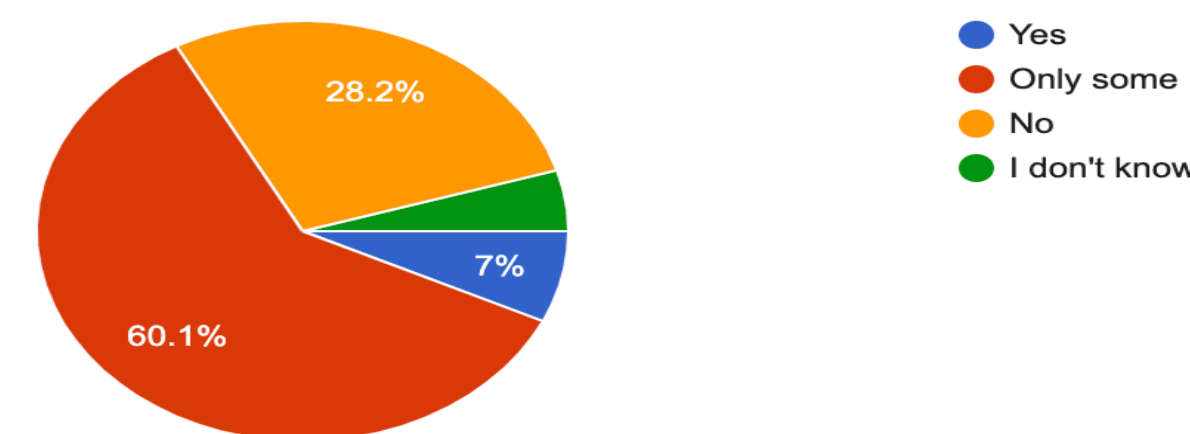
A total of 213 students completed the survey, which included the question 'What are potential sources of your distress and wellbeing?' and suggested that students consider eight domains of wellness: physical, emotional, social, intellectual, environmental, financial, occupational, and spiritual.

Overall, it is apparent that the intellectual domain is perhaps the domain which students feel the most distress from. Second to this is the emotional domain, as many students expressed that positive relationships are not fostered with their classmates further exemplifying anxieties in the classroom. Finally, the third most common domain of distress is the social domain, as many students commented on a fear of missing out on the social life of the institution, due to the immense workload.

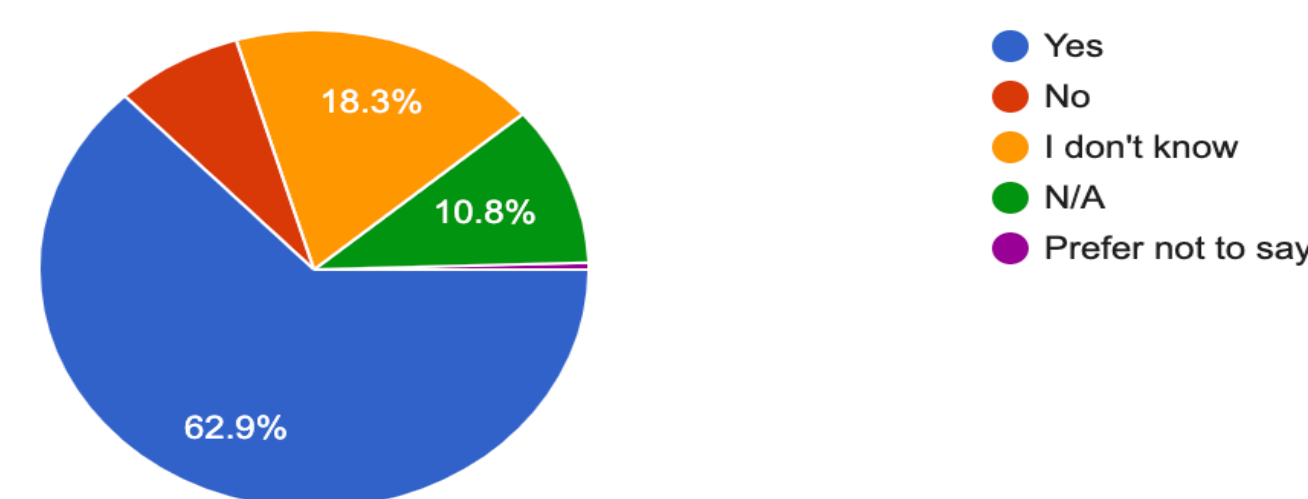
Do you feel that your professors take mental health as seriously as physical health?
213 responses



Do/would you feel comfortable discussing a mental health disorder with all of your professors?
213 responses



Do you believe your productivity/success has ever been affected by a mental health issue?
213 responses



Student Interviews

We interviewed fifteen undergraduate students from the target institution to determine their feelings about wellness and distress as computer science students. The students were either juniors or seniors who had completed the software engineering course. The interview consisted of thirteen questions developed to have students elaborate on their experiences in the computer science field, as well as the changes they hoped to see in the department.

The most significant finding of the interview was that most interviewees stated they believe the lack of opportunities to collaborate in their computer science classes causes some of their distress. In many computer science classes, students are required to work alone to prevent cheating. However, in classes with group projects and/or collaboration partners, students felt more supported since they could discuss their ideas, thoughts, and processes with classmates. Additionally, the students felt less lonely when working with others because it develops an engaging environment where people are more prone to speak to others and continue those conversations outside of the classroom.

Faculty Interviews

The interviewed professors teach introductory level courses and volunteered their time to share their thoughts. The interviews lasted about 20 minutes and were conducted on Zoom. The professors were asked a set of four questions with the opportunity for follow up questioning. The questions sought information about the opportunities for collaboration in their classes, student feedback on their collaboration opportunities, professors' willingness to expand their collaboration opportunities, and concerns about relaxing their anti-collaboration policies.

The instructors suggested incorporating more collaboration into their recitation sections since it is a smaller environment and the students are graded on attendance. In recitation sections, the benefits of collaboration are so desirable for both the professors and the students that it is a worthwhile adjustment to the structure. The recitation section collaboration would allow students to work together without stressing over grades and finding times to meet, while also giving students the ability to create a community in their classrooms. The increase in collaboration in the computer science departments should improve student wellbeing while maintaining academic rigor in the classroom.

Conclusions

This research project determined significant data and ways to address computer science student distress. Future work should include data from more universities and compare distress levels of students who can collaborate with the distress levels of students who cannot collaborate.

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