White, S. W., Ollendrick, T. H., Bray, B. C. (2011). College students on the autism spectrum: Prevalence and associated problems. *Sage Publications and the National Autistic Society, 15*(6), 683-701.

Annotated by Michael Hong, Kara Smith - 11/29/2016

ABSTRACT "As more young people are identified with autism spectrum diagnoses without co-occurring intellectual disability (i.e. high functioning autism spectrum disorder; HFASD), it is imperative that we begin to study the needs of this population. We sought to gain a preliminary estimate of the scope of the problem and to examine psychiatric risks associated HFASD symptoms in university students. In a large sample (n = 667), we examined prevalence of ASD in students at a single university both diagnostically and dimensionally, and surveyed students on other behavioral and psychiatric problems. Dependent upon the ascertainment method, between .7 per cent and 1.9 per cent of college students could meet criteria for HFASD. Of special interest, none of the students who were found to meet diagnostic criteria (n = 5) formally for HFASD in this study had been previously diagnosed. From a dimensional perspective, those students scoring above the clinical threshold for symptoms of autism (n = 13) self-reported more problems with social anxiety than a matched comparison group of students with lower autism severity scores. In addition, symptoms of HFASD were significantly correlated with symptoms of social anxiety, as well as depression and aggression. Findings demonstrate the importance of screening for autism-related impairment among university students." (p.683)

SUMMARY

Purpose of Study

This study had a two-fold purpose:

1. To attain an estimate of prevalence of HFASD among college students
2. And to identify behavior and psychiatric problems associated with symptoms of HFASD
   a. Such symptoms include social anxiety, psychiatric comorbidity, and aggression.

The hypothesis of this study was that students that exhibited more symptoms of HFASD would report higher levels of comorbidity, specifically comorbid with social anxiety and that they would show more symptoms of depression and aggression in comparison to students who exhibited less symptoms of HFASD

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Framework

Individuals diagnosed with HFASD face challenges during their transition into college. This transition could include negative implications towards their academic performance mediated by an inability to independently navigate barriers to remain enrolled, adjust to shared living arrangements, and introduction to a new environment that may be less structured and supervised than what they have been previously accustomed to.

Population and Sample

- The sample was drawn from undergraduate students attending a large, public university in the Southeastern United States.
- The selected university was an engineering-technology oriented institution.
- The original sample contained 685 students enrolled in the study. Students were recruited through a campus-wide database and had the potential of earning class credit. The participants completed the Autism Spectrum Quotient (AQ) data, and out of the 685 students, 667 students met the criterion for sufficient data and became the sample of participants in the study. The AQ scores participants based on a series of items (higher scores suggest more symptoms of ASD), and a score of 32 or higher was used as the optimal cutoff for identifying clinical autism traits.
- All 667 participants were included in the Phase I study, but only those who met an
- AQ cutoff score of 32 or above advanced on to Phase II. The cutoff of 32 implies that these students exhibited clinical autism traits. Students who met or exceeded this cutoff were considered the "high-AQ" group, and those who were below the cutoff were deemed the "low-AQ" group. These two groups served as the comparison groups from which the analysis focused on.

Overview of Methods

- Recruitment was campus-wide, utilizing an electronic departmental (psychology) experimental database. The measures were primarily questionnaires and inventories.
- A demographic information questionnaire surveyed Phase I students on their class standing, grade point average, mental health services, and satisfaction with their college experience.

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- The Autism Spectrum Quotient sums up the item scores to achieve a total score; the optimal cutoff of 32 or above is used to identify those with clinically significant traits of autism (or in this case, students that qualify for Phase II).
- The Social Responsiveness Scale-Brief Format Adult Self-Report Form (SRS-BA-SR) was used as a secondary measure for both the symptoms of ASD and the convergent validity of the AQ.
- The Buss and Perry Aggression Questionnaire, Social Phobia and Anxiety Inventory, and the Patient Health Questionnaire respectively measured aggression, social phobia, and depression
- The Early Development Questionnaire was used for the Phase II interview and asked students to self-assess the degree to which they have experienced specific symptoms of ASD.

Variables or Broad Topics

Overall, the independent variable is the AQ group, and the dependent variables are prior victimization, self-harm, and satisfaction.

Findings/Results
- There was no significant difference in AQ total score between males and females. Thirteen students scored above the AQ cutoff in Phase I. There was a significant group difference in GPA. Eight of the high-AQ students reported a GPA of 3.5 or higher, compared to only three of the low-AQ students. Of the 13 'high AQ' participants invited to participate in Phase II diagnostic evaluations, 8 participated. Five of the 8 high-AQ participants were determined to meet diagnostic criteria for HFASD.
- None of the 8 students to complete Phase II, including the 5 who met diagnostic criteria in this study, had previously received HFASD diagnoses. The majority of the screen positives were engineering or computer science majors, whereas 28 per cent of the remainder of the sample were engineering or computer science majors. Of the remaining 6 high-AQ individuals, 5 were physical science majors and one was a social science major.
- Students reporting more symptoms of ASD also reported more social anxiety and depression as well as anger/aggression. Comparing the 13 students with high AQ scores to the matched low-AQ comparison group on social anxiety, depression, and aggression, few significant group differences emerged.

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- 4 high-AQ students reported either affirmatively or that they would prefer not to answer the question, 'Do you ever think about hurting yourself or ending your life?' whereas only 2 low-AQ students reported as such.
- Significant differences emerged between the low-AQ and high-AQ groups with respect to self-reported satisfaction with their college experience. There was also a significant difference in reported satisfaction with life overall. Ten of the low-AQ students reported being either somewhat or very satisfied with their lives, whereas only 4 of the high-AQ students reported similar life satisfaction.

Implications

a. As more children are identified as having HFASD, there is arguably an ethical commitment to further understand the needs of college students with HFASD. University faculty and staff who serve students with disabilities should seek approaches that allows these students to succeed in college. Therefore, the author(s) discussed personal coaching prior to the student's first semester to facilitate organization and planning for college.

b. On a broader level, the clinical implications of this research suggest that diagnostic screening for college-aged students requires non-traditional diagnostic indices to measure comorbid social anxiety in students with HFASD as much as it requires the consideration of ASD diagnosis on a continuum.

CRITIQUES & LIMITATIONS

Conceptual

The author(s) mentioned the following:

- College students with HFASD are likely to be quite socially isolated and may experience considerable loneliness, as well as victimization (e.g. hostile aggression, rejection), due to their socially unskilled behaviors and unusual, sometimes odd or eccentric, behaviors and interests.
- These symptoms and issues may be coexistent with other disorders aside from HFSAD. Therefore, social isolation should be recognized as not only a unique behavior to HFASD.

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Data

The author(s) included a primarily Caucasian sample and the drawing of students from a single university. This limits the generalizability to other race/ethnicity and students at institutions other than engineering and technology institutions.

Because the authors acknowledge that the study took place in a university with strong engineering and computer science programs, the findings of the research may not be representative to colleges nation-wide, as there are also liberal-arts schools and school with specializations in other areas. The differences of focus in the academic programs may yield highly different results.

Analysis

Because this study measured characteristics of the college students at a specific moment in time - rather than longitudinally - the findings may be influenced by any stressful life events. This might have skewed the results of the study, therefore, begging the question of whether or not the results can be generalized to the population.

Interpretation

"Clearly, there is considerable variability when trying to estimate prevalence of HFASD among college students, based to some degree on how cases are ascertained and on how caseness is defined." (p. 695)

The author concedes the limited interpretation of research on HFASD prevalence at the college setting, due to the differences on how well the case can be applied to.

Application

The limitations to the application of this research reflect the limitations of the data sample. Having a primarily Caucasian sample deters the ability of this research to apply to even the United States as the proportion of Caucasians in this sample is higher than that of the U.S. Therefore, the entire U.S. population is not Caucasian so the results of this study cannot be generalized to the U.S. population since other ethnicities are not represented.

FOLLOW-UP

Little Questions

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i. How did using multiple measures help with the study?
ii. At what point in their college years did students tend to drop out?
iii. What other academic factors could be correlated with a high AQ score?
iv. Would these results be different if the study was conducted in a university with different emphases and/or locations? How so?

Big Questions

i. What are the non-clinical implications of not screening individuals who are at risk of being high on the autism spectrum?
ii. Are there life events going on within an individual's life that could have triggered individuals to exhibit behaviors mistaken for HFASD when screened (such as social isolation, loneliness, and eccentric behaviors)? Is there a need to increase the number of screenings over a long period of time for individuals who initially score high on the AQ in order to determine their status on the autism spectrum?

Next Steps

i. The next steps may include intervention programs early on (e.g. in high school) where HFASD students are identified and appropriately prepared for college life. Standardizing the current knowledge based on research such as this paper into psychiatry residency training may be optimal for better diagnoses in students with HFASD.
ii. It would also be important to study the prevalence of HFASD of females within male-dominated fields of study (maths, sciences, etc.) to understand if there is a link between being drawn to male-dominated fields and the broader autism phenotype in both genders.

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