2026 ASEE ANNUAL CONFERENCE June 21–24, 2026 | Charlotte Convention Center, NC
Host Sponsor UNC Charlotte
Paper ID #51338

Work in progress - Engineering, Neurodivergence, and Disclosure: A Systematic Scoping Literature Review

Mr. Carter Huber, The Ohio State University

Carter Huber is a Disability Services Access Specialist Embedded within the College of Engineering at The Ohio State University. He is also an Engineering Education PhD student and a Mechanical Engineering master's student at OSU. His current research focuses on the narratives of neurodivergent engineering students and the professional development of engineering educators.

Tabo Lumba Mkandawire, The Ohio State University
Jordan Peyton, Ohio State University

Jordan Peyton [] is a Ph.D. student and Graduate Research Assistant in the CHARGE Research Group led by Dr. Mayra Artiles. Their research examines engineering Research Experiences for Undergraduates (REUs), undergraduate-to-graduate pathways, and equity-oriented data disaggregation within the Asian American, Native Hawaiian, and Pacific Islander (AANHPI) umbrella. Drawing on professional experience across K-12 education, higher education, corporate DEI, and APIDA nonprofit organizations, Jordan's work centers on understanding how educational structures and support systems shape students' agency and access in engineering education.

Amy Kramer, The Ohio State University

Dr. Amy Kramer is an Assistant Professor of Practice at The Ohio State University. She received her Ph.D. in engineering education from The Ohio State University. She has prior academic and professional experience in civil engineering, having worked professionally as a structural engineer. Her research interests include engineering epistemology, identity, beliefs, and equity and inclusion in engineering.

STEM, Neurodivergence, and Disclosure: A Systematic Scooping Literature Review

Introduction

This Work in-progress paper describes preliminary findings from a systematic scoping literature review conducted to examine the landscape and gaps in the literature surrounding neurodivergent engineering student disclosure to educators and staff. While there is a growing emphasis on developing inclusive and supportive learning environments, little is known about the unique factors or environments which encourage healthy disclosure in engineering programs.

Recent engineering education studies focused on disability-related experiences have highlighted engineering environments as hostile to individuals with a disability (e.g., [1], [2], [3], [4]). Engineering education has been called upon to examine the social and cultural barriers which inhibit individuals with disabilities from fully participating within the field [1]. One such barrier lies at the heart of the accommodation process. The Americans with Disabilities Act and similar governing laws in higher education, require students to self-advocate and disclose a disability to receive relevant support and accommodations [5]. However, one sample reported by the U.S. Department of Education Statistics showed that over 60% of students that identify as having a disability, choose not to disclose to their institution of higher education [6].

Student perceptions of stigma contribute to individual decisions of whether one should disclose. Goffman likened the concept of disability identity to that of involuntary social deviance from the norm [7]. This deviance yields a negative "mark" known as stigma, that can be seen as a relationship between a socially perceived negative attribute and a stereotype [7], [8]. To manage the negative emotional and psychological states associated with stigma, an individual may opt to socially mask [7], [8]. This typically includes a form of suppression of one's needs, traits, or perspectives, and performing social norms to appear normal (e.g. [9]).

Interactions with faculty and staff have shown to influence the stigma surrounding disability and disclosure. Negative faculty reactions to disclosure have been linked to student reluctance to advocate for themselves and student perceptions of being labeled as incapable [10], [11]. Within engineering, repeated refusals from faculty have been linked to student reluctance to request accommodations in later semesters [12]. However, relational framing has shown the potential to improve student experiences with disability-related stigma. In their 2022 study, Zengaro et al. [13] found that students were more likely to disclose to an instructor based on perceived intimacy, trust, and reciprocity in the student-faculty relationship. Disability studies scholars have applied a framing of interdependence to reimagine student development theory [14], and to provide practical applications to foster disclosure [15].

One group of students with disabilities who have shown to be significantly impacted by stigma are neurodivergent students – or those who have "a mind that functions in ways which diverge significantly from the dominant societal standards of 'normal'" [16]. Individuals with invisible disabilities (such as neurodivergence) are commonly questioned about the necessity of their accommodation by faculty members [12], [17]. Based on these and other factors, neurodivergent students have shown a tendency to continuously mask. This tendency has also been observed in recent studies in engineering education (e.g., [5], [6]). Within neurodivergent

populations, masking has been directly linked with negative mental and physical health outcomes [19], [20], [21], [22].

While experiences with stigma and disclosure have been explored, previous findings have been isolated to faculty members, rather than to additional support staff such as advisors or graduate teaching associates. Furthermore, although some research alludes to disciplinary context, there remains limited clarity on how engineering-specific norms, including deeply embedded beliefs about smartness [23], shape disclosure experiences. To better understand what is currently known about these dynamics within engineering settings, this study uses a systematic scoping review to synthesize existing research on how engineering students disclose neurodivergence to faculty and staff. Specifically, we focus on the following research question:

> *What is known about individual disclosure of neurodivergence to educators and staff in Engineering Education?*

Methods

We conducted a systematic scoping review following the methodology outlined by Peters et al. [24] to examine what is known about neurodivergent engineering student disclosure to educators and staff. A scoping review was chosen for its broader scope and to assess the potential for a systematic review. This approach follows similar methods to traditional systematic reviews [24]. Our process, guided by the PRISMA protocol [25] is summarized in Figure #1.

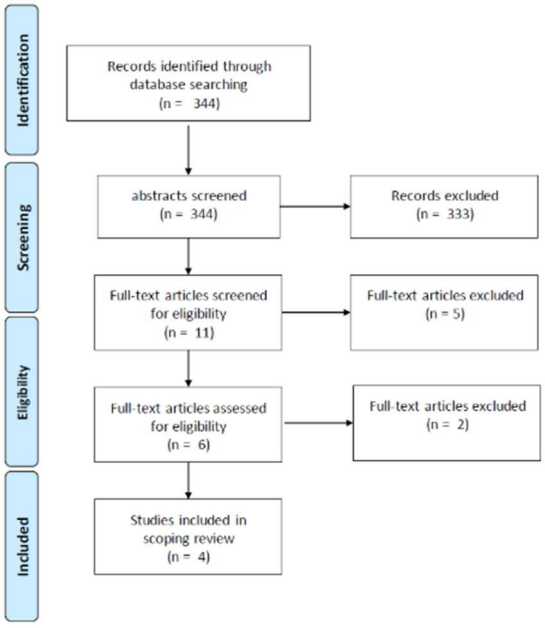

Figure 1: Flow Diagram. Adapted from the PRISMA 2009 Flow Diagram

Identification

We identified relevant papers in July 2025 to support the goals of our systematic scoping review. In consultation with a librarian, we selected the databases and developed the search string. We chose six databases (Scopus, ERIC, Education Research Complete, Education Full Text, Web of Science, and Academic Search Complete) to ensure broad coverage of indexed journals and conference proceedings across education and engineering. We then collectively developed the following search string for use in each database:

1. *(pass OR camouflag* OR come out OR coming out OR mask* OR unmask* OR disclos* OR accommodat* OR self-discl* OR self-identify OR reveal*)*
2. *AND (Neurodivergen* OR ND OR Neurodevelopmental OR learning disorder OR Neurominority OR Autis* OR ASD OR A.S.D. OR AuDHD OR ADHD or A.D.H.D. OR Dyslex* OR Dysprax* or Aphantasia OR Tourette OR epilep* OR neurotype)*
3. *AND (Teacher OR Instructor OR Staff OR Personnel OR Graduate Teaching Associate OR Graduate Teaching Assistant OR Faculty OR Advisor OR Lecturer)*
4. *AND (Engineer*)*
5. *AND (Higher Education OR College OR University OR Postsecondary OR post secondary OR post-secondary OR undergrad* OR grad*)*

We developed the search string to be comprehensive to ensure broad retrieval of literature related to 1) disclosure, 2) neurodivergence, 3) educational personnel and staff, and 4) engineering in the context of 5) higher education. We limited our search to English language documents only and only included peer reviewed articles, and conference papers. We did not put any limits on the search related to the publication dates. After removing duplicates, our search identified 344 papers.

Screening of abstracts

A team of researchers screened the 344 abstracts to determine if the papers met our criteria of focusing on disclosure of neurodivergence in the context of engineering higher education. We divided into two pairs for this stage of the review. Each team member evaluated our assigned abstracts and then met with a partner to compare decisions and resolve any discrepancies. When a pair was unable to reach an agreement, we consulted another member of the team. Throughout this process, we erred on the side of inclusion. In total, of the initial 344 abstracts, only 11 advanced to full text review.

Screening of full papers

We performed another round of screening with the full papers, but this time all four members of the research team reviewed the 11 papers. Reviewing the full texts allowed us to remove papers that ultimately did not focus on disclosure of neurodivergence in the context of engineering education but were not excluded earlier because 1) the abstract did not provide enough detail for a confident decision, or 2) although the abstract referenced terms related to disclosure, the full paper revealed that disclosure was not a part of the study. In total, our full-text screening process retained six of the 11 manuscripts.

Scoping of full papers

It was at this point in our scoping review that we finalized our inclusion criteria and begin the process of extracting and mapping the data [24]. The final inclusion criteria were:

- Inclusion: The article addressed neurodivergent students
- Inclusion: The article addressed some form of potential student disclosure or involvement that would imply a form of disclosure (e.g., student-faculty/staff disclosure, accommodations, community involvement/community connection)
- Inclusion: The article addressed engineering or STEM students
- Inclusion: The article addressed the higher education context

Three members of the research team reviewed the six articles that met the criteria. We followed the same procedure used during the abstract and initial fulltext screenings: individual review, comparison of decisions, and consultation with a third reviewer when discrepancies arose. This resulted in four articles being included in the final systematic scoping review.

Concurrently, we initiated the data extraction and mapping process [24] to address our research questions and assess the breadth of existing literature. We recorded key information from each article, including study population, institutional context, study purpose, methods, and results related to disclosure. We also maintained a section for additional comments to capture inductive insights that might inform subsequent analysis.

Qualifying Papers

In Table 1, we present the general characteristics of the qualifying papers.

Table 1. General characteristics of papers included in our review

Paper	Author	Date	Population	Source	Institutional Context	Research Approach
Harnessing the Strengths of Neurodiverse Students in Graduate STEM Fields: The Central Role of Advisor-Advisee Communication	Syharat, Hain, & Zaghi	2024	Graduate STEM Students	ASEE Annual Conference & Exposition	U.S. Northeastern R1 University	Qualitative
WIP: Comparison of Neurodivergent Student Prevalence in Engineering Across Two Institutions	Bolhari, Bielefeldt, & Dyer	2024	Undergraduate Engineering Students	IEEE Frontiers in Education	U.S. R1 University & Master's University	Quantitative
Burnout: The Cost of Masking Neurodiversity in Graduate STEM Programs	Syharat, et al.	2023	Graduate STEM Students	ASEE Annual Conference & Exposition	U.S. R1 University	Qualitative
Experiences of neurodivergent students in graduate STEM programs	Syharat, et al.	2023	Graduate STEM Students	Frontiers in Psychology	U.S. R1 University	Qualitative

Conclusions and Future Work

Because the final inclusion criteria yielded only four papers, we elected not to proceed with more extensive data mapping and analysis. We paused at this stage in part because the research question could be addressed: if the question is "W*hat is known about individual disclosure of neurodivergence to educators and staff in Engineering Education*?" Then the answer is that very little is known. This finding underscores a significant gap in engineering education literature related to neurodivergent student disclosure.

We present this as a Work-in-Progress paper because the limited number of engineering-specific studies identified in our scoping review highlights the need for continued exploration. Future research will expand the scope of the search, for example, by including broader STEM fields, related constructs (e.g., accommodation processes, belonging, and community), and broader forms of disability.

References

[1] E. A. Cech, "Engineering ableism: The exclusion and devaluation of engineering students and professionals with physical disabilities and chronic and mental illness," *J. Eng. Educ.*, vol. 112, no. 2, pp. 462–487, Apr. 2023, doi: 10.1002/jee.20522.

[2] R. A. Figard, "Disabled in Academe: Interrogating Ableism's Role in the Experiences of Disabled Students in Undergraduate Engineering Degree Programs," Doctoral dissertation, Arizona State University, 2024.

[3] C. McCall, A. Shew, D. R. Simmons, M. C. Paretti, and L. D. McNair, "Exploring student disability and professional identity: navigating sociocultural expectations in U.S. undergraduate civil engineering programs," *Australas. J. Eng. Educ.*, vol. 25, no. 1, pp. 79–89, Jan. 2020, doi: 10.1080/22054952.2020.1720434.

[4] C. Zongrone, C. McCall, M. Paretti, A. Shew, D. Simmons, and L. McNair, "'I'm Looking at You, You're a Perfectly Good Person …': Describing Non-Apparent Disability in Engineering," in *2021 CoNECD Proceedings*, Virtual - 1pm to 5pm Eastern Time Each Day: ASEE Conferences, Jan. 2021, p. 36059. doi: 10.18260/1-2--36059.

[5] J. W. Madaus and I. B. Kunkes, "The (Modern) History of Disability Services in Higher Education," *J. Postsecond. Educ. Disabil.*, vol. 36, no. 4, pp. 319–329, 2023.

[6] National Center for Education Statistics, "Use of Supports Among Students With Disabilities and Special Needs in College," Institute of Education Sciences, NCES 2022-071, 2022. [Online]. Available: https://nces.ed.gov/pubs2022/2022071.pdf

[7] E. Goffman, "Information Control and Personal Identity," in *Stigma: Notes on the Management of Spoiled Identity*, Englewood Cliffs, N.J.: Prentice-Hall, 1963, pp. 41–104.

[8] B. G. Link and J. C. Phelan, "Conceptualizing Stigma," *Annu. Rev. Sociol.*, vol. 27, no. 1, pp. 363–385, Aug. 2001, doi: 10.1146/annurev.soc.27.1.363.

[9] K. Kritika, R. M. Williams, and K. E. Ringland, "'Ultimately, it's a matter of safety, and resisting ostracization': Understanding Neurodivergent Masking with Online Communities," in *Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems*, Yokohama Japan: ACM, Apr. 2025, pp. 1–14. doi: 10.1145/3706598.3714094.

[10] Y. Bolourian, S. M. Zeedyk, and J. Blacher, "Autism and the University Experience: Narratives from Students with Neurodevelopmental Disorders," *J. Autism Dev. Disord.*, vol. 48, no. 10, pp. 3330–3343, Oct. 2018, doi: 10.1007/s10803-018-3599-5.

[11] S. Grimes, E. Southgate, J. Scevak, and R. Buchanan, "University Student Experiences of Disability and the Influence of Stigma on Institutional Non-Disclosure and Learning".

[12] R. Figard, S. Brunhaver, and J. Bekki, "'It is So Exhausting to Constantly Have to Explain to People': Exploring the Effects of Faculty Interactions on Disabled Students," in *2023 ASEE Annual Conference & Exposition Proceedings*, Baltimore , Maryland: ASEE Conferences, Jun. 2023, p. 42321. doi: 10.18260/1-2--42321.

[13] E. Zengaro, H. J. Carmack, N. Buzzelli, and N. A. Towery, "Disclosure Catalysts in Student Disclosures of Personal Health Information to College Instructors," *Health Commun.*, vol. 37, no. 1, pp. 55–63, Jan. 2022, doi: 10.1080/10410236.2020.1816310.

[14] E. S. Abes and M. M. Wallace, "Using Crip Theory to Reimagine Student Development Theory as Disability Justice," *J. Coll. Stud. Dev.*, vol. 61, no. 5, pp. 574–592, 2020, doi: 10.1353/csd.2020.0056.

[15] E. S. Abes and D. C. Darkow, “Using Crip Theory to Create Campus Cultures that Foster Students’ Disability Disclosure (Practice Brief),” *J. Postsecond. Educ. Disabil.*, vol. 33, no. 3, pp. 223–231, 2020.
[16] N. Walker, “Neurodiversity: Some basic terms & definitions,” Neuroqueer: The writings of Dr. Nick Walker. [Online]. Available: https://neuroqueer.com/neurodiversity-terms-and-definitions/
[17] A. Cuellar, B. Webster, S. Solanki, C. Spence, and M. Tsugawa, “Examination of Ableist Educational Systems and Structures that Limit Access to Engineering Education through Narratives,” in *2022 ASEE Annual Conference & Exposition Proceedings*, Minneapolis, MN: ASEE Conferences, Aug. 2022, p. 41800. doi: 10.18260/1-2--41800.
[18] B. E. Cox *et al.*, “College Experiences for Students With Autism Spectrum Disorder: Personal Identity, Public Disclosure, and Institutional Support,” *J. Coll. Stud. Dev.*, vol. 58, no. 1, pp. 71–87, 2017, doi: 10.1353/csd.2017.0004.
[19] W. Ai, W. A. Cunningham, and M.-C. Lai, “Camouflaging, internalized stigma, and mental health in the general population,” *Int. J. Soc. Psychiatry*, vol. 70, no. 7, pp. 1239–1253, Nov. 2024, doi: 10.1177/00207640241260020.
[20] L. Hull *et al.*, “Is social camouflaging associated with anxiety and depression in autistic adults?,” *Mol. Autism*, vol. 12, no. 1, p. 13, Feb. 2021, doi: 10.1186/s13229-021-00421-1.
[21] C. M. Syharat, A. Hain, A. E. Zaghi, R. Gabriel, and C. G. P. Berdanier, “Experiences of neurodivergent students in graduate STEM programs,” *Front. Psychol.*, vol. 14, p. 1149068, Jun. 2023, doi: 10.3389/fpsyg.2023.1149068.
[22] C. Syharat, A. Hain, A. Esmaili Zaghi, and C. Berdanier, “Burnout: The Cost of Masking Neurodiversity in Graduate STEM Programs,” in *2023 ASEE Annual Conference & Exposition Proceedings*, Baltimore , Maryland: ASEE Conferences, Jun. 2023, p. 43092. doi: 10.18260/1-2--43092.
[23] E. Dringenberg, A. Kramer, and A. R. Betz, “Smartness in engineering: Beliefs of undergraduate engineering students,” *J. Eng. Educ.*, vol. 111, no. 3, pp. 575–594, Jul. 2022, doi: 10.1002/jee.20463.
[24] M. D. J. Peters, C. M. Godfrey, H. Khalil, P. McInerney, D. Parker, and C. B. Soares, “Guidance for conducting systematic scoping reviews,” *Int. J. Evid. Based Healthc.*, vol. 13, no. 3, pp. 141–146, Sep. 2015, doi: 10.1097/XEB.0000000000000050.
[25] D. Moher, A. Liberati, J. Tetzlaff, and D. G. Altman, “Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement,” *BMJ*, vol. 339, pp. 1–8, 2009, doi: 10.1136/bmj.b2535.