

WIP: Interviewing with Neurodivergent Learners in STEM Education: Individualized Semi-Structured Protocols Informed by an Institution-Wide Survey

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Introduction

This work-in-progress paper presents our work with neurodivergent learners in STEM fields. There is an increasing number of neurodivergent individuals in higher education, yet many still face systemic barriers that can hinder success. This work-in-progress paper is a continuation of a multi-year research project conducted by undergraduate students under the guidance of a faculty mentor that explores the experiences of neurodivergent learners in STEM majors at a public, land-grant R1 institution in the southeastern United States. We conducted this work as part of a Course-Based Undergraduate Research Experience (CURE), a course that allows undergraduate students to collaborate in authentic, open-ended research addressing questions with relevance beyond the classroom and emphasizing student ownership in the research process [1, 2]. Building on prior research, this study used evidence-based revisions to both our design and implementation strategies, enabling broader participation and more representative data, as well as semi-structured interview protocols that fostered a more nuanced and comprehensive understanding of neurodivergent learners' experiences.

Theoretical Framework and Background

Neurodivergence describes differences in how people's brains process information, yet the term carries significant social stigma [3]. Individuals who identify with the neurodivergent community can include those with attention, learning, or mood disorders, along with autism and other diagnoses [3]. Traditionally, neurodivergence has carried a negative connotation because the deficit view has been historically dominant in both clinical and educational settings [3, 4]. However, as people conduct more research, it is clear that neurodivergence is a natural variation in human cognitive processing rather than a negative trait to be "fixed" [4]. This study promotes a strength-based view, acknowledging that some people's brains may function differently, yet also that these differences may enable people with neurodivergence to acquire unique skills or possess intrinsic strengths that have been traditionally overlooked in STEM environments [4]. As this viewpoint becomes more popular, the introduction of new accommodations has increased accessibility in all parts of life, including education [3]. Primary and secondary education have seen the most changes, but higher education still lacks research on how to close the significant achievement and retention gap between neurodivergent and neurotypical students [3]. For instance, even with comparable parental education levels, students with autism are significantly less likely to continue into post-secondary education than their neurotypical peers [5]. This study aims to determine reasons for the difference and research possible methods to improve accessibility in higher education.

Undergraduate students have conducted this work-in-progress at a large R1 institution. This study leverages approaches that can increase inclusivity in science for underrepresented populations, including the neurodivergent community [6]. Such frameworks allow students to engage in authentic research practices, including sending out an IRB-approved survey, thereby fostering a sense of project ownership and scientific identity [6]. After analyzing the data quantitatively, the researchers conducted interviews with students who self-identified as neurodivergent to learn more about each student's individual experiences at the university.

Additionally, some of the researchers identify as neurodivergent, allowing the study to benefit from an understanding of “lived experience” and the nuances of “double masking”, i.e., the process of concealing neurodivergence while simultaneously suppressing the struggle to meet neurotypical expectations [4]. This adaptation of the protocol enabled authentic learning experiences for both neurotypical and neurodivergent researchers, as students could see firsthand how their critical thinking skills improved in real-world applications.

Methods

Our study used a sequential mixed-methods design in which we surveyed both neurotypical and neurodivergent participants, then offered them the option to participate in a follow-up interview. Survey questions included a variety of formats, such as scales, free-response, and yes/no questions. Examples include “If your institution provides specific accommodations for neurodivergent individuals, rate your perception of their effectiveness on a scale of 0-100, with 0 being very ineffective and 100 being very effective,” “Would you participate in a training or workshop focused on better understanding and supporting neurodivergent learners?” and “Do you feel that your neurodivergence contributes to a strength or strengths that has/have helped you in higher education?” The survey was sent to a random sample of 6407 university affiliates via institutional email addresses, yielding 537 completed questionnaires. Of these survey respondents, 140 indicated interest in an interview. Project subgroups are currently conducting interviews with interested respondents and, as of January 2026, have completed 36. With the project involving 10-20 researchers each semester, researchers have broken into subprojects that work toward the common goal of understanding the experiences of neurodivergent learners in higher education. Currently, in the Spring 2026 semester, there are four subgroups based on the specific interests of the student researchers: Accommodation and Inclusion, Cultural Perceptions and Social Media, Mental Health and Well-Being, and Strengths-Based Approaches. Each subgroup developed its own section of survey questions to explore its specific topic and aid in selecting interview participants.

In selecting interview participants, each team analyzed responses or response combinations to select a variety of neurodiverse participants with diverse experiences. In striving towards this variety, teams worked to select respondents who: represented a variety of majors across the university’s nine colleges; self-reported neurodivergent and neurotypical identities; and reported varying degrees of satisfaction with current university support. To maintain ethical considerations, we identified participants by their response number, which we used within subgroups to track the interview process, from invitation through incentive. Unredacted contact information provided by the participant in the initial survey was used only by the interviewing subgroup to invite the interviewee. We gave participants options for interview modality (in-person or virtual) and offered accessibility considerations, including the ability to take breaks as needed. Researchers also read an informed consent statement at the beginning of each interview that detailed the interview process and the expected duration, to ease potential anxieties among participants and to obtain full consent before the interview began.

Interviews followed a semi-structured protocol that was specific to the subgroup conducting the interview: interviewers began with introductory rapport questions that also gathered background information, then shifted to core theme-aligned questions, and concluded with closing reflections. Interview questions were also anchored in survey prompts and served as follow-ups

to elicit individualized answers that would not be possible in the survey. An example of this would be an interview conducted by the Cultural Perceptions and Social Media group, which asked participants how their own neurodivergent experience was affected by the neurodivergent content they reported having access to on the survey. Throughout the process, researchers received support from both the project mentor, who helped them rehearse interviews and refine draft interview questions.

One of the main components that sets this project apart from previous research is the ideal of “nothing about us without us” accessibility, and we keep neurodivergent voices at the forefront. Each team included neurodivergent researchers who sought to inform and advise on supporting the neurodivergent participants. We offer participants a variety of accommodations they can opt into or out of based on their needs, regardless of whether they self-identified as neurotypical or neurodivergent. These options included advanced question previews, multimodal response choices (such as written, spoken, or chat-based responses), and structured pacing and rapport-building that allowed check-ins with participants if they needed planned breaks or pauses during the interview. Researchers tracked accommodations under each participant’s survey identification number, allowing them to review their survey responses before an interview.

Researchers also used reflexive memos and peer debriefing to ensure that we attended to pre-conceived biases during interview analysis. The current method of analysis for this study is a deductive-inductive thematic analysis, in which we developed initial code families from the four theme areas and prior survey constructs. We use inductive expansion as patterns emerge within and across interviews. Teams then work together to develop a shared codebook of interview results. This method maintains reliability and validity through the use of the previously mentioned reflexive memos, peer debriefing, team-based coding, and an audit trail linking the survey to the interview protocol and coded excerpts.

Preliminary Findings

To access the collected data from the revised survey and to gain deeper insight into the experiences of neurodivergent learners in STEM fields, we conducted both thematic and descriptive statistical analysis on 93 participant responses. We then narrowed our analysis to responses from participants majoring in STEM fields, bringing our sample size to 66. From these observed responses, 31 self-identified as neurotypical and 35 self-identified as neurodivergent.

Among the neurodivergent participants, the majority (57%) stated they had not disclosed their neurodivergence status to their institution, and 37% stated they had. When asked about feelings of overstimulation (an overwhelming response to excessive external stimuli) in the academic workplace, 71% of participants reported experiencing them. When asked to reflect on their mental well-being as it related to their experience as a neurodivergent learner, most responses included the terms: “coping”, “overwhelming”, and “stressful”. In response to questions about personal strategies to support their academic success, participants discussed noise-canceling devices, time-blocking, intensive calendar-based planning, and body doubling as helpful. When asked to rate the effectiveness of their institution’s accommodations on a scale from 0 (ineffective) to 100 (effective), the average reported score was 64.84.

Among the neurotypical participants, 25 of 31 stated they knew someone who was neurodivergent. When asked to describe these individuals who process information and approach problem-solving differently, the common words or phrases expressed were “visual learning,” “detail-oriented,” “anxious,” and “helpful.” We asked participants to reflect on academic collaboration, and their responses revealed trends of difficulty, compromise, adaptation, and diverse perspectives. When asked about their perceptions of strengths associated with neurodiverse individuals, multiple responses emphasized different approaches, creativity, and pattern recognition as beneficial for problem-solving.

Discussion and Significance

Findings from this study illustrate how neurodivergent learners navigate higher education by using individualized strategies beyond institutional resources, tailored to their personal needs. Neurodivergent participants frequently described having to manage their own cognitive load, sensory demands, and work organization through self-developed systems to successfully navigate STEM education. These findings suggest that, while neurodivergent learners actively adapt to higher education environments, institutional resources and accommodations are not as effective as they should be. A strengths-based interpretation of these findings highlights many meaningful implications for course design, academic advising, and institutional policies. Neurodivergent participants’ reliance on self-made structured planning, flexible pacing, and various study strategies supports the need for a revised institutional design that considers diverse learning and accommodation approaches. Rather than viewing neurodivergence as a barrier to learning, these findings show that it can actually contribute to better problem-solving, collaboration, and innovation in STEM fields. STEM fields emphasize problem-solving, pattern recognition, and innovation, which align closely with the strengths of neurodivergent learners. When compared to other areas of higher education that may emphasize other methods of learning, STEM fields may provide more strengths-based opportunities that prioritize diverse approaches to academic challenges.

This study also demonstrates how we operationalized survey-based, semi-structured interviews to capture the nuanced experiences of neurodivergent learners while maintaining consistency across all participants. By basing interview protocols on available survey results, researchers can explore individual experiences in greater depth while maintaining consistent themes. The inclusion of accessibility practices during interviews, such as flexible response formats and structured pacing, strengthened the quality and inclusivity of the collected data.

Although the findings of this study are limited by sample size and some self-selection bias in the interviews, the framework remains beneficial for educational, research, and institutional contexts. Overall, this study offers a consistent, accessibility-based approach to studying neurodivergence in higher education and emphasizes the importance of centering neurodivergent voices in both institutional decision-making and research design.

Conclusions and Next Steps

This work-in-progress paper continues to advance our research into the experiences of neurodivergent learners in higher education. Through both institutionally administered surveys and semi-structured interviews, our team continues to gain valuable insights into the experiences of neurodivergent learners in STEM fields. Going forward, our team seeks to further expand our

research by implementing another survey in the Spring of 2026. Additionally, we will continue our survey-informed, semi-structured interviews and development of a shared codebook based on a deductive-inductive analysis of interview results. Ultimately, we aim for our accessibility-centered methodology and findings from both the survey and the interviews to inform future research and improve support, inclusivity, and accommodations for neurodivergent individuals in higher education.

Acknowledgments

The Creative Inquiry and Undergraduate Research program at Clemson University supports this research through funding for resources and travel.

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