

## **WIP: Developing an Interview Protocol for a Phenomenographic Study on Anxiety in Working Students**

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## **Introduction and Background**

This WIP Methods/Theory paper is the first part of a larger phenomenographic study aimed at understanding how working engineering students conceptualize and experience anxiety within the context of university academic structures by developing an interview protocol that can capture the varied experiences of working engineering students. This study will recruit participants who are first- and second-year engineering students at two institutions, a mid-sized, primarily undergraduate private university in the Pacific Northwest, and a large, public, R1 university in the Midwest to recruit a diverse set of participants. This work is important because in 2020 the National Center for Education Statistics found that 70% of part-time students and 40% of full-time students were employed while enrolled in college with many of these students working over 20 hours a week [1]. Currently, the private institution employs over 21% of all students in on-campus jobs. This includes about 36% of students in the engineering programs and does not include students who are employed in off-campus positions. With a large proportion of students, both broadly and at one of the institutions of interest, working at least part-time while earning their degree, it is important to understand how employment affects this demographic of students with regards to both their mental health and academic performance.

Previous research on anxiety in working students has focused mainly on populations outside of engineering and on quantifying the effects of anxiety on student academic performance [2–4]. Some of this work has shown that employment has complex and varied effects on student academic performance and persistence dependent on various factors including hours worked and job relevance to career goals [5] with no clear trend between employment status and academic performance [2, 6]. More recent studies have found that working students experience higher levels of anxiety while their academic performance remains similar to non-working peers [4]. In one study, employment was shown to be a stabilizing factor for students following the COVID-19 lockdown [7]. A few studies have examined the effects of stress and anxiety on persistence and performance specifically for engineering students [8–10]. These studies highlight the discipline-specific challenges engineering students face including rigid curriculum and policy structures, competitive culture, heavy workloads, and an overemphasis on rigor [11, 12]. Additional studies on test anxiety demonstrate inconsistent findings with one study finding a negative correlation on GPA and persistence while another found that test anxiety acts as a motivating factor for certain groups in engineering [8, 13]. Collectively, these studies highlight the complex ways in which working students' anxiety affects their academic performance and the growing attention in engineering education to student mental health.

The mentioned studies highlight a critical methodological gap concerning how working engineering students experience and navigate anxiety. These studies mainly use methods such as surveys [3, 6, 11, 12], with many incorporating validated psychometric instruments [2, 4, 7–10, 14] to evaluate the effects of stress and anxiety on academic performance. Some studies also used semi-structured interviews [3, 11] or focus groups [6] to provide context for the survey results. This highlights a methodological gap in qualitative understanding of anxiety in working students. This paper will demonstrate a rigorous process for designing a protocol to qualitatively understand working engineering students' anxiety experiences.

## **Methodological Value**

In this study, we are interested in general anxiety which is typically expressed as “negative emotions” experienced in response to stressors [15] and will not attempt to diagnose or differentiate clinical conditions. Instead, we will rely on working engineering students’ self-reported anxiety to characterize their experiences similar to the work done by Jensen [16]. The interview protocol to be used in the study’s first phase is a critical methodological tool that directly shapes the kinds of variations in experience that can be revealed through participants’ accounts. A carefully designed interview protocol is especially necessary for a study on anxiety in working students because anxiety is a complex, context- and time-dependent, and often tacit phenomenon that participants may struggle to articulate without thoughtful prompting. Working students navigate overlapping academic, employment, financial, and personal responsibilities, and poorly constructed questions risk flattening these experiences or imposing researcher assumptions. A strong protocol ensures consistency across interviews while remaining flexible enough to follow participants’ meaning making, supports ethical engagement with potentially sensitive topics, and enhances the credibility and trustworthiness of the resulting data. Documenting the development process for this protocol is therefore not a procedural step but a foundational methodological contribution that strengthens phenomenographic rigor and supports future research in similar contexts, particularly in engineering education research. The resulting interview protocol will be used to answer the following research questions:

1. What are the physical, emotional, and cognitive ways in which working students in engineering describe their experiences of anxiety?
2. How do working engineering students’ anxiety experiences influence decisions that they make at critical points of their academic trajectories?

## **Theoretical Framework**

In designing this interview protocol, we will consider Expectancy-Value Theory of Anxiety (EVTA) [17] and Tinto’s Student Integration Theory (SIT) [18] to guide the framing of the questions. EVTA provides a lens for understanding how working students’ anxiety develops and what factors affect its development [17], and SIT highlights the importance of both academic and social integration to student persistence [18]. Together, these frameworks provide a lens through which to examine how students experience anxiety, how this anxiety can affect persistence, and how working students navigate anxiety amidst the pressures of work and academics.

### ***Expectancy-Value Theory of Anxiety***

As described by Pekrun [17], Expectancy Value Theory of Anxiety (EVTA) characterizes how anxiety in an individual manifests through the combined effect of various expectancies and valences. Expectancies are an individual’s belief of how well they will do in the future on a given activity, and valences are the value that they place on an event that results from an action [19]. In EVTA, the expectancies and valences are evaluated based on the individual’s beliefs and past experiences. Therefore, anxiety arises as a result of the current situation, the perceived risks associated with the situation, the consequences of their response to that situation, and the time available to respond to the situation [17]. This theory highlights the situation- and time-dependent nature of anxiety that is important to consider while designing an interview protocol.

### ***Student Integration Theory***

Tinto's Student Integration Theory (SIT) argues that both social and academic integration is critical to student persistence, with the first year of college being especially critical [18,20]. In SIT, it is the goal of the institution to create environments that foster academic and social integration. The interactions and connections that occur in these environments in addition to the student's intentions, goals, commitments, and pre-entry attributes all contribute to their decision to stay at that institution [18,20]. This lens allows us to understand how anxiety affects working students' interactions and connections which can help us identify factors that are critical to fostering academic and social integration.

While SIT provides a useful lens for understanding academic and social integration, scholars have noted its limited attention to external obligations and the experiences of nontraditional students [21]. Therefore, we will also aim to account for participants' family, employment, and external responsibilities when developing the protocol to augment this deficiency in SIT.

### **Method Development**

Phenomenography seeks to understand the different ways in which people conceptualize and experience a specific aspect or phenomenon in the world around them [22]. Interviewing is a typical method used in phenomenographic research since it gives researchers insight into other peoples lived experiences and how they make meaning in and from those experiences [23]. Additionally, interviewing is consistent with people's ability to make meaning through verbal processing [23]. Because anxiety is often a tacit experience, interviewing provides a space where participants can verbally process past experiences, begin to understand how these experiences have been affected by anxiety, and gain insight into how anxiety could affect future experiences. For these reasons, interviewing is an appropriate method to use in this research aimed at understanding the different ways working students experience anxiety and respond to it.

We choose to implement a three-sequence interview protocol similar to the one described by Seidman [23]. Seidman's three-sequence interview method is grounded in phenomenological interviewing. Phenomenological research, similar to phenomenographic research, aims to understand how individuals experience specific phenomena in their lives. This quality makes the three-sequence interview method suitable for studying student's experiences in anxiety. In this protocol, participant shares their life story, relevant experiences, and reflections on their experiences in three separate interviews given over a short period of time. Using this interview protocol is appropriate for studying anxiety due to its time- and situational-dependent nature. The three-sequence interview protocol also means that different aspects of how the participants experience anxiety can be more readily explored through each interview's different focus.

In Seidman's method, the first interview is used to understand the participant's life history both generally and in relation to the topic of interest [23]. We will design the first interview to learn about their academic standing, employment status, and past experiences that highlight tensions between their academic, personal, and work responsibilities. These past experiences are critical to learn early in the interview process because, according to EVTA, past experiences affect how the participant's processes anxiety. In addition, processing these experiences verbally creates an opportunity for the participants to reflect on their past experiences in relation to anxiety and develop a lens through which to see new experiences. This reflection on their past experiences can give us insights into the participant's past cognitive and emotional experiences of anxiety.

The second interview is used to examine the participant's recent experiences with critical academic decisions such as major declaration or course registration [23]. Our goal for this interview is to understand how anxiety and tensions manifest when the participant needs to make an academic decision. Our interest in academic decisions like major declaration are why we will recruit first- and second-year students as participants since they likely have made a critical academic decision recently, such as declaring or switching their major, while experiencing the tensions that arise due to working while pursuing a college education. Additionally, the second interview will happen during the advising and registration period so that we can capture participants' experiences navigating the tensions between work and academic responsibilities through their interactions with their academic plan and advisors. These interactions with the participant's academic plan and advisor can highlight ways in which anxiety affects their decision-making process and gives insight into their present emotional, and potentially their physical, experiences of anxiety.

Because the second interview is focused specifically on their current academic decisions, we will include an artifact generation activity prior to this interview. This activity is partly inspired by the journey-mapping [24, 25] and timeline activities [26, 27] used as a method for reflective practice in other education studies. These activities have been shown to be effective for highlighting multiple facets of the participant's journey while giving them the power to depict their journey and reflect on their experiences [24]. The participants will be asked to generate an artifact based on their current academic plan with added annotations highlighting important choices they have made and how they made those choices. This artifact generation activity will give participants space to personally reflect on their academic plan prior to the second interview which will help facilitate a focused discussion that highlights facets of their academic journey that might not be captured through spontaneous interview responses, thus giving a more nuanced view of how the participants experience anxiety cognitively, in the past and now.

In the third interview, we will encourage participants to reflect on their experiences in the previous interviews [23]. The participants will also be encouraged to share any experiences that they were unable to share in the previous interviews. By reflecting verbally on their experiences, participants can develop new ways of understanding those recent anxiety experiences. This meaning making process will be used to guide the researchers' analysis process. By using the participants' meaning making process to guide our analysis process, we can mitigate the potential for implicit bias to affect our analysis and findings. Like the artifact generation activity, this reflection process will give us insight into how the participants currently experience anxiety cognitively and emotionally, better characterizing the time-dependent nature of anxiety.

## **Conclusion**

The suggested approach using a sequence of interviews with an artifact generation activity is methodologically sound and accounts for the varied experiences of the participants both within and outside of school. In this protocol, the participants have multiple opportunities to share their experiences through a sequence of differently-focused interviews. This results in a varied data set that we can analyze to understand the ways in which working college students experience anxiety and how that anxiety has influenced their college experiences. The artifact generation activity using academic plans as a base creates an opportunity for personal reflection prior to the second interview. It also will guide discussion in the second interview, leading to a complex and nuanced reflection on their academic journey in both the second and third interviews.

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