Engineering Educators Bringing the World Together
2025 ASEE Annual Conference & Exposition
Palais des congrès de Montréal, Montréal, QC • June 22–25, 2025 ASEE
Paper ID #45619

Whose Goals Are We Measuring? A QuantCrit Analysis Examining the Cultural Blind Spots in Achievement Goal Theory

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Whose Goals Are We Measuring? A QuantCrit Analysis Examining the Cultural Blind Spots in Achievement Goal Theory

Introduction

This **full theory paper** seeks to provide an evidence-based critique of Achievement Goal Theory (AGT). AGT is considered a prominent lens through which to study motivation, evidenced by the volume of meta-analytic studies produced over decades (e.g., [1]-[4]). Achievement goals are akin to a mental framework of what an individual wants to accomplish in the future; they are defined as students' *reasons* for engaging in "competence-relevant behavior" [5, p. 44]. Goals function as mental images of desired futures, and individuals link their self-satisfaction to achieving their goals; goals guide action and motivate effort toward achievement [6]. AGT sought to theorize the reason *why* a person behaved as they did and how those goals guided their behavior in a specific way [4], [7]. Goals provide a motivational framework through which various cognitive and affective responses to achievement situations can be interpreted [8]-[12]. Specifically, AGT was developed to show how different goal orientations influenced individuals' choices, effort, persistence, and response to challenges, ultimately driving academic success and psychological well-being. Achievement goals were not intended to answer the question of whether students were motivated but rather answer the question of *why*, that is, *what motivates their pursuits* [13]. The achievement goals students pursue help shape how they interpret, experience, and engage or withdraw from achievement-related situations. Understanding students' goal pursuits is a critical area of study because goals exert direct motivational effects on achievement, regardless of students' prior performance [14], [15]. The original conceptualization by achievement goal theorists is that three-goal motives explain why students engage in achievement-related tasks:

1. to develop one's competence or master a task (**mastery goal**),
2. display one's ability or competency relative to others (**performance goal**),
3. avoid appearing academically inadequate (**performance-avoidance goal**)

Countless systematic and meta-analytic reviews have been published synthesizing the volume of research produced using achievement goal theory and its impact on motivation, academic achievement, persistence, and other beneficial or ineffective behaviors [1]-[3], [16]-[22]. These reviews consistently report how endorsing a mastery goal is associated with greater motivation, the application of deeper learning strategies, and higher levels of achievement. Even so, studies have produced mixed and sometimes contradictory findings regarding the effect of endorsing performance goals on students' academic achievement. Some studies concluded that performance goals lead to adverse outcomes such as cheating, giving up in the face of difficulties, and diminished interest in learning. In contrast, other studies concluded that performance goals lead to higher engagement and academic performance. It has broadly been accepted that performance-avoidance goals are maladaptive goals that lead to adverse academic outcomes (e.g., [4], [16], [19], [23], [24]). The overall conclusion about achievement goal theory discussed in the literature is how endorsing different goals leads to differential educational outcomes.

This paper does not aim to disentangle the effectiveness of one goal versus another but rather to draw attention to a conversation that has remained largely in the shadows: a lack of cultural consideration during the development of AGT and its implications for inclusive research practices.

Exposing its Limitations: A Critical Integration of the History of Achievement Goal Theory

AGT was developed without considering the influence of students' culture or unique lived experiences, and to date, no study has reconceptualized the core assumptions of the theory to consider minoritized students' unique life circumstances or worldviews. The historical traditions of psychology, where volumes of theories were derived, largely ignored race and gender until after the 1960s. Even then, when issues of race were incorporated, it was viewed as a way to simply explore variations or differences, taking a deficit view of racialized groups [25]-[27]. Motivational processes and decisions were considered psychologically universal and culture-free; "it was generally assumed that the working principles of goal theory applied to *all* students, irrespective of their cultural backgrounds" [28, p. 246]. As well, scholars whose work significantly contributed to the development of AGT approached the formation of the theory from a study of personality (see [9], [29]). Consequently, the philosophical tradition rooted in studies on personality assumed that an individual's motivation was "in the heads" of participants and not in the learning context or their sociocultural realities [28], [30], [31]. In the 1980s, scholars urged researchers to "take a second look … under which achievement behaviours occur[red] cross-culturally" [32, p. 226]. This critique highlighted concerns, explicitly pointing out that "when achievement motivation is treated as a personal trait, the possibility of diverse modes of achievement in different cultures is almost certain to be ignored" [32, p. 224]. Unfortunately, this call remained ignored until its resurgence in 2020 [33], when the issue arose again.

Overlooking minoritized students' racialized experiences ignores how social and cultural experiences shape their motivational goal pursuits and, in turn, their achievement. Most studies that have used AGT to understand students' achievement motivation and their effect on learning and performance have used predominantly White students or have used race/ethnicity as a 'control' variable. Specifically, seminal AGT studies were conducted in the American Midwest on predominantly White, middle-class students in psychology courses [28], [30]. Centering on White experiences and points of view were considered "acceptable starting points for the development of theories of motivation for use with "other" populations" [27, p. 132]. In studies of predominantly White samples, performance goals were found to predict academic achievement, measured via GPA or course grades [34], [35]. When scholars have used AGT while considering students' gender, specifically male versus female students, the results have been inconclusive or contradictory (see [36]). Findings from Struck et al.'s review suggest that when considering lived experiences tied to social positions, the deeply held beliefs surrounding AGT do not hold [22].

Additionally, studies that have used AGT in diverse cultural settings, primarily in East Asian countries, refute many widely accepted beliefs about AGT [36]-[38]. For example, these studies have found a positive correlation between performance-avoidance goals and academic achievement with samples of Asian/East Asian students, a goal orientation that consistently shows a negative relationship with achievement when looking at samples of U.S. students [38], [39]. A study of White continuing-generation college students found that those who achieved a higher course grade were more likely to highly endorse performance goals [40]. In my work on engineering Latinx, first-generation college students found that these students were more likely to associate performance goals with avoidance goal-oriented behaviors [41]. And these racially minoritized students largely rejected performance goals [41].

The omission of minoritized students' experiences, perspectives, and educational context in the development of the theory itself may help explain why some of these goals function differently among different students. In light of the historical traditions that helped develop AGT and the variety of ways goals differentially impact students, I decided to investigate if, among

engineering students, there were differences in how these goal orientations impacted Latina, Latino, and White engineering students' self-efficacy and persistence beliefs. The aim of this comparison is to highlight the implications of using a theory and its related survey measures that were designed from the perspective of one group of students (i.e., White students).

Purpose

I take a Quantitative Critical Race Theory (QuantCrit) lens to situate and interpret my research findings specifically by answering the following research questions:

> **RQ1.** Given that AGT was developed through the perspective of White scholars and primarily validated through White students, how effectively does AGT explain *Latinx* engineering students' course self-efficacy and persistence beliefs?
>
> **RQ2.** Given that AGT was developed through the perspective of White scholars and primarily validated through White students, how effective is AGT at explaining *White* engineering students' course self-efficacy and persistence beliefs?

Specifically, I use an existing AGT survey scale (i.e., PALS [53]) and, through multiple regression, evaluate the strength and quality of the relationship between each goal type and students' course self-efficacy and persistence beliefs. The aim is to draw awareness to the implications of what can happen when we use theories that are not designed for or through the perspective of minoritized students (e.g., Latinx students).

Theoretical Framework: Quantitative Critical Race Theory (QuantCrit)

As I analyze and interpret my results, I am guided by the following QuantCrit tenets: 1. Centrality of racism, 2. Numbers are not neutral, 3. Categories are neither 'natural' nor given, 4. Data cannot speak for itself, and 5. Using numbers for social justice [42, p. 169], [43]. Critical theorists have affirmed it is possible to use numerical data to promote equity and challenge their common use in upholding systems of oppression [44]. Understanding data analyses through QuantCrit does not imply that statistical methods should be outright rejected; instead, they should be employed to uncover injustices and challenge power structures. Therefore, I will use the QuantCrit tenets as "analytic frames to help make sense of the data, and in a larger sense, the social world" [45, p. 26].

1. Centrality of racism. Racism is a structural and systemic feature of policies, practices, educational pathways, and even how theories are developed [47]-[50]. Racism occurs through the exclusion and discrimination of people of color or systemic biases; it also operates by centering, normalizing, and valuing the knowledge and ideals of whiteness [45]. All QuantCrit tenets follow the belief that we live in a racist society and a social order created through racist beliefs. Racism shapes the way researchers interpret their results. For example, studies on student achievement may oversimplify or ignore how systemic inequalities and discriminatory practices disproportionately affect minoritized students. Centering racism in how researchers think about their statistical results ensures that the experiences and perspectives of racialized students are prioritized [45].

2. Numbers are not neutral. QuantCrit challenges researchers to avoid drawing conclusions that serve to reproduce white supremacy; results should be interrogated for their role in promoting deficit conclusions of minoritized students [42]. Power relations can influence conclusions about one's statistical results and can further reproduce inequities; thus, results should be interpreted within social, historical, and political contexts [42], [44].

3. Categories are neither 'natural' nor given. Race or students' racial identification does not create unequal educational outcomes. Rather, it is the social, structural, and institutional

inequalities produced through racism and racial stratification that create and perpetuate educational disparities. While race is a socially constructed category, when people are racially stratified, that stratification further creates, perpetuates, and sustains systems of inequality and exclusion [44]. Thus, as recommended by Zuberi [45], in order to understand how society responds to an individual's racial identification, we should "place our statistical analysis of race within a historical and social context… The question has to do with society itself, not the innate makeup of individuals" [p.133].

4. *Data cannot speak for itself.* In the same way that we expect qualitative researchers to critically contextualize and interpret their findings, those who analyze quantitative data should do the same. Numerical data are not inherently objective representations of reality; rather, they represent responses influenced by systemic biases, historical and cultural contexts, and methodological choices [45], [50].

5. *Using numbers for social justice.* Scholars applying a QuantCrit approach to understand their data are cognizant of the white supremacist views that created many of the analytical tools we use today. Despite criticism stating that one cannot use the "master's tools" to "dismantle the master's house" [51], it *is* possible to further a social justice agenda using statistical methods. Zuberi's book [44] provided examples of how statistics have been used in court cases to provide evidence of discrimination, underscoring how quantitative analyses can uncover patterns of inequity, systematic bias, and discrimination so as to identify areas to intervene.

Researcher's Positionality

The social position every researcher occupies leads them to think about their results differently. The interpretations I bring to my data analysis are from the perspective of a Mexican American who learned to navigate the world through the lens of Mexican immigrant parents and community members. I grew up and continue to live in a world that only sees race as either White or Black; perhaps this logic was what prompted one *JEE* Reviewer to boldly proclaim, "*Latinx are not racialized members. I would be careful with confusing race and ethnicity*" -Reviewer 2. Latinx individuals are racialized and marginalized individuals, and many of us, myself included, resist and resent the erasure of our Indigenous roots by the brutal history of colonization. It is through this lens of a Latina, Mexican American individual with a non-Anglo self-concept that I analyze and interpret my findings.

Method

Survey data were collected at one Hispanic-Serving Institution in the Southwest, specifically targeting three engineering courses (i.e., Statics, Strength of Materials, and Embedded Systems Programming I). These courses were selected as part of a larger study conducted in Fall 2021-Fall 2023. The data used in this study are cross-sectional collected at the beginning of each semester. This HSI has a very high enrollment of Latinx students, and as a result, most of the students sampled identify as Latinx. To understand whether the achievement goal measures differentially explain self-efficacy and persistence beliefs, I focused on students for whom I had a large enough sample size. Therefore, this study is focused on Latinas (n = 64), Latinos (n = 212), and White (n = 34) students. I was unable to further subdivide the sample of White students across gender categories due to the low representation of women. Sample sizes of 30 or greater are considered acceptable for conducting multiple regression [52]; still, I conducted a *posthoc* power analysis to ensure the sample size was adequate and reliable. Further information on student demographics can be found in Table 1 in the Appendix.

Survey Instruments

Achievement Goal Orientation. The achievement goal orientation survey items were borrowed from the Patterns of Adaptive Learning Scales (PALS;[53]). A recent meta-analytic confirmatory factor analysis found that PALS had stronger evidence of validity than other popular scales and also recommended not to use the mastery-avoidance scale [54]. Students were prompted to think about their current engineering course when responding to the items, i.e., "How true are the following statements as it pertains to your engineering course." Cronbach alpha values were between .85 and .95.

Course Self-Efficacy Beliefs. These items were intended to capture students' perceptions of their competence to do their coursework. When responding to the self-efficacy measures, students were asked to think about their current engineering course. The self-efficacy beliefs survey items were borrowed from PALS [53]. Cronbach alpha values were between .85 and .89.

Persistence Beliefs. Three measures were used to capture students' beliefs about persisting in engineering, i.e., "I feel committed to engineering," "I feel certain about graduating with an engineering degree," and "I am certain I can be successful in engineering." Cronbach alpha values were between .80 and .89.

Data Analysis

Multiple regression models were used to examine the linear relationship between the two outcome variables (i.e., course self-efficacy and persistence beliefs) and the achievement goal variables (i.e., mastery, performance, and avoidance goals). Similarly, separate multiple regression models were run for each student sample to help answer the research questions. Backward elimination was used to retain only the achievement goal variables that significantly contributed to the outcome variables. I used a Mahalanobis distance procedure at a 95% confidence level to identify multivariate outliers that deviated from the expected distribution. Cases that were considered extreme outliers were removed to minimize the potential impact on the analysis. The correlation matrixes did not exceed 0.80.

The final regression models were evaluated to ensure quality. Each model was screened for multicollinearity issues and influential cases. All variance inflation factor values were less than 5, and tolerance was above the recommended 0.1 cutoff value [55]. Casewise diagnostics were evaluated by examining the standardized residuals to detect outliers and Cook's distance to detect influential cases. No cases exceeded the recommended cutoff value [56]. Collectively, these diagnostics help provide confidence that the final models are reliable.

The *posthoc* power analysis was conducted using the G*Power 3.1 software on each model to determine if the sample size was sufficient. I used an alpha level of 0.05 and calculated each model's Cohen's f^2 value.

Result Interpretation Guide. Two sources of evidence were used to evaluate how effectively the goal measures explained students' beliefs: 1) adjusted R-square value and 2) standard coefficient values. Both the adjusted R-square and the standardized coefficient values help researchers evaluate the *practical* significance of each regression model, with the adjusted R-square providing insight into the overall explanatory power of the model and the standardized coefficients indicating the contribution of each goal orientation.

1. Adjusted R-square value was used because it provides a penalty for adding variables into the model that are not useful [52]. The adjusted R-square value evaluates the proportion of variance in the outcome variable that is explained by the achievement goal measures. This value helps

establish each model's explanatory power, specifically how much the achievement goal measures inform the different beliefs. "Explanatory power is linked with predictive power" [57, p. 44]. Adjusted R^2 values range from 0 to 1 and can be interpreted as a percent index (0% to 100%). A 0% value indicates that the different achievement goal measures do not explain the academic beliefs- no explanatory power.

2. Standardized coefficients were used to determine the magnitude and direction of each achievement goal's influence on students' course self-efficacy and persistence beliefs. Standardized coefficients can be thought of as an effect size estimate. This coefficient provides information on how much the dependent variable is expected to change. Specifically, these coefficients indicate how many standard deviations the outcome variable (e.g., course self-efficacy beliefs) will change if you increase the independent variable (e.g., mastery goal) by one unit.

Results

Given the historical traditions underlying the development of AGT and its over-reliance on validity evidence primarily drawn from samples of White students, this study investigated if the achievement goal measures were effectively explaining *Latinx* students' course self-efficacy and persistence beliefs (RQ1). Or if the AGT measures were more effective in explaining White students' course self-efficacy and persistence beliefs (RQ2). I found that the achievement goals survey measures produced high explanatory power for White students and less so for Latina and Latino students. Although White students were the smallest sample, my results show that the achievement goal measures can better explain White students' self-efficacy and persistence beliefs than Latinx students. My findings raise concerns about the validity of the theory to Latinx students' self-efficacy, persistence beliefs, and perhaps other affective outcomes.

The achievement goal measures have higher explanatory power (Adj. R-square) for White students not so much for Latinx students

Distinct patterns emerged when examining the impact of the achievement goal measures on students' self-efficacy and persistence beliefs, emphasizing how the measures had the most significant explanatory power on some students but not all students. Figure 1 provides a brief visual of the results, and the full models are in Appendix A. The model for White students demonstrated that the achievement goals explained 56% of the variance in course self-efficacy beliefs and 66% of the variance in their persistence beliefs. Having an explanatory power of 56% and 66% indicates that the achievement goal measures are well-aligned with the motivational processes and educational experiences of White students, making them more reliable predictors for this student demographic. Mindful of the concerns regarding the low sample size for White students, I assessed the reliability of the results via a *posthoc* power analysis using G*Power. The models reached a statistical power level of 0.99, indicating a 99% probability of detecting the effect size (i.e., adjusted R-square value) if it truly exists. Said differently, there is a very high chance that the results for White students are not due to random chance and the analysis is highly reliable in identifying this adjusted R-square value for this sample.

In contrast, the achievement goals were less predictive in evaluating the relationship between course self-efficacy beliefs and persistence beliefs for Latinx students. The achievement goal measures explained 17% and 24% of the variance in Latinas' course self-efficacy beliefs and persistence beliefs. Additionally, for the Latino students, the achievement goal measures explained 19% and 8% of the variance in their course self-efficacy beliefs and persistence beliefs. The low adjusted R-square values for the Latina and Latino students sampled indicate that the achievement

goal measures were less effective in capturing the factors that influence their course self-efficacy and persistence beliefs.

Since the sample of Latino students was large, I explored whether a small sample size, similar to White students, would influence the explanatory power of the results. I randomly created 100 smaller samples of 34 Latino students, matching the sample size of White students, and ran the analysis on those 100 new samples. Only 3% of the sample produced an adjusted R-square value of 0.50 for course self-efficacy. While 86% of the models had an adjusted R-square value between 0%-30% for course self-efficacy, indicating that the likely explanatory power falls within this range. Moreover, 97% of the models examining persistence beliefs produced an adjusted R-square value between 0%-30%.

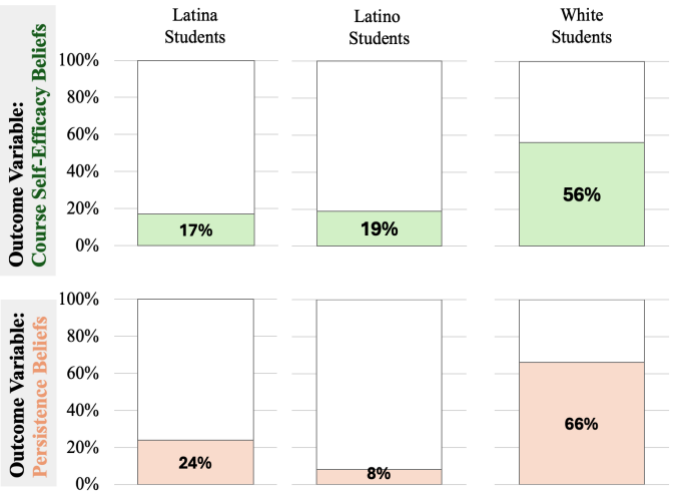

Figure 1
Explanatory power of the achievement goal measures on course self-efficacy and persistence beliefs

Overall, these findings reflect the disparities between achievement goal theory's ability to understand the motivational process of Latinx students accurately. The findings suggest that other factors such as cultural, social, structural inequalities, or perhaps goal orientations not yet theorized might play a more significant role in shaping Latinx students' self-efficacy and persistence beliefs that should be part of achievement goal theory. Following, I examine how each achievement goal measure differentially helps inform Latina, Latino, and White students' self-efficacy and persistence beliefs.

Mastery goals had a greater impact on White students' course self-efficacy and persistence beliefs compared to Latinx students

Standardized coefficient values were used to evaluate the degree of influence a goal type has on the outcome variable of interest and they range from -1 to +1. The coefficient values for mastery goals were consistently significant across all samples and models— see Figure 2 below. However, the magnitude of the standardized coefficients for mastery goals was twice as large in the sample of White students compared to the models of Latinx students. This magnitude difference indicates that mastery goals may be less influential on Latina and Latino students' self-efficacy and persistence beliefs but not on White students. White students had the largest coefficient values for mastery goals, indicating that mastery goals substantially informed their course confidence and persistence beliefs.

While mastery goals appear to be the most consistently supportive goal orientation across all students sampled, the *magnitude* of their impact tells a different story. Mastery goals are highly effective in capturing the strength of the relationship between White students' course self-efficacy and persistence beliefs, yet they only mildly capture this relationship for Latinx students. Mastery goals have a *consistently* strong influence on both outcome variables among White students, yet this high level of consistency is not observed for the Latinx students sampled.

Performance Goals are only motivational for White students. Avoidance goals are only detrimental to Latinx students

Performance goals were shown to significantly motivate White students' persistence and bolster their confidence, with standardized coefficient values of 0.31 and 0.24, respectively (see Figure 2), while this effect was not found for Latinx students. The differential effect that performance goals have on White students but not Latinx students highlights the complex and differential ways in which student groups respond to competitive and comparative motivational orientations (i.e., performance goals).

Latina and Latino students were the only groups impacted by the avoidant-related goal. Performance-avoidance goals had a significant negative effect on Latina and Latino students' course self-efficacy and persistence beliefs. These same goals did not appear to influence White students' course self-efficacy and persistence beliefs. This finding suggests that AGT may not fully capture the *positive* goals motivating Latinx students.

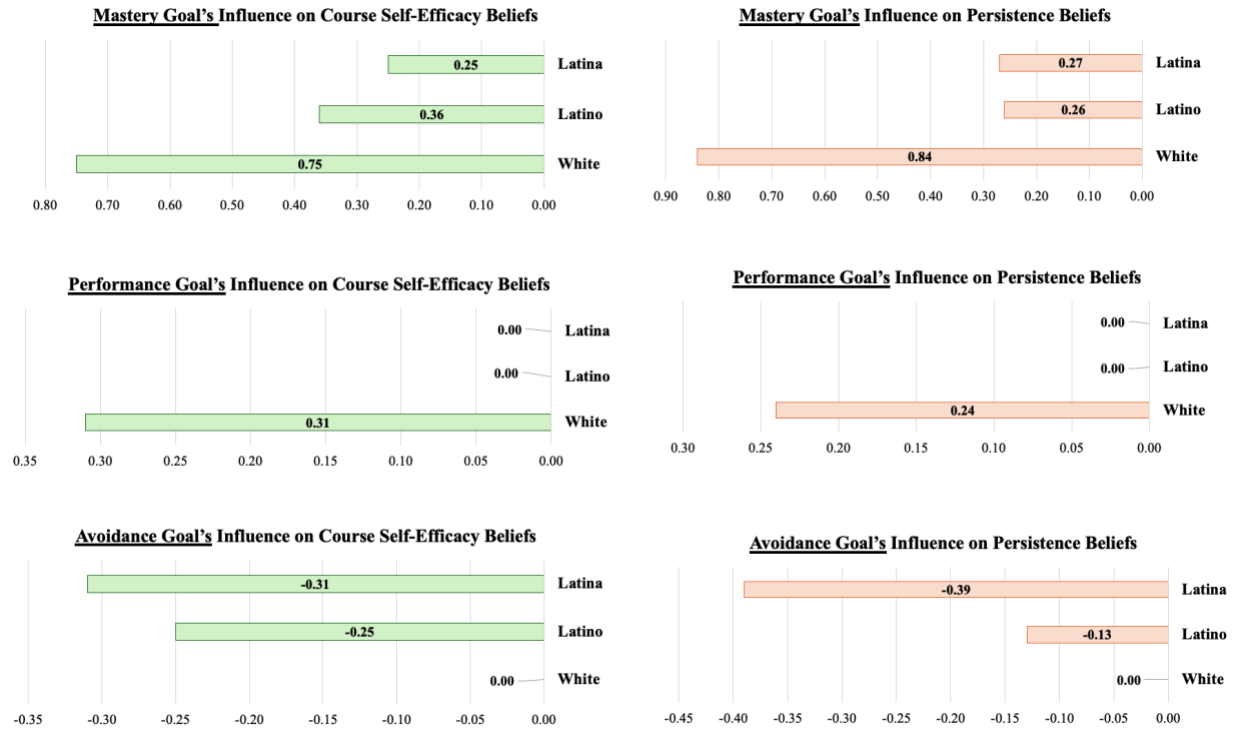

Figure 2
Standardized Coefficient Values for Course Self-Efficacy and Persistence Beliefs

Limitations

I acknowledge that a complete representation of how achievement goal theory fails to inform minoritized students' motivational pursuits requires an examination of other racially minoritized students (i.e., Asian, Black, and Native students). This study was conducted at a single institution, and the results could be limited to the unique perspectives of the students at this institution. A more thorough examination should consider multiple institutions across the U.S. Additionally, most White students identified as continuing-generation college students (61%), and the Latina and Latino students sampled identified as first-generation college students (83% and 86%,

respectively). An analysis that considers the differences in parents' level of education for each group may shed more light on how the theory informs of fails to inform these students' motivational goals. Interview data from multiple participants across different demographic groups could further support the conclusions drawn in this paper.

Discussion through a QuantCrit Lens

Scholars have raised concerns that achievement goal theory and its related measures were developed through the perspective of White scholars and primarily validated from studies with predominantly White students [27], [28], [30]. Students' beliefs about their abilities and perseverance in academic contexts are shaped by their goal-related motives [1]. Thus, the novelty of this paper is not about establishing a relationship between AGT, self-efficacy, and persistence beliefs. Instead, I provide a critical examination of the theory and its related survey measures by examining if achievement goal theory differentially explained Latinx and White students' self-efficacy and persistence beliefs. Based on the evidence presented in this paper, I conclude that AGT does a good job explaining White engineering students' course self-efficacy and persistence beliefs (RQ2). The models showed high explanatory power for the White students sampled, as the AGT measures accounted for **over 50%** of the variation in self-efficacy and persistence beliefs. Yet, the theory and its related survey measures fail to effectively explain Latina and Latino students' beliefs (RQ1). The explanatory power, measured using adjusted R-square, **fell below 25%**, indicating that the AGT measures were less effective in explaining the variation of Latina and Latino students' self-efficacy and persistence beliefs. The broader social and academic context likely shaped students' responses to these survey measures. Specifically, they were asked to think about their current engineering courses, known to be weed-out courses; thus, the exclusionary and often hostile culture of engineering cannot be overlooked. Educational environments are not culturally neutral spaces. Scholars have long argued how incongruent and alienating the culture of engineering can be for minoritized students [58]-[60]. These learning environments are shaped by normative values that often align more closely with the experiences and expectations of White students. While the achievement goal measures provide robust explanatory power for White engineering students' self-efficacy and persistence beliefs, the theory and its measures are limited in their ability to account for the experiences of Latinx students.

When examining the individual standardized coefficient values, mastery goals were the only goal orientation that consistently supported most students' course self-efficacy and persistence beliefs. Still, a difference was observed in how mastery goals influence course self-efficacy and persistence beliefs across minoritized and White students. There is a high consensus that endorsement of mastery goals produces the most positive educational outcomes; see Bardach et al.'s [16] meta-analysis. Perhaps the caveat should be that they positively inform White students' educational outcomes more strongly. Mastery goals are more closely aligned with the experiences and academic environments of White students, further providing evidence that this motivational theory is biased toward dominant cultural norms. The educational systems and practices were historically shaped by and for the dominant group [27], [28], [58]. As a result, these goals are more effective in promoting self-efficacy and persistence among White students, who are navigating a system designed with their cultural background and lived experiences in mind. While mastery goals focus on *developing* one's ability is a desirable endeavor that all students should pursue. Unfortunately, not all students have the privilege of pursuing it. Many racially minoritized students are entering college from school systems that failed to adequately prepare them [61]; such is the case for students at this institution. For Latinx students, the benefits of mastery goals may be

tempered by structural inequalities and cultural incongruence, which can interfere with how these goals positively shape their beliefs. Each goal orientation "evok[es] different thoughts and emotions and calling forth different behaviors" [62, p. 11]. For Latinx students, the goal of *developing one's ability* might be more of an aspiration, whereas the practical goals they are pursuing might be focused on something else not yet theorized. For example, mastery goals might be reinforced through teaching practices, feedback, and task framing that implicitly validate the cultural capital and learning approaches most familiar to White students, leaving minoritized students to navigate an incongruent or less affirming learning environment.

Aside from mastery goals, there was no other goal orientation that was common across students from different racialized groups. A lack of consistent patterns could signal that the achievement goal orientations do not consistently capture the diverse motivational drivers present among a diverse sample of students. Performance goals, which are based on competition and displaying one's ability relative to others, were only informative in understanding White students' self-efficacy and persistence beliefs. This same goal type did not inform how Latinx students in the study developed their self-efficacy or persistence beliefs as they were removed from the models in the backward elimination process due to a non-significant effect. The underlying aim of a performance goal is to out-compete one's peers or achieve so-called "objective" markers of achievement. The undertone of performance goals is the belief in the ideology of meritocracy, which is actually a harmful ideal that ignores systemic inequities rooted in racialized practices. Additionally, the performance-driven goal seems to prioritize competition over collaboration, creating a mismatch between students with collectivist orientations prevalent among Latinx and first-generation college students [63], [64].

Moving Forward with Achievement Goal Theory (AGT)

This paper offered an evidence-driven theoretical critique of achievement goal theory. Based on the findings of this study, there are issues with how effective AGT is in explaining Latinx students' motivational pursuits. The theory's focus on individual achievement goals does not resonate with Latinx students who may prioritize collective success or face additional stressors. AGT overlooks culturally specific motives and does not account for how systemic barriers have led Latinx, first-generation college students to frame their achievement motives differently. Researchers whose student population is largely from the dominant group may still find this theory applicable. Yet, those of us interested in applying culturally relevant and responsive theories to examine issues related to minoritized students might find that AGT does not offer equitable insights into the achievement motives of these students. AGT overlooks culturally specific motives, such as communal goals, family expectations, or the need to navigate systemic barriers.

Furthermore, the theory's focus on individual achievement might not resonate as strongly with Latinx students who may prioritize collective success or face additional stressors. The lack of cultural relevance in AGT indicates a critical need to refine it to include a broader array of motivational constructs relevant to students from diverse backgrounds. Psychologists who developed AGT theory did not ask students, especially those from minoritized backgrounds, about their achievement motives. The issues raised in this paper indicate a critical need to refine AGT or apply a grounded theory perspective that would shed light on a broader array of motivational constructs that are relevant to minoritized students, particularly in fields like engineering, where cultural and structural factors can significantly influence educational outcomes. My next step in this project is to conduct a grounded theory study examining the *reasons why* engineering Latinx students engage in competence-relevant behaviors.

Appendix A

Table 1
Demographic information for each sample analyzed in this study

	Latina	Latino	White
Total	64	212	34
Women	100%		24%
Men		100%	49%
Genderqueer			
Transgender			~7%
Cisgender	3%	~1%	
A gender not listed		~1%	
Parents' level of education	83%	86%	39%

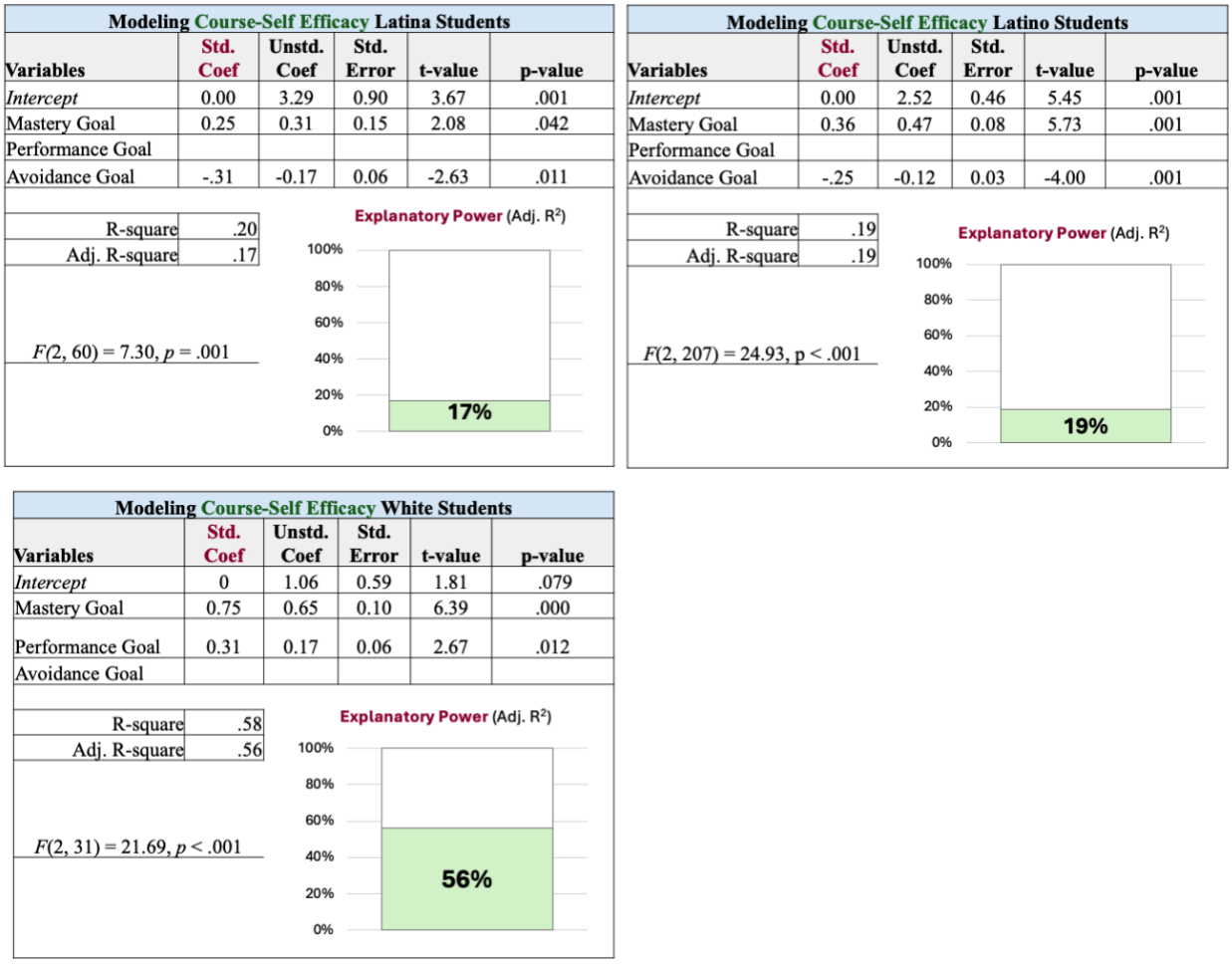

Figure 3
Complete model information for **Course Self-Efficacy beliefs** that includes the explanatory power and standardized coefficient values reported in the results section for Latina, Latino, and White students

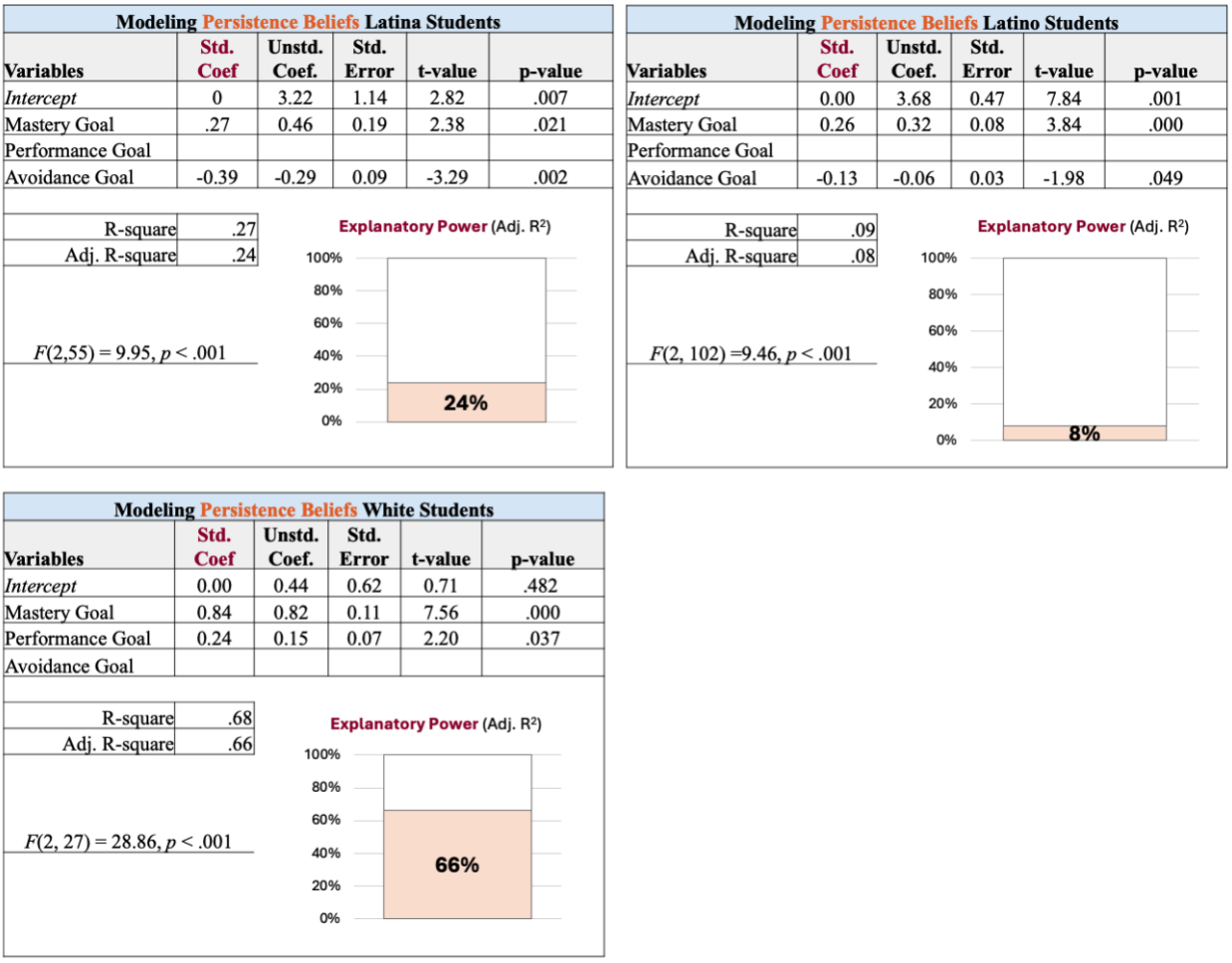

Figure 4

Complete model information for **Persistence Beliefs** that includes the explanatory power and standardized coefficient values reported in the results section for Latina, Latino, and White students

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