



## Finding *Los Científicos* Within: Latino Male Science Identity Development in the First College Semester

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Over the past 30 years, the phenomena of shifting economies coupled with the rapidity of globalization have placed a substantial threat on America's place as an economic global competitor (Thussu, 2010). Specifically, the shift from the postindustrial/ mass production economy to the knowledge economy has increased the demand for a workforce composed of critical thinkers and innovators who possess strong math and science skills (Thussu, 2010). According to the National Science Board (2008), global and national economies are threatened by shortfalls of workers to meet these needs. Further, the past decade's demographic shift suggests that racial ethnic minorities will become the majority on many college campuses in the next decade (National Center for Education Statistics, 2010). The latest census data reveal that Hispanics are the fastest growing population and currently number 50.5 million, representing 16.3% of the entire U.S. population (U.S. Census Bureau, 2010). The same report (U.S. Census Bureau, 2010) also predicts that the Hispanic population will become the majority of the U.S. population by 2040.



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On the science, technology, engineering, and mathematics (STEM) front, data from the Higher Education Research Institute (2010) suggest that Hispanic students are interested in STEM fields, but are held back due to poor STEM degree completion rates. In 2010, 32% of all U.S. undergraduates planned to pursue a STEM degree (National Science Foundation [NSF], 2013). Out of these undergraduates, 29.5% were White and 36% were of Latina/o descent. In that very same year, however, White students earned 67.2% of all STEM degrees, while Latina/o students earned only 8% of all STEM degrees (NSF, 2013). Scholars (e.g., Rendón, García, & Person, 2004; Rodriguez, Guido-DiBrito, Torres, & Talbot, 2000) have also acknowledged the importance of the first few weeks of college as critical to validating Hispanic students' knowledge and skills; nonetheless, no studies to date have examined the first-semester experiences of Latino students in the STEM disciplines.

In response to these phenomenon, Dr. Charles Lu's research focuses on examining science experiences of Latino males majoring in Science, Technology, Engineering, and Mathematics (STEM) disciplines. The qualitative, phenomenological study referenced in this brief examined their first semester science experiences using a science identity framework. The two main research questions guiding this research study were: (1) How do Latino males majoring in STEM disciplines ascribe meaning to their science experiences in the first semester of college? (2) How do Latino males' science identities develop in their first college semester?

### A Case For Latino Men

Specifically within the Latina/o community, a growing achievement gap demonstrates that a majority of Latino men do not meet the minimum requirements to access the STEM disciplines (Saenz & Ponjuan, 2009). Nevertheless, Latino males who graduate from high school and enroll in college are interested in pursuing STEM careers. Using a sample of 3,946 students, Riegle-Crumb and King (2010) found that Hispanic males were more likely to enroll in a STEM major compared to their White and Black male peers and almost 3 times more likely to pursue a STEM degree compared to their Latina female counterparts. Despite high interest and enrollment in the STEM fields, research has also shown that Latino males are not successfully attaining STEM degrees. A national report written by Toldson and Esters (2012) on minority men in STEM determined that even though Latino men made up 18.5% of the total population, only 5% of STEM bachelor's recipients were Latino men. Compared to their White, Black, Asian, and Native American male peers, Latino males were proportionally the lowest recipients of STEM bachelor's degrees. As such, the lack of STEM completion for Latino men remains a critical issue that must be quickly addressed and resolved. Within this context, the following is a summary of key findings of this study.

### Creative Identity as a Means to STEM Success

When asked how they knew they were "science people," the first characteristic all participants discussed was their science and math grades. All participants received A's in their high school science and math courses, which was the primary basis of how they ascribed meaning to their science competencies. In addition, their grades shaped their recognition of themselves, as well as the recognition of their peers and high school teachers as "science" people. By the end of their first college semester, however, some of the participants who did not perform well academically no longer felt competent in their science abilities.

Even though they were still recognized as “science people” because they majored in science, their inability to score well on class exams and secure good grades also diminished their self-recognition as scientists. The majority of the participants attributed the development of their creative identities as essential to their first-semester science and math experiences, particularly their grades. They discussed the importance of finding patterns and connections in their course content, and they discovered that their creativity was critical in helping them on their exams to solve problems the answers to which they were never directly taught. As such, their creative identities helped them infer and derive the correct answers from the information that was provided for them.

### The Importance of Science Communities

The findings from this study showed that the participants’ science identities were largely shaped from their science communities, which is consistent with past research on how learning communities influence identity development and academic outcomes for ethnic minority students (e.g., Cole & Espinoza, 2008; Guiffrida, 2006; Museus & Harris, 2010). Overall, participants agreed that their experiences within the scientific community helped shape their science identities. Additionally, while most of the participants benefitted from being a part of the scientific community, their rhetoric also suggested that they, to a certain extent, enjoyed the fact that the scientific community held a sense of elitism and was perceived as difficult to enter. This, too, may confirm some of the literature about Latino masculinity, specifically the cultural and social constructions of competition (see, e.g., Rodriguez & Gonzales, 1997; Torres, Solberg, & Carlstrom, 2002). Participants told stories about peers or friends whom they knew who were not achieving at high levels in STEM courses, and the level of satisfaction they got from knowing that the scientific community was not accessible by everyone. The majority of the students in this study, nonetheless, were part of science communities that cultivated and nurtured their science identities. As such, the science communities the students were involved in not only allowed them to meet and interact with professional scientists, but also provided a broader perspective on how scientists connect with other parts of society.

### Implications for Practice

The primary goal of this study was to explore first semester science experiences for Latino males in college. The findings from this study bring attention to the ways Latino males’ science identities are deconstructed, challenged, and shaped in their first semester of college. Many of the men enjoyed the prestige and exclusivity that they associated with STEM, and this affected the way they constructed their reality within and outside the scientific world. University administrators should make participating in a science community an expected norm for all STEM students in their first year of college. They should also reframe “tutoring” and as “collaborative study sessions” so that students feel like they are active contributors as opposed to passive consumers of scientific knowledge. At the same time, faculty and staff should work together to send a strong message to normalize help-seeking behaviors, particularly for Latino male students.

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