THE SOCIALIZATION FOR TEACHING: FACTORS RELATED TO TEACHING CAREER ASPIRATIONS FOR DOCTORAL STUDENTS OF COLOR

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ABSTRACT

Aim/Purpose	The purpose of our study was to gain a better understanding of the socialization factors that contribute to the aspirations of doctoral students of Color to pursue teaching careers.
Background	Internationally, there has been a renewed call to diversify the professoriate. While the literature often examines early pathway issues and hiring bias, one efficient solution is to continue encouraging the socialization of those doctoral students of Color already interested in pursuing a teaching career.
Methodology	We used a sample of 2,717 doctoral candidates of Color from over 221 doctoral-granting institutions in the USA who completed a survey about their graduate experiences. The sample of participants indicated they aspired to a teaching career at the beginning of their doctoral study, yet not all were interested in the same career choice by the end.
	To analyze our data we used Logistic Regression Modeling (LOGIT) to test which socialization factors (i.e., anticipatory, formal, informal, and personal) contribute to teaching career aspirations.
Contribution	We found that factors associated with anticipatory and personal socialization contributed greatest to the continued aspiration of being a teaching faculty member, along with teaching experience. These results are somewhat different

than previous literature and practice that places a greater emphasis on formal and informal socialization experiences as contributing to a future teaching faculty career.

Findings	Anticipatory (publishing before the start of a PhD program), formal (teaching experience), and personal socialization (sense of belonging) were most related to aspirations to pursue a teaching faculty career, while more factors more traditional in the literature (e.g., relationship with advisor, career and research support, etc.) were not significantly correlated with the desire to pursue a teaching faculty career.
Recommendations for Practitioners	We recommend that faculty advisors, graduate education administrators, and academic leaders pay close attention to the personal and social development of doctoral students of Color in order to sustain their interest in teaching in higher education. In addition, it is important for academic leaders to recognize doctoral socialization begins before a student enters a PhD program, so more attention should be given to the opportunities for undergraduate students of Color to learn about the academy through research and publication.
Recommendations for Researchers	Doctoral socialization as a topic of study has continued to be of interest to scholars, but there are more quantitative and mixed-method scholarship that could be used to influence academic leaders and policymakers. In addition, scholars should continue to complicate and refine graduate socialization theory in order to understand and represent racially diverse populations.
Impact on Society	Multiple interventions will be needed in order to increase the amount of faculty of Color in the professoriate but improving pre-PhD experiences and sense of belonging for doctoral students of Color could be a targeted policy intervention for academic leaders. As researchers and practitioners in the field are looking for ways to better support doctoral students of Color, a nuanced understanding of developmental needs is essential not only for graduation but for intended career aspiration.
Future Research	With these findings, we offer opportunities for future research to further our understanding of socialization for doctoral students of Color. Future studies should include more robust measures of socialization factors along with longitudinal research designs in order to understand the temporal developmental needs for students of Color along multiple pathways to the professoriate.
Keywords	graduate education, doctoral socialization, race, sense of belonging, teaching

INTRODUCTION

Approximately 75% of full-time faculty at four-year institutions in the U.S. are White (Espinosa et al., 2019). Even though demographics for people of Color (We capitalize "Color" in order to recognize the power dynamic capitalization and grammar play in pursuit of racial justice.) are expanding in the United States, access to higher education and specifically doctoral education have only moderately increased, while the racial diversity of the professoriate has largely remained stagnant (Finkelstein et al., 2016). The underrepresentation of faculty of Color is not specific to the U.S. context (Adams, 2020). Pathways to, and through, the professoriate are complex (Svederlik et al., 2018) and especially difficult for people with minoritized identities. Individuals could veer from a path to the professoriate in numerous ways, but one of the easier solutions to diversifying the racial composition of faculty is to sustain teaching career aspirations for doctoral students of Color from application through graduation. In order for us to examine why there are not more faculty of Color in teaching roles, we must

look back. This paper seeks to explore the role doctoral student socialization has in the aspiration to pursue a teaching faculty career for doctoral students of Color.

DOCTORAL SOCIALIZATION THEORY

Merton (1957) defined socialization as a rational, linear process for how individuals acquire and incorporate cultural norms into their integrated personality and behavior. As this definition has expanded, the underlying ability to integrate established norms, beliefs, and habits in order to engage with a prospective group has held for most modernist versions of socialization theory (Antony, 2002). From a linear and temporal perspective, Gardner (2010) developed a model of doctoral socialization using transitions of graduate education (i.e., pre-/early transition, candidacy, and beyond candidacy). Even though graduate education milestones such as reaching candidacy is based on a linear temporal continuum, scholar development and socialization may not occur so linearly, especially for doctoral students of Color (Jazvac-Martek, 2009).

Weidman et al. (2001) later created a nonlinear model of doctoral socialization whereby role commitment and identity are developed through formal and informal experiences with professional and personal referenced social groups. Furthering this work, Twale et al. (2016) proposed how students of Color are impacted by racial climate and available opportunities to engage with scholarly ideas and tasks. For the purpose of this study, we use these conceputalizations of doctoral socialization that describe graduate student socialization as occurring through four interactive (not linear) stages (i.e., Anticipatory, Formal, Informal, and Personal) to integrate a professional role congruence for a faculty career.

Anticipatory socialization specifically involves the type of implicit and explicit messaging and understanding students receive before graduate school (Austin & McDaniels, 2006; Twale et al., 2016; Weidman et al., 2001) (It should be noted there are different definitions for anticipatory socialization used in the higher education. Tierney and Bensimon (1996) refer to anticipatory socialization as graduate education experiences and interactions *in,* and not *before,* graduate education. For the purposes of this paper, we use Twale et al.'s definition.). The *formal* stage of socialization encompasses the "training" and activities doctoral students engage in with advisors, faculty mentors, and peers. As students are "trying" new activities, acquiring disciplinary knowledge, and learning the norms from their field, they are also beginning to negotiate a scholar identity (Emmioğlu et al., 2017; Gardner, 2008; Jazvac-Martek, 2009).

As students gain formal training in pedagogy and methodology, they also discover more ambiguous expectations about faculty lifestyle, disciplinary norms, and peer networks through *informal* socialization (Austin, 2002; Skakni, 2018). Hawley (2010) labels the "encoded system of behavior" as "unwritten rules" that doctoral students must uncover in order to be successful. As students have learned the formal knowledge necessary for a faculty role, integration of informal experiences and expectations into a scholar/faculty identity become important to prepare them for independent research, teaching, and service (Gardner, 2009). Lastly, the *personal* stage of doctoral socialization is the integration of previous identities with recent informal and formal identities which can be indicative of their feeling or sense of belonging as a whole person. This is particularly important for students of Color in the socialization process since they often receive explicit messages about the definition of prototypical scholars and expectations created for and by White scholars (Felder et al., 2014; Levin et al., 2013).

DOCTORAL STUDENT OF COLOR'S SOCIALIZATION

Educational outcomes that graduate students of Color receive in their doctoral programs are twofold: 1) Acquiring the necessary academic training to advance professionally, and 2) learning to employ critical navigational skills to personally survive (Gildersleeve et al., 2011; Truong & Museus, 2012). The socialization experiences and environment in doctoral education have lasting effects that transcend well after degree completion (Platow, 2012). While there are nuances on how graduate

students of different minoritized racial identities experience graduate education (e.g., Felder, 2010; Fox, 2013; Museus et al., 2013; Ramirez, 2017), doctoral students of Color operate within racialized organizations that operationalize the privilege of Whiteness (Ray, 2019).

In graduate school at predominantly White institutions, students of Color often contend with isolation, racial discrimination, and exclusion in their academic programs which can negatively influence their overall well-being and success (Truong et al., 2016). As prior research demonstrates (Bowman, 2006; Burt et al., 2019; Gildversleeve et al., 2011), students of Color must learn to navigate hostile terrains in their graduate programs in order to succeed. However, the navigational strategies that graduate students of Color employ to survive negative racial climates in their programs can have negative consequences like self-isolation and negative perceptions of the academy (Gonzalez, 2006). Using Sverdlik et al.'s (2018) comprehensive analysis of factors that lead to doctoral student success and Twale et al.'s (2016) socialization factors, much of doctoral socialization is based on relationships with faculty and peers. We use this section to review the existing literature on doctoral student relationships in the socialization process.

FACULTY RELATIONSHIPS

The faculty-student relationship in doctoral education is one of the most unique and important factors that distinguishes doctoral education from other forms of education (Austin, 2002; Rosser, 2004) and can have a significant impact on doctoral socialization outcomes (Barnes & Austin, 2009; Schneijderberg, 2019). This unique relationship is vital to understanding the ways in which doctoral students receive implicit and explicit messages from academia, are introduced to discipline and department-specific values, and intend to enter the professoriate (Hottenrott & Lawson, 2017). Positive doctoral supervision relationships that support students personally and professionally have profound impact related to self-efficacy and scholarly productivity (Jairam & Kahl, 2012; Paglis et al., 2006).

For students of Color, relationships with faculty are also related to positive student outcomes, but often mentorship is found outside of the department and/or institution (Winkle-Wagner et al., 2010). Felder (2010) found that "faculty mentoring and support are critical to promoting [Black doctoral students'] socialization, scholarship, research, and career development for post degree-completion" (p. 463). Through both formal and informal interactions, students can gain professional and personal knowledge and support (Griffin, 2013; Griffin et al., 2018). The types of collegial interactions mentors have with their doctoral students produce positive outcomes by creating healthier social environments (Curtin et al., 2016; Jairam & Kahl, 2012) and more a positive orientation to a potential faculty career (O'Meara et al., 2014).

PEER RELATIONSHIPS

Doctoral socialization is often framed as students learning from advisors, mentors, and disciplinary associations, but is also shaped by horizontal peer relationships, which is important for doctoral student success (Gardner, 2007; Lovitts, 2001). Peers can provide another social relationship where doctoral students can learn and develop (Griffin et al., 2018). Peers can provide tangible benefits in doctoral socialization, such as helping a new student acclimate to laboratory protocols, while also providing psychosocial support by validating experiences (Douglas, 2020).

While peers are documented in the literature as sources of support (Gardner, 2007, 2008, 2009), for minoritized doctoral students, they can also be a source of conflict (Gildersleeve et al., 2011). For example, students of Color endure direct microaggressions from peers in lab and class settings but also experience "vicarious trauma" from learning about peers' of Color experiences of discrimination (Slay et al, 2019). White peers can also produce an environment of "social othering" that excludes certain students from engaging in the social nature of departments and peer cultures (Laufer & Gorup, 2019).

SENSE OF BELONGING

Sense of belonging is, in some ways, the integration of oneself among the social contexts. While there has been a significant study of the impact of sense of belonging on undergraduate students of Color, there is increasing attention to the ways belonging impacts doctoral student success (Herzig, 2006; Mantai, 2019; O'Meara et al., 2017; Ong et al., 2018 Winkle-Wagner et al., 2010). Winkle-Wagner et al. (2010) found that the sense of belonging of doctoral students of Color was related to the level of support they experienced from faculty and institutional culture. This was similar to the findings of Lovitts (2004) who concluded that doctoral students not persisting through graduation often lacked a sense of community amongst faculty and peers. Unlike most results of the qualitative studies, Gibbs et al. (2014) did not find intellectual or social sense of belonging contributing significantly for recent BioMedical PhDs in their faculty career aspiration. Belongingness in graduate school, while seeming to have positive benefits for career aspirations, should further be explored for students of Color.

CAREER IMPLICATIONS

Research demonstrates that doctoral students of Color are generally less likely to choose an academic career (Gibbs et al., 2014; Golde & Dore, 2004) because of negative climates for these students (Austin, 2002), the inability to enact shared and community values in a faculty role (Haley et al., 2014), or the lack of positive doctoral socialization experiences provided by institutions and faculty advisors (Barnes & Austin, 2009). For students of Color, especially those with more collectivist orientations, value incongruence between the independence of faculty career activities and those of their home communities can divert faculty career intentions (Gibbs & Griffin, 2013; Haley et al., 2014; Jaeger et al., 2016; Levin et al., 2013).

Additionally, students may be deterred from a faculty career if they do not have a positive sense of belonging or interactions with their academic field or discipline (Ali & Kohun, 2006; Curtin et al., 2016; Etmanski, 2019; Fisher et al., 2019; Margolis & Romero, 1998; O'Meara et al., 2017). What does seem to have the most consistent influence on students' pursuit of a faculty career is the mentorship and advising they receive from a faculty mentor (Davidson & Foster-Johnson, 2001; Griffin et al., 2018; Jaeger et al., 2016; Margolis & Romero, 2001; Millett & Nettles, 2006; Posselt, 2018).

Because there are multiple, dynamic factors related to doctoral socialization and faculty careers that have been mostly explored separately, we use a unique database of doctoral candidates to explore how doctoral socialization experiences and interventions shape teaching faculty career aspirations for doctoral students of Color. Thus, we explore the following research question: *What are the anticipatory, formal, informal, and personal socialization factors that are related to the teaching career aspirations of doctoral students of Color?*

METHODOLOGY

DATA

This study uses survey data from the National Research Council (NRC) sponsored, *A Data-Based Assessment of Research-Doctorate Programs in the United States 2005-2006* (National Research Council, 2010). These data came from 221 participating doctoral-granting institutions with approximately 12,000 doctoral candidates, representing 62 different academic fields. We analyzed responses from the doctoral candidates of Color (i.e., Asian, Black, Latinx, Indigenous, and Multiracial) that indicated "teaching" was a primary or secondary career goal at the beginning of their doctoral experience (n = 2,717). In particular, these data are helpful to show the antecedent as to why there are not more faculty of Color currently, by showing the socialization experiences in relationship to career outcomes that shaped the current demographics of the professoriate.

Variables

Career aspiration

Each participant was asked to give their primary and secondary career goals before they entered the program and at the time of survey (i.e., at the time of doctoral candidacy). Participants could choose from goals of research, teaching, management, professional services, and "other." We narrowed the sample to only those students of Color that selected "teaching" as either a primary or secondary goal at the beginning of their doctoral program. Then, we created a dichotomous variable to represent whether or not the student still had aspirations to pursue a "teaching" path at the time of candidacy, where "1" represented still having a primary or secondary "teaching" goal and "0" represented no longer having a primary or secondary "teaching" goal. This variable served as the dependent variable for our analysis.

Personal characteristics

To examine demographic information in the model, we created variables for sex, first-generation status, citizenship, and academic field. Gender was a dichotomous variable (1=female; 0=male; We recognize that "gender," with a range of potential options to select would have been ideal to capture the full gendered experience of faculty, this was not an option for this data set.). First-generation status was created from the highest educational attainment of the participant's mother, father, or guardian (holding a bachelor's degree). Additionally, citizenship was a dichotomous variable (1 = U.S. citizen/permanent resident; 0 = non-U.S. citizen; We also recognize the citizenship status of participants may not be captured from a dichotomous variable, but this is how these data were collected.). Academic fields were created by the National Research Council and grouped into five different categories: Biomedical/Health Sciences, Physical and Mathematical Sciences, Engineering, Social Sciences, and Humanities.

Socialization factors

To understand the anticipatory socialization (i.e., experiences before being a doctoral student) experiences and their relationship to a faculty career, we created a variable to indicate whether participants published before their doctoral program. Participants could have published book chapters, articles, books, or book reviews in order to be coded as a "yes" or "1" in our analysis.

In order to examine formal socialization experiences (i.e., teaching and research), we first used a dichotomous variable of whether they taught a course. Next, we created a dichotomous variable that indicated if they had any publication – similar to the anticipatory socialization variable, but during their doctoral program. Finally, to understand doctoral students of Colors' doctoral experiences, questions about the student's "satisfaction" with the quality of their experiences in research, teaching, and dissertation process were used. The participant could answer on a three-point scale (1 to 3) of "not," "somewhat," or "very" satisfied.

To examine informal socialization (i.e., the relationships with faculty, mentors, and peers), we created two dichotomous variables that indicated if the participants had a mentor that was "internal" or "external" to the program. Additionally, doctoral candidates were asked, on 5-point Likert scales, how distant (1) or interactive (5) their relationship with both their advisor and program faculty were. Finally, we included a categorical variable that described the doctoral student's career support from their advisor (i.e., no, not certain, or yes) and used "no" as a reference group. We also used a peer support variable of a three-point scale indicating whether the student felt their peers were "not supportive (1)," "somewhat supportive (2)," or "very supportive (3)" of each other.

Lastly, in order to measure personal socialization (i.e., how one's identity is integrated in the doctoral work context), we used the question "How much do you feel you belong to your program?"

Participants could respond with "not at all," "some," and "a lot." Descriptive statistics for each of these variables is presented in Table 1.

ANALYSIS

We underwent three steps to explore our research question. First, we imputed the missing values with multiple imputation (MI) technique. The original data had 15% of missingness. This could have resulted in severely biased estimates if listwise deletion was employed to treat the missing values (Manly & Wells, 2015). Thus, we conducted twenty-five imputations (m=25) for the variables listed above with five other auxiliary variables (gender, first generation status, citizenship, publication before and during doctoral study) that were explanatory variables in our model and were related to the variables with missingness.

Table 1: Descriptive Statistics for Students of Color

	Original Dataset (N=2,284)	Imputed Dataset (N=2,775)
	Mean or %	Mean or % *
Demographics		
Female	35.7%	36.2%
Race/Ethnicity		
Asian	58.8%	58.8%
Black	8.2%	8.2%
Indigenous	4.2%	4.2%
Latinx	13.4%	13.4%
First Generation	23.6%	24.3%
US citizen or permanent resident	33.2%	31.2%
Academic Field		
Bio and Health Science	11.1%	10.9%
Physical and Mathematical Science	32.7%	33.9%
Engineering	17.9%	17.9%
Social and Behavioral Science	24.1%	23.4%
Humanities	14.2%	13.9%
Anticipatory Socialization		
Published before doctoral work	53.3%	54.6%
Formal Socialization		
Published during doctoral work	60.8%	61.3%
Has a teaching experience during doctoral study	54.5%	54.3%
Respondent's satisfaction with teaching		
Not satisfied	7.5%	7.4%
Somewhat Satisfied	46.2%	46.7%
Very satisfied	46.3%	45.9%
Respondent's satisfaction with research		
Not satisfied	9.9%	9.7%
Somewhat Satisfied	35.9%	35.8%
Very satisfied	54.3%	54.4%
Dissertation support		
Not satisfied	10.3%	10.2%
Somewhat Satisfied	35.5%	35.6%
Very satisfied	54.2%	54.2%

	Original Dataset (N=2,284)	Imputed Dataset (N=2,775)
	Mean or %	Mean or % *
Informal Socialization		
Advisor's support in career goals		
No	5.2%	5.5%
Not Certain	12.4%	12.5%
Yes	82.5%	82.0%
Relationship with Advisor	4.27	4.26
Relationship with faculty	3.57	3.58
Has a mentor internally	83.0%	83.5%
Has a mentor externally	36.3%	36.4%
Peer Support	3.83	3.83
Personal Socialization		
Sense of belonging		
None	6.3%	6.1%
Some	40.6%	40.5%
A lot	53.1%	53.3%

Notes: * The values are pooled point estimates from 25 imputed dataset;

Next, as our dependent variable was dichotomous, we identified the logistic regression model which is a non-linear model for estimating the probability of a binary dependent outcome (Rodriguez et al., 2018). We specified an equation using a vector of explanatory variables as follows to estimate the predicted probabilities of students of Color desire to pursue teaching intentions:

$$\ln(\frac{P}{1-P}) = \beta_0 + \beta_1 X$$

where, the left-hand side of the model represents the natural log of the probability of the event occurring for each individual, and β_1 and X in the right-hand side are vectors of regression coefficients and explanatory variables, respectively, that include student demographics (gender, first generation, citizenship); academics (field of study), anticipatory socialization (publication before doctoral study), formal socialization (teaching or publication experiences, satisfaction with research, teaching and curriculum), peer relationship, and sense of belonging. Finally, we plotted predicted probabilities for pursuing a teaching faculty career.

LIMITATIONS

As with any study, we have to acknowledge there are limitations. Since the student survey data was collected between 2005-2006, some of the concepts (e.g. sense of belonging) were measured using a one-item question. For future research we hope that a more robust set of items could be used to measure complex concepts. Second, these data do not include an equal representation of different racial groups. Lastly, our study applies directly to faculty interested in a teaching career, even though faculty roles can have a myriad of other responsibilities including research, advising, and other service opportunities so results should be narrowly interpreted to that population of the professoriate.

RESULTS

For the logistic model, we report both odds ratio and predicted probabilities. Table 2 presents the results between socialization/experience factors and aspirations to pursue a teaching career.

**Table 2. Logistic Regression Model for Pursuing a Teaching Career**

	Odds Ratio	S.E.
Student Background Characteristics		
Female	0.895	0.109
Race (Ref. Asian)		
Black	0.924	0.213
Latinx	1.124	0.192
Indigenous	1.036	0.305
First Generation	1.163	0.160
US citizen or permanent resident	1.027	0.152
Academic Field (Ref. Humanities)		
Bio and Health Science	0.143***	0.048
Physical and Mathematical Science	0.221***	0.072
Engineering	0.109***	0.035
Social and Behavioral Science	0.239***	0.077
Anticipatory Socialization		
Publications before doctoral work	1.403*	0.200
Formal Socialization		
Publications during doctoral work	0.772†	0.118
Has a teaching experience during doctoral study	1.296*	0.159
Respondent's satisfaction with teaching (Ref. Not satisfied)		
Somewhat satisfied	0.881	0.186
Very satisfied	0.864	0.195
Respondent's satisfaction with research (Ref. Not satisfied)		
Somewhat satisfied	0.878	0.195
Very satisfied	1.223	0.313
Dissertation support (Ref. Not satisfied)		
Somewhat satisfied	1.271	0.280
Very satisfied	1.177	0.304
Informal Socialization		
Advisor's support in career goals (Ref. No)		
Not certain	0.727	0.194
Yes	1.196	0.335
Respondent's relationship with advisor	0.995	0.081
Respondent's relationship with faculty	1.125†	0.079
Has a mentor internally	1.049	0.161
Has a mentor externally	1.114	0.144
Peer Support	0.917	3.567
Sense of Belonging (Ref. None)		
Some	2.599***	0.230
A lot	2.368***	0.258
Constant	7.256	3.567
Observations	2,717	

Note: The estimates are pulled from 25 imputed datasets. †p<0.10, * p<0.05 ** p<0.01, *** p<0.001

ANTICIPATORY SOCIALIZATION

The findings show that publishing before doctoral education is a significant factor related to teaching aspirations for students of Color at .05 level. The odds of the students who published their works before doctoral study were 1.403 times higher than that of those with no publication prior to

doctoral work. This is equivalent to 4 % pts increase in the predicted probability for students who published an article before doctoral study (Figure 1).
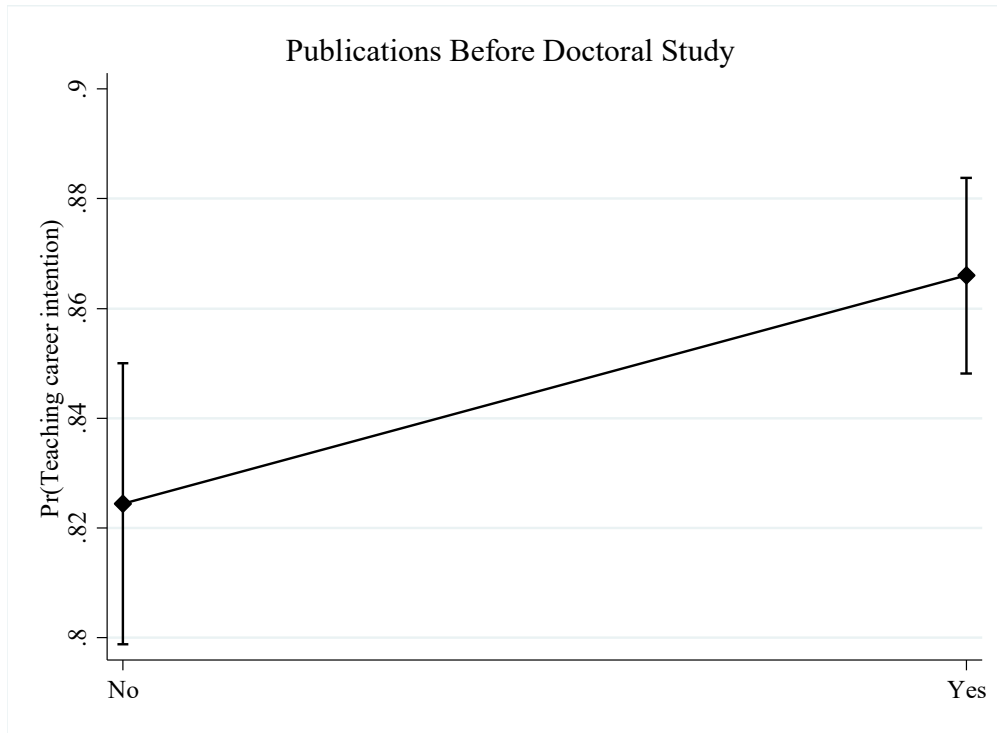
Figure 1. Predicted Probabilities of Teaching Career Intention by Publication Experience

FORMAL SOCIALIZATION

Among formal socialization experiences during doctoral study, teaching experience during doctoral study was positively associated with pursuing a teaching career after graduation at .05 level. The students with teaching experience had 1.296 times higher odds than that of the students with no teaching experience. On average, the students with teaching experience had 3% pts higher probability of considering a teaching career than their peers with no teaching experience (Figure 2). On the other hand, satisfaction of teaching experience did not have a considerable association with the desire to pursue a teaching career. Additionally, students who produced at least one publication during their graduate career were less likely to pursue a teaching career. They had 0.772 times the odds of maintaining the career intention than their peers with no publication during their doctoral study.
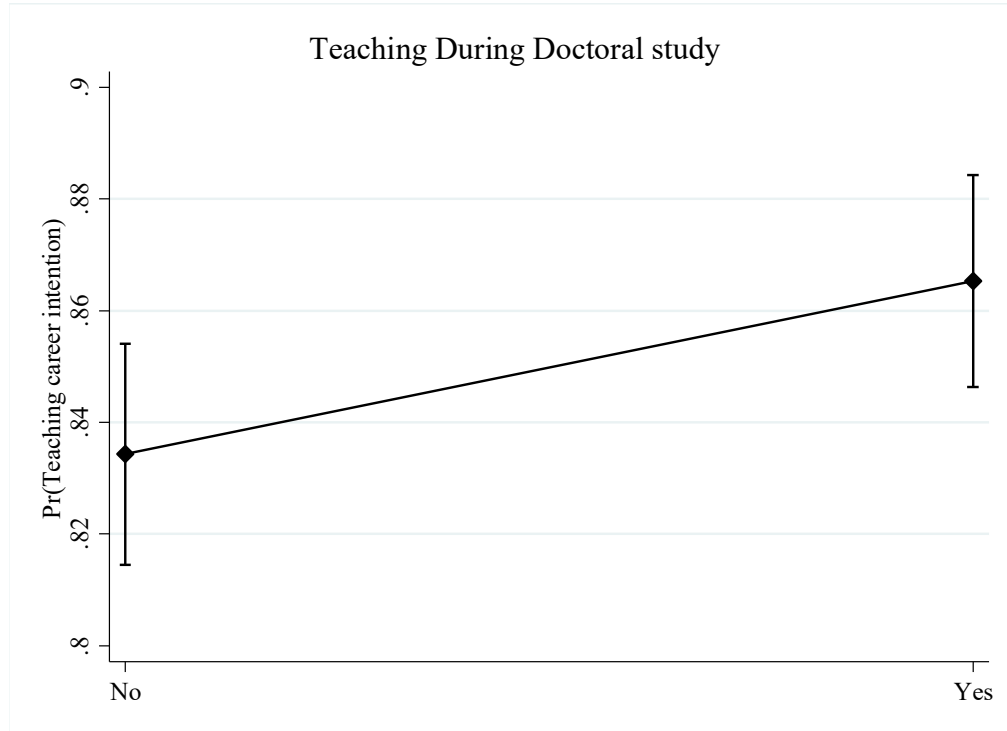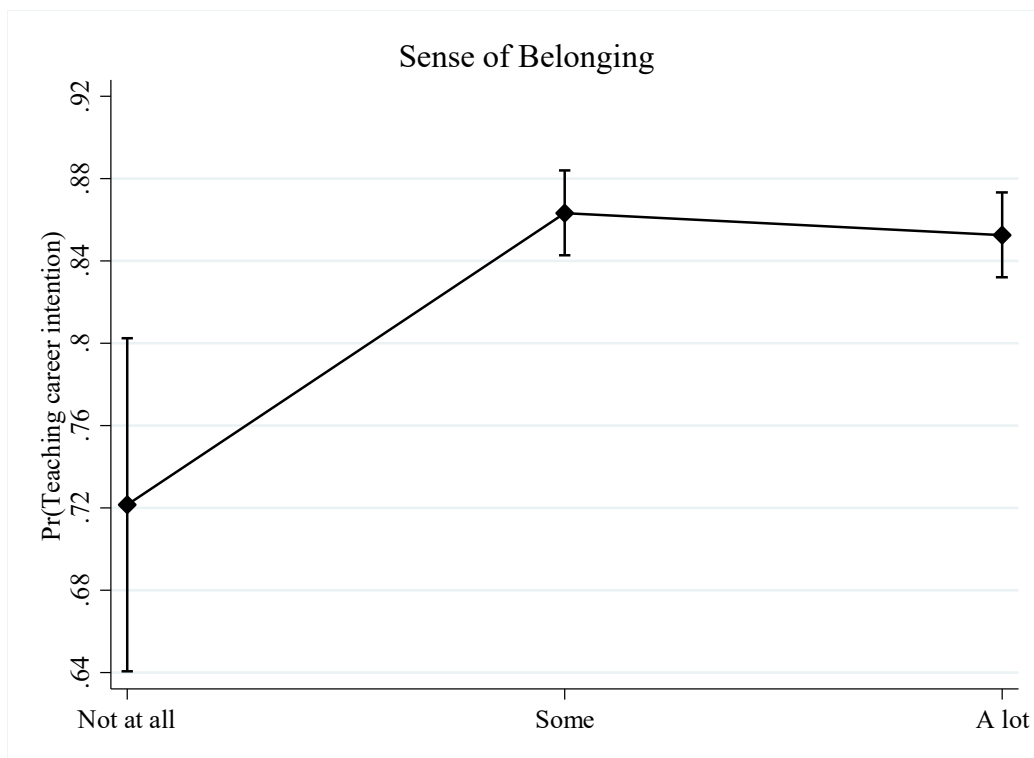
**Figure 2. Predicted Probabilities of Teaching Career Intention
by Teaching Experience**

INFORMAL SOCIALIZATION

Our findings suggest that informal socialization is inconsistent in shaping career aspirations of doctoral students of Color. While previous research suggests having a mentor and supportive advisor is influential for shaping doctoral students' aspiration of pursuing a faculty career, these factors were not substantial in explaining the aspiration to pursue a career in teaching for students of Color. However, interacting with departmental faculty was moderately meaningful (0.1 significance level) for students of Color in relation to teaching faculty aspirations.

PERSONAL SOCIALIZATION

Sense of belonging had the strongest relationship with students of Color teaching career aspirations. Whether students had an overall sense of belonging was the most influential factor in our model to predict students' pursuit of the professoriate. As seen in Figure 3, the difference in the probabilities is close to 14% pts difference between the students who did not feel any sense of belonging and those who felt "some" or "a lot." Interestingly, there was little statistical difference between feeling "some" or "a lot" of sense of belonging, which leads us to believe even feeling moderately a part of a scholarly community while in a doctoral program is related to increased probability of pursuing a teaching faculty career after graduation.

**Figure 3. Predicted Probabilities of Teaching Career Intention
by Sense of Belonging**

DISCUSSION

In order to diversify the teaching professoriate, researchers and academic leaders should approach the solutions with nuanced research-based frameworks and interventions. The results of this study showcase the multifaceted nature of doctoral socialization for students of Color. In this section, we provide implications for doctoral socialization theory and practical considerations that academic leaders should utilize in order to create interventions to encourage faculty career aspirations for doctoral students of Color. Additionally, we offer future research possibilities to extend doctoral socialization theory and improve outcomes for doctoral students of Color.

IMPLICATIONS FOR THEORY

This study contributes to a growing body of empirical research that demonstrates how and what socialization experiences and relationships are related to faculty career aspirations, particularly for doctoral students of Color. What we found is that many of the socialization factors that are represented in traditional theories do not have empirical support. For example, in much of the socialization theories (e.g., Tierney & Bensimon, 1996) the formal and informal experiences and relationships in doctoral education are the more integral aspects of doctoral socialization, yet for our sample, it was the anticipatory socialization factor that had the most significant relationship. This confirms how other theorists (Twale et al., 2016; Weidman et al., 2001) conceptualize doctoral socialization as beginning well before the doctoral education process begins. More theoretical and conceptual work should include and expand upon the anticipatory socialization factors that contribute to career aspirations, especially for doctoral students of Color.

The results from this study also complicate ideas of formal and informal factors of doctoral education that are related to teaching faculty career aspirations. Unlike most models and theories of

doctoral socialization, most informal and formal socialization experiences and relationships were not related to teaching career aspirations for students of Color. Only teaching experience and relationship with departmental faculty were moderately related to teaching career aspirations, while other common theoretical factors (i.e., research experience, advisor support, and presence of a mentor) were not. This seems to support prior research (e.g., Felder et al, 2014; Gildersleeve et al., 2011; Truong & Museus, 2012) that recognizes the resilience and innovation of students of Color to create their own supportive structures outside of, or sometimes in resistance to, current formal and informal doctoral education structures. Conceptual ideas of socialization within graduate education may need to be adapted to consider broader definitions and context for socialization outside of formal structures like advisor/departmental relationships and institutional boundaries for doctoral students of Color.

Since not all socialization experiences and relationships had similar influence on career aspirations, we believe there is a need to develop more theory and conceptual frameworks that center the experiences of doctoral students of Color and their distinct socialization needs. Future research on doctoral student socialization should include broader conceptualizations of faculty relationships, mentorship, and research experience. For example, since doctoral students of Color often find networks outside of departmental advisors and mentors (Griffin et al., 2018), investigating experiences of mentorship and faculty relationships should be examined through culturally relevant psychosocial support and apprenticeship-type learning from a broad array of contexts.

IMPLICATIONS FOR PRACTICE

ANTICIPATORY SOCIALIZATION

There was a relationship between students of Color who published scholarship before their doctoral program and the likelihood of aspiring to a teaching career. This finding has important implications for current faculty and academic leaders. First, it is important to provide opportunities for undergraduate and masters students of Color to begin the doctoral socialization and scholarly identity development process as soon as possible. Developing scholarly habitus while allowing pre-doctoral students the space to validate their other personal social identities can catalyze doctoral socialization processes (McCoy & Winkle-Wagner, 2015). Providing explicit and targeted opportunities for research and publishing experience to pre-doctoral students can disrupt historical and systemic racial educational inequities that can have lasting effects through doctoral education (Winkle-Wagner & McCoy, 2016). The pathways to and through doctoral education are enhanced when students, especially those that may experience isolation or discrimination, are prepared with success strategies, academic confidence, and coping mechanisms (Truong & Museus, 2012).

It is important to note that these findings, if not carefully implemented, could be misconstrued to devalue the contributions doctoral students of Color who have not published prior to doctoral work. For doctoral students who may not have received opportunities to publish prior to doctoral studies, graduate admissions committees should take into account how a lack of pre-doctoral publications may be a result of differential socialization experiences for students of Color and envision the potential when given equitable and appropriate socialization experiences (Perna, 2004).

COLLECTIVIST ORIENTATION TO DOCTORAL EDUCATION

In our study, personal socialization (i.e., sense of belonging) was one of the most related factors that enhanced faculty career aspirations for doctoral students of Color. Often doctoral work is structured to encourage individual work and attainment without regard to social interactions and experiences contributing to success and career aspirations. We encourage academic leaders to take seriously the role of belongingness in multiple ways including departments and academic colleges, institutional graduate student engagement, and disciplinary involvement (O'Meara et al., 2017; Ong et al. 2018). It is important for academic leaders to structure activities and social experiences, along with correlated

inclusive climates, for doctoral students to build community and gain connections not only for psychosocial health, but for intellectual and scholarly development. This can happen through pre-orientation and orientation programs that deliberately connect incoming students to current students and faculty. From our results, community-building should not be an afterthought or an expendable activity, but essential to the career development of doctoral students of Color (Williams et al, 2018).

In addition to activities at the organizational level, academic leaders should provide the necessary resources – financial and time – for doctoral students of Color to engage with scholarly associations that provide disciplinary context and more belongingness opportunities. Especially for students of Color, the ability to expand and develop networks beyond the institution to potential formal and informal professional relationships can catalyze socialization for students of Color in ways they may not be able to at their home contexts (Griffin et al., 2018).

Department chairs, academic deans, faculty advisors, and all faculty interacting with doctoral students should recognize the importance of their role in creating an environment where all students, especially students of Color, have a sense of belonging. As our results indicate, interventions for doctoral socialization and success like teaching opportunities are only moderately related to teaching career aspirations compared to feeling a sense of belonging. Formal and informal relationships and experiences should not be viewed as only discrete contributors to doctoral socialization, but as interconnected contributors to the personal socialization of students of Color.

CONCLUSION

While lack of faculty diversity is a multi-faceted problem plaguing higher education institutions and systems around the world, we provide a potential antecedent as to why there are currently not more teaching faculty of Color. Doctoral socialization is important for doctoral students; especially those that intend to pursue any faculty career (Austin & McDaniels, 2006; McDaniels, 2010). Not all students, particularly those from historically marginalized racial backgrounds, are gaining equitable experiences and relationships in their doctoral program, which may deter them from pursuing a professional future in the academy (Gay, 2004; Gildersleeve et al., 2011; Gonzalez, 2006). Based on this study, we encourage scholars to continue developing frameworks that are more representative empirically from the experiences of students of Color and challenges academic leaders and faculty to not take a "one size fits all" approach to doctoral socialization

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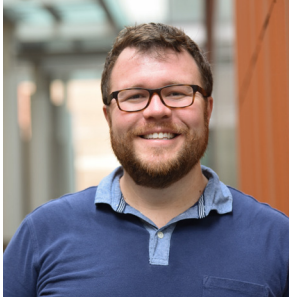
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