Examining How Race/Ethnicity and Gender is Explored in Research on STEM Contingent Faculty[1]

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About the ARC Network

Funded by the National Science Foundation ADVANCE Program, Awards HRD-2121468 and HRD-1740860, the ADVANCE Resource and Coordination (ARC) Network seeks to achieve gender equity for faculty in higher education science, technology, engineering, and mathematics (STEM) disciplines. As the STEM equity brain trust, the ARC Network recognizes the achievements made so far while producing new perspectives, methods and interventions with an intersectional, intentional and inclusive lens. The leading champion in North America to propel the inclusion of women in the field of engineering, the Women in Engineering ProActive Network (WEPAN), serves as the backbone organization of the ARC Network.

About the Virtual Visiting Scholars

The Virtual Visiting Scholars (VVS) program provides a unique opportunity for select scholars across disciplines to pursue research meta-analysis, synthesis, and big data curation on topics crucial to STEM faculty equity. VVS analyze existing research and data, synthesizing different, sometimes competing, perspectives, frameworks, metrics, and outcomes to offer new insights and applications to the broader community.

About the Author

Dr. Goings is an Assistant Professor in the Language, Literacy, and Culture interdisciplinary doctoral program at the University of Maryland, Baltimore County. Dr. Goings' research interests are centered on exploring the academic and social experiences of gifted/high-achieving Black males PK-PhD, diversifying the educator workforce in K-12 and higher education, and investigating the contributions of historically Black colleges and universities to education and society. Dr. Goings is the author of over 50 scholarly publications including four books. His scholarship has been featured in leading academic and popular press outlets including: Teachers College Record, Journal of Teacher Education, Adult Education Quarterly, Gifted Child Quarterly, Inside Higher Ed, Education Week, and Diverse: Issues in Higher Education. Dr. Goings earned his Doctor of Education degree in urban educational leadership from Morgan State University, Master of Science in human services from Post University, and Bachelor of Arts in music education from Lynchburg College (now University of Lynchburg).

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Introduction

Over the past twenty years, colleges and universities have witnessed a drastic decrease in tenure-track faculty positions and an increase of contingent faculty. For the purposes of this project, contingent faculty are defined as "both part- and full-time faculty who are appointed off the tenure track" (American Association of University Professors [AAUP], 2003, p. 170). Recent data from the AAUP (2018) found that 73% of instructional positions across institution types are held by contingent faculty. Researchers have suggested that plausible explanations for the increase in contingent faculty include decreases in tenure-track faculty positions, a general disinvestment in higher education, cost savings of hiring contingent faculty, and increases in individuals earning terminal degrees and seeking faculty positions (Baldwin & Wawrzynski, 2011; Fitzmorris et al., 2020; Kezar & Maxey, 2014; Maxey & Kezar, 2015; Schuster & Finkelstein, 2007).

The onset of and fiscal response to the coronavirus pandemic unfortunately places a spotlight on the use of contingent faculty. Given the current and forthcoming faculty and administrator salary reductions, furloughs, and hiring freezes as a result of the pandemic, universities will continue to rely on, and in some ways increase their use of, contingent faculty as a price saving vehicle. Current instructor hiring data suggests most students majoring in STEM disciplines are taught by a contingent faculty member at some point during their academic career (Fetcher et al., 2019). While studies have sought to understand STEM contingent faculty experiences, one shortcoming of this research area is the lack of focus or mention of the intersectional factors of race/ethnicity and gender identity. However, it is important for institutions of higher education to understand the barriers and supports STEM contingent faculty face, particularly those from marginalized populations. Given the importance that research has on practice and policy, I wanted to explore how researchers have explored this population. Thus, this meta-synthesis was guided by the following three interconnected research questions:

1. What are the characteristics of studies published on STEM contingent faculty?
2. In what ways are discussions of race/ethnicity and gender included in studies on STEM contingent faculty?
3. What best practices do researchers suggest institutions of higher education implement to support the needs of STEM contingency faculty at the intersection of race/ethnicity and gender?

Methodology

The methodological approach for this study used a two-phase content analysis method developed from a prior meta-synthesis project (see Goings & Ford, 2018). Below I describe the article selection criteria and process along with data analysis.

Article Selection Criteria and Process

This study was guided by the following selection criteria:

(1) publication discusses contingent faculty in any STEM discipline;
(2) publication must be empirical/data based (e.g., uses quantitative, qualitative, or mixed-methods); and
(3) publications must have been published between 1993–2019.

Conceptual studies were not included as I wanted to explore how scholars discuss the race/ethnicity and gender identities of their participants and the insights they have garnered about this population from their data. I use 1993 as the starting date as this is when the American Association of University Professors (AAUP) published its inaugural report titled The Status of Non-Tenure-Track Faculty (AAUP, 1993), which played a foundational role in the scholarly discourse on contingent faculty. Additionally, the initial search focused solely on peer-

reviewed journal articles, however due to the low numbers of publications this analysis also includes dissertations and published conference proceedings that met the selection criteria.

To secure articles for this synthesis, with the support of a graduate research assistant I used the following search engines: EBSCO, ERIC, JSTOR, Google Scholar, and ProjectMuse. Given the current literature uses various names to represent contingent faculty, the following search terms were used in our search: contingent faculty, non-tenure-track faculty, clinical faculty, part-time faculty, adjunct faculty, lecturers, instructors. In order to narrow the search for STEM contingent faculty, the following search terms were used: STEM, science, technology, engineering, mathematics. Furthermore, when there were subdisciplines (e.g., ecology; Fetcher et al., 2019) found that discuss contingent faculty, we used those names as well in our search. From the articles found, we first reviewed the abstract to ensure the article meets the aforementioned inclusion criteria. Once an article fit the purposes of this study we downloaded the article and stored the PDF, which then led us to engage in the two phase content analysis of the article, which is described in greater detail in the section below.

Data Analysis Process

To analyze each article in this study we first used a two-phase approach to extract information from each article. Phase one of the data analysis entailed exploring the characteristics of each study quantitatively. To achieve this aim, I modified a survey used for a prior publication (Goings & Ford, 2018) that allowed me to extract information from each of the articles. For the purposes of this study the following aspects of each study were extracted:

- methodological approach (i.e., quantitative, qualitative, mixed methods)
- race/ethnicity of participants
- gender of participants
- discipline of the study.

This information was used to understand trends in research published on STEM contingent faculty and are shared in the quantitative findings section below.

Phase two of data analysis entailed pulling the methodology, discussion, and implications sections from each article for input into NVivo (a qualitative data management software) for analysis. The intent for selecting each section was that I believed authors would discuss their participants race and gender identity in detail as well as theorize about the impact race and gender had on their various findings.

The initial qualitative analysis of these article sections consisted of myself and my research assistant to read the article extractions to gain a sense of the data as a whole. From there we highlighted sentences and phrases that are related to the following: (1) discussion about race/ethnicity and gender; and (2) strategies to support STEM contingent faculty. After our initial read we met to discuss our initial thoughts and musings about the articles we read. From this conversation we discussed the individual codes that we took from the articles individually. After the completion of sharing our perspectives, we then sought to find intersections between our coding. To facilitate this process, we used Google Jamboard to engage in our data analysis process. We each created sticky notes that were color coded and then we sought ways to combine them to encompass the overarching themes for this literature review synthesis. Figure 1 below provides a screenshot of the Jamboard to showcase our thoughts about the data. As a result of our analysis, we developed 3 themes that help to answer the research questions.

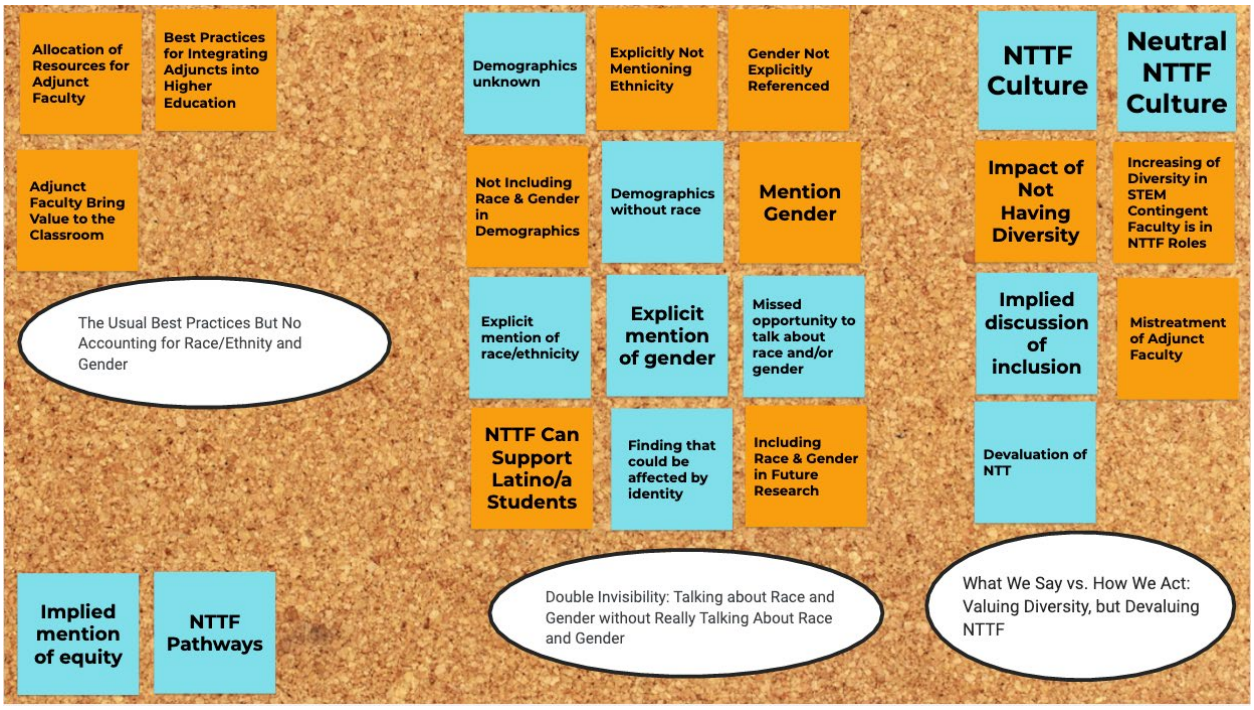

Figure 1. Data analysis via Google Jamboard

Quantitative Findings

In Appendix A we provide an overview of the characteristics we explored from each study. However, below I touch on specific characteristics of the articles reviewed that were noteworthy. After a review of the literature and taking into account the specific nature of this study, there were 25 publications that met the selection criteria (citations for each article are in the Appendix). Table 2 below provides a summary of the STEM disciplines that are the focus of these articles. As shown 11/24 (45%) of the articles secured are related to nursing and engineering. In addition to subject area a majority of these studies involved undergraduate faculty. When exploring the methodologies of each study, 13 of articles were quantitative, 10 qualitative, and 2 mixed-methods.

Table 1.
Discipline Demographics in Articles Reviewed

Discipline	Number of Articles
Nursing	7
Engineering	5
Mathematics	5
Multiple STEM Disciplines	4
Medicine	3
Science	1

When examining the characteristics of these articles, only six articles explicitly mention the race and/or ethnicity, even though their article seeks to explore differences in contingent faculty experiences (this is explored further in the qualitative findings). Interestingly, five qualitative studies do not mention the race/ethnicity of the participants at all. This is surprising given the importance qualitative research places on researchers taking into account their participants' identity to understanding their unique experiences. Similar to race/ethnicity, gender is also not discussed heavily in the articles reviewed for this study. In fact, almost half of the studies reviewed (n = 12) do not mention the gender of their participants. For those articles that do discuss gender the terms "male" "female" are used most often (see Appendix for complete list of references and characteristics of each study).

Qualitative Findings

As described in the methodology section after review of the quantitative characteristics of each study, the methodology, discussion, and implication sections were extracted and used as data to address the last two research questions. After data analysis three themes were developed that captured the scholarly discourse across the articles. In the first theme titled, Intersectional Erasure: Talking about Race and Gender without Really Talking about Race and Gender I discuss how authors often excluded the mention of race and gender in their analyses. The second theme titled, What We Say vs How We Act: Valuing Diversity, but Devaluing Contingent Faculty I explored how authors' participants understood the importance of contingent faculty but created campus ethos which were incongruent to their espoused mission of inclusivity. The last theme titled, The Usual Best Practices, But No Accounting for Race/Ethnicity and Gender underscores how while best practices to support contingent STEM faculty were shared, these recommendations did not take into account the unique experiences that racial/ethnic and gender minoritized contingent faculty have in the academy.

Intersectional Erasure: Talking about Race and Gender without Really Talking about Race and Gender

Prudie-Vaughns and Eibach (2008) argued for the term intersectional invisibility to describe the fact that because of androcentrism, ethnocentrism, and heteocentrism, "may cause people who have intersecting identities to be perceived as non-prototypical members of their constituent identity groups" (p. 378). In other words, given that individuals may have multiple minoritized identities, they are deemed invisible in each identity group. Interestingly, in the analysis of literature for this project I would argue that not only were the intersection of race and gender deemed invisible, but in fact it was erased from the record in many of the studies analyzed for this literature review. Furthermore, there were instances of authors explicitly why they did not include the race and gender of participants in their studies (Fitzmorris et al., 2020; Gerhard & Burn, 2014) while other authors just did not include any demographic explanation and provided no rationale.

For example, Fitzmorris et al. (2020) explored how non-tenure-track electrical engineering faculty experienced respect and inclusion as contingent faculty. During the review of the methodology section, the authors state the following, "The ethnicity of each participant is not included in the table. Ethnicity is an important participant attribute and in general, should be specified. In this population, however, specifying ethnicity would compromise the anonymity of several participants" (p. 3). Additionally, in this study the reader is left to assume the gender of participants, but leaving this in the hands of the reader may lead to misinterpretations. Similarly, Gerhard and Burn (2014) who examined engagement strategies for non-tenure-track faculty in mathematics explained, "Although participants were not asked to self-identify, the majority were White" (p. 211). These two examples captured a common discussion across all of the studies.

What We Say vs How We Act: Valuing Diversity, but Devaluing NTTF

Ahmed (2006) argued that institutional statements of diversity are nonperformative statements. Specifically, Ahmed (2006) explained that diversity statements "do not do what they say: they do not, as it were, commit a person, organization, or state to an action. Instead, they are nonperformatives" (p. 104). Stated differently, universities and departments say they are doing actions (often in grandiose media campaigns and press conferences) to mask what they are not doing. When exploring the literature for this study it became evident that STEM departments take this perspective in their conversations about contingent faculty. In essence, while the conversation is that there has to be more supports for contingent faculty in reality, many STEM departments have created a culture where contingent faculty are not welcomed.

Many articles highlighted the valuing of diversity but devaluing of contingent faculty. The idea of "what we say versus how we act" appeared as a common thread throughout articles, as contingent faculty in the studies often cited a discrepancy between a university or a department's stated goals and their actions. A particular example of this was discussions about contingent faculty culture (n = 7) or their experiences with departmental culture. For example, one study provided the following insight:

> Non-tenure-track faculty described how departmental cultures shaped their willingness to perform to the best of their abilities and the degree to which they would do work above and beyond what is required. (Kezar, 2013, p. 178)

Beyond culture itself, several articles explicitly mentioned the devaluation of contingent faculty, especially when compared to their tenure-track peers (Fitzmorris, 2020; Fitzmorris et al., 2018; Kezar, 2013; Xierali & Nivet, 2020). As a result, some authors explored how institutional policies negatively impacted contingent faculty. For example, Kezar (2013) stated that part-time faculty "could not shield themselves the way some long-time, full-time NTTF were able to" (p. 180). Multiple articles made mention of faculty members explicitly stating that they were "not respected" (Fitzmorris, 2020; Fitzmorris et al., 2020; Kezar, 2013; Xierali & Nivet, 2020).

This was true even among those who were already hired, as they felt that they lacked adequate understanding of the mission, goals, and values of their departments (Gosink & Streveler, 2000). This desire for communication was seen in almost every article, with frequent mention of a disconnect between NTTF and other faculty in the department. There was a direct connection between lack of communication and devaluation of faculty, as many claimed that both contributed to one another.

In Yang and Carrol's (2018) study they also added the importance of communication and understanding the experience of women contingent faculty. They argued,

> This finding suggests a need for colleges and universities to examine and deconstruct the culture in which women faculty experience gendered microaggressions. If gendered microaggressions exist in campus cultures, then college and university administrators must understand how their occurrences change as women move along the professorial ranks.

The Usual Best Practices, But No Accounting for Race/Ethnicity and Gender

Overall, articles in this study described best practices to recruit and retain STEM contingent faculty such as create a more inclusive STEM department culture, provide resources for contingent faculty, integrate contingent faculty into departmental decisions . However, these best practices were often not discussed within the context

of race/ethnicity and/or gender. Thus, from the review of articles it is still somewhat unclear how institutions can be of better support and create more inclusive spaces for continent faculty at the intersection of race/ethnicity and/or gender.

For example Eagen et al. (2015) explained that,

> we argue that institutional support mechanisms, such as office space and computers, signify a level of respect coming from the larger campus. In cases where faculty enjoy these basic amenities of university life, they report increased levels of workplace satisfaction. part-time faculty who do not have access to some of these essential support structures report significantly reduced levels of satisfaction. Thus, the notion of respect as it relates to part-timers' satisfaction includes not only the extent to which full-time faculty esteem and value the contributions of part-time faculty but also the ways in which institutions allocate resources to support the important work of part-timers.

In this instance while access to resources is indeed a sign of respect to contingent faculty, there also needs to be more discourse about how faculty's intersecting race/ethnicity and gender identities may impact the way they experience respect (or lack of it) as a contingent faculty from both other faculty and students.

Aside from allocating more resources to contingent faculty, some of the literature review suggested that there be more collaborative opportunities between contingent and tenure-track faculty. Aklli (2005) for instance explained that "Another arena for the adjunct, who possesses a proven record of practical experience in a specific area, is to "team-up" with the "full-time" faculty, in an attempt to bring in the practical side of the subject into the classroom (p. 4). Although this perspective makes sense, in some articles there was an underlying sentiment that contingent faculty's role was only to support in teaching and there was not often mention about how their practical experience could be leveraged in research. While research is not required for most contingent faculty, there should be more opportunity for collaborations to include research activities.

Recommendations for Higher Education and Future Research

Based on this review of the literature there are several opportunities for higher education to be more strategic in creating an inclusive environment for STEM contingent faculty. There is a need for higher education institutions who espouse the importance of diversifying the faculty pool to not just talk about the importance but consider how the institution is prepared (or not) to support the needs of faculty at the intersection of race/ethnicity and gender. This becomes critical for STEM contingent faculty as if the environment is one that they are not appreciated due to their job title and race/ethnicity and gender then there is a high likelihood they leave higher education and go back to industry positions where their expertise is valued and appreciated.

Several articles in this review mentioned the importance of collaboration between contingent and tenure-track faculty. However, the focus was often on teaching. While this is a central component of the contingent faculty position there are STEM faculty with tenure track aspirations and others who enjoy research that if incentivized would contribute to research and extramural activities on campus. Therefore, providing funding opportunities for contingent faculty is not only a win for STEM contingent faculty, but would also generate revenue for institutions through securing external research funding.

The review of the literature for this synthesis leaves several untapped areas of research. First, overall there was a dearth of literature on STEM contingent faculty. Our review concluded that nursing, mathematics, and

engineering had the most published work on this topic. However, there needs to be further investigation on STEM contingent faculty in other disciplines. Moreover, there is more research needed to understand the motivation of STEM contingent faculty to take their positions when in many situations there is more monetary compensation for their skillset outside of academia.

When examining the literature on STEM contingent faculty it was clear that race/ethnicity and gender where in most cases not the central component of the scholarly discourse. Thus, there is an opportunity for research to explore the experiences of STEM contingent faculty at the intersection of race/ethnicity and gender. This is critical given that STEM faculty of color are more likely to be in contingent faculty positions, yet we know little about their experiences. While not exhaustive below are some burgeoning research questions to consider:

1. What factors influence the commitment STEM contingent faculty of color?
2. What types of supports do STEM contingent faculty of color believe are needed for them to be successful in departments where they are one of only (or few)?
3. In what ways does faculty's gender impact their experience as a contingent faculty?
4. What institutional policies can colleges implement that would make STEM departments more inclusive?
5. What are the faculty job market experiences for STEM contingent faculty?

APPENDIX A: ARTICLES REVIEWED IN ANALYSIS

Author(s) and year of publication	Methodology	Race/ethnicity of participants	Gender of participants	Discipline(s) of study
*Schwartz (2012)	Mixed	Does not mention	Does not mention	Science, Technology, Math
Eagan, Jaeger, & Grantham (2015)	Quantitative	White	53% female	Science, Technology, Engineering, Math
Yang & Carroll (2018)	Quantitative	Does not (explicitly) mention	Female	Science, Technology, Engineering, Math
Kezar (2013)	Qualitative	Does not mention	Does not mention	Science, Math
Howell, Chen, Joad, Green, Callahan, & Bonham (2010)	Quantitative	Does not mention	41% women	Medicine
Xierali & Nivet (2020)	Quantitative	• Black/African American • American Indians/Alaskan Natives • Native Hawaiians/Pacific Islanders • Hispanic	Male, Female	Medicine
Xierali, Nivet, Syed, Shakil, & Schneider (2020)	Quantitative	• African American • Hispanic, Native American, • Asian/Pacific Islander, • White • Other	Male, Female	Medicine
*Austin-Hickey (2013)	Mixed	Not mentioned	Not mentioned	Math
*Montes (2014)	Qualitative	Hispanic	Male, Female	Math
Figlio, Schapiro, & Soter (2015)	Quantitative	Does not mention	Does not mention	Math
Akili (2005)	Qualitative	Does not mention	Does not mention	Engineering

*Dissertation

Author(s) and year of publication	Methodology	Race/ethnicity of participants	Gender of participants	Discipline(s) of study
Fitzmorris, Shehab, & Trytten (2020)	Qualitative	**Does not mention	**Does not mention	Engineering
Fitzmorris, Shehab, & Trytten (2018)	Qualitative	Does not mention	Male, Female	Engineering
Gosink & Streveler (2000)	Qualitative	Does not mention	Does not mention	Engineering
Carlson (2015)	Quantitative	Does not mention	Male, Female	Nursing
Elder, Svoboda, Ryan, & Fitzgerald (2016)	Quantitative	Does not mention	Does not mention	Nursing
Fetchner, Lam, Cid, & Mourad (2019)	Quantitative	• African American • Hispanic, Native American, • Asian/Pacific Islander, • White • Other	Male, Female	Science (Ecology)
Forbes, Hickey, & White (2010)	Quantitative (with qualitative survey questions)	Does not mention	Does not mention	Nursing
Lasfer & Pyster (2013)	Quantitative	Does not mention	Does not mention	Engineering
Mann & Gagne (2017)	Qualitative	Does not mention	Women	Nursing

**Intentionally left out

Author(s) and year of publication	Methodology	Race/ethnicity of participants	Gender of participants	Discipline(s) of study
*Montes (2014)	Qualitative	• Asian • **Central American	Women	Mathematics
Gerhard & Burn (2014)	Qualitative	Does not mention	Male, Female	Mathematics
Weener, Hakim, & Schoening (2020)	Qualitative	Does not mention	Women, Men	Nursing
Woodworth (2016)	Quantitative	Does not mention	Does not mention	Nursing
Woodworth (2017)	Quantitative	Does not mention	Does not mention	Nursing

*Dissertation
**Does not specify country

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*denotes article used in analysis

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*Schwartz, C. (2012). *An Analysis of Instructional Practices of Contingent Faculty in Community Colleges* [Doctoral dissertation, University of Toledo]. ProQuest Dissertations Publishing.

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