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Workplace Satisfaction on Inclusion and Turnover Intentions of Minority Women in Science, Technology, Engineering, and Mathematics

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Abstract

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MS, Walden University, 2020

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Dissertation Submitted in Partial Fulfillment

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Industrial Organizational Psychology

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Abstract

Women of color are diminishing from the STEM workforce in spite of organizational efforts to increase diverse representation. A diverse workforce is a key competitive advantage for many STEM innovations, making this a topic of interest amongst workplace scholars. Researchers have pointed to relative contributors, such as barriers to inclusion and social identity threats for minority women in STEM. However, scholars have not yet uncovered the effect of global satisfaction on inclusion and turnover intentions for minority women within these workplaces. The purpose of this study was to evaluate organizational inclusion differences by sex and minority status, review organizational inclusion to predict turnover intentions, and assess global satisfaction as a mediator. Social identity theory (SIT) was the theoretical framework for the study's interpretations. A secondary analysis was conducted with a cross-section of 2019 Federal Employee Viewpoint Survey responses (N =28,535) from three STEM workplaces. A comparative analysis showed mean differences between minority women and other groups using ANOVA ($F(3, 20711) = 34.01$, $p < .001$) and Kruskal-Wallis ($H(3) = 80.82$, $p = .0001$). A binary logistic regression showed organizational inclusion was a significant predictor of turnover intentions for minority women within STEM workplaces, with turnover intentions decreasing by 67.6% for every unit of organizational inclusion. Global satisfaction was also found to fully mediate organizational inclusion and turnover intentions. These findings have implications for SIT's group behavior process, for industrial-organizational psychology by broadening inclusion research, and for promoting positive social change by fostering inclusive work environments within STEM.

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Dedication

This document is a cumulation of years of hard work and perseverance. All of which could not have been accomplished without the incredible support of my family. A special thanks to my husband, Wil, who believed in me when I did not always believe in myself, and to my dad, who always encouraged me to be all that I could be, and my faith, which has served as a guiding light where I believe deeply that *"with God all things are possible." – Matthew 19:26*

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Chapter 1: Introduction to the Study

Despite the growing number of degrees attained in science, technology, engineering, and mathematics (STEM) fields in recent years and the projected growth of STEM professions, gender, racial, and ethnic minorities continue to be underrepresented within the STEM workforce (Fry et al., 2021). Scholars and practitioners have grappled to understand these disparities while working to identify interventions to counter these realities. The loss of competent women of color within the STEM fields has been referred to as a *leaky pipeline* (Liu et al., 2019). This term refers to the gradual loss of women of color from STEM talent pipelines throughout academia and various stages of career development (Alfred et al., 2019; Liu et al., 2019). Some scholars have inferred that the crux of this issue is relative to the perceived identities held by these historically marginalized workers, which contribute to the disparities, systemic biases, and lower perceived inclusion for women of color within STEM work environments (Kim et al., 2022; Misra et al., 2022). These postulations suggest that the psychological and contextual cues workers derive from their workplaces engender work behaviors and evident consequences, particularly for underrepresented workers within STEM work groups (Hall et al., 2019; Ryan et al., 2020).

The premise of this current study was to review the perceptions of inclusion that workers derive from their workplaces when working within STEM environments, examine how perceptions of organizational inclusion may differ by personal demographic group, investigate how organizational inclusion explicitly affects minority women's turnover intentions within these environments, and explore if minority women's general

satisfaction regarding their work context as a whole, henceforth referred to as *global satisfaction*, had intervening effects on these outcomes. Prior researchers have shown significant connections between workers' perceptions of inclusion and organizational outcomes (Brimhall & Mor Barak, 2018; Li et al., 2019; Shore et al., 2018). Thus, methods that foster inclusive work environments within STEM workplaces may offer insights that organizations can employ to attract and retain minority women of color within STEM work environments. To further understand the relationship between these variables, I analyzed differences in organizational inclusion perceptions by sex and minority status groups with a sample of workers from STEM organizations. Next, I reviewed the relationship between minority women's perceptions of inclusion within these workplaces and their turnover intentions. From there, I examined these minority women's global satisfaction with holistic work contexts for mediating effects on organizational inclusion and turnover intentions.

The results of this analysis support furthering the knowledge of the disparities minority women face within STEM workplaces. The outcomes of this research present viable steps that organizations can take to foster inclusive work environments, particularly for underrepresented workers within STEM environments. In the corresponding sections of this chapter, I provide an overview of the background for this study, the problem that informs the premise for this research, the study's purpose, research questions and hypotheses, the theoretical framework, the nature of the study, definitions of relevant terms, along with study assumptions, delimitations, limitations,

and I conclude with the study's significance prior transitioning to the literature review that justified this research.

Background of the Problem

STEM organizations have utilized various methods to broaden the participation of minority women of color in their workplaces (Metcalf et al., 2018). While some of these tactics have successfully increased the number of minority women hired to work within these organizations, once minority women are employed within these STEM workplaces, their perceptions of organizational inclusion can impact their turnover intentions (Liu et al., 2019). The scholarly community has documented the prevalence of objective and subjective barriers to the professional growth of minority women within STEM work environments (Alfred et al., 2019). These impediments have created gaps within talent pipelines and hindrances to funneling and retaining diverse groups in STEM organizations (Liu et al., 2019). Diverse work environments that promote inclusion are work environments that create psychologically safe work conditions where group learning and innovation flourish (Fang et al., 2019; Ghosh & Tripathi, 2020). Peer learning and innovation are two areas that are considered competitive advantages to many STEM organizations (Alfred et al., 2019). Thus, efforts to foster an inclusive work climate where minority women thrive in STEM have been at the center of much investigative research within organizational behavioral studies (Alfred et al., 2019; Jung & Kim, 2020; Leung, 2018; McNeely & Fealing, 2018). Minority women who do not see themselves represented within these work environments may be less likely to identify or

feel connected with work groups, which can impede STEM organizations from realizing the benefits of a diverse workforce.

Consequently, differing workplace perceptions of inclusion may inhibit an organization's ability to retain a diverse workforce and to grow diverse talent for STEM roles within organizational parameters. Many researchers have seemingly limited the focus of this topic to the linear path to entry into STEM careers for minority women, which has been dutifully noted as a path from academia to industry. What has been explored to a lesser degree is the option to organically grow talent and interests in STEM careers from within STEM work environments. Growing talent through immersive peer-to-peer learning opportunities and other social engagements are characteristic of inclusive work environments (Chen & Tang, 2018; Ghosh & Tripathi, 2020). What has been scantly explored are the perceived differences in organizational inclusion by sex and minority group when working within STEM workplaces, the impact organizational inclusion has on minority women's turnover intentions, and the effects that minority women's global satisfaction has on their organizational inclusion and turnover intentions. Workers identify with historically marginalized or unrepresented groups can attune to work environments differently than workers who do not identify with these groups (Bochatay et al., 2019; Kim et al., 2022). Hence, it is imperative that minority workers of color, such as minority women working within STEM workplaces, experience limited feelings of isolation and an increase in their sense of belonging to want to stay within these environments (Misra et al., 2022). Organizations that foster a climate of inclusivity for these underrepresented workers often reap the benefits within their competitive

landscapes (Alfred et al., 2019). Therefore, it is essential to understand how inclusion permeates STEM workplaces and not limit this study to a review of workers with STEM degrees or exclusively to workers within STEM occupations.

Much of the current literature has been fixed on minority women's participation in STEM education or successive career paths from STEM academia to industry. However, there is limited literature on how minority women's general perceptions of organizational inclusion may differ from their nonminority or male counterparts when working within STEM work environments and if minority women's perceived inclusion within these workplaces affects their turnover intentions. Furthermore, there is limited information on the intervening effects of global satisfaction on these variables. Prior literature has primarily highlighted the perceptions of minority workers in these environments who currently work in STEM occupations or possess STEM degrees. Inquiries into a more holistic review of STEM work environments are meager. This current study reviewed organizational inclusion within STEM workplaces to see how workers' perceptions differed by personal demographic group affiliations without limiting parameters, such as prior STEM education or prior STEM occupational backgrounds. This approach yielded a more robust assessment of the perceived inclusion within STEM environments and how those perceptions differ by sex and minority status group. This study further delved into the inclusion perceptions of minority women, whether organizational inclusion predicted intentions to stay or leave STEM organizations, and if satisfaction with other work contexts altered the effect of inclusion and turnover intentions.

Problem Statement

This study aimed to provide insights into the differences and the impact of organizational inclusion perceptions on the turnover intentions of minority women in STEM work environments, and to understand if global satisfaction mediates effects. Organizational inclusion and its effects have grown in inquiry amongst the scholarly literature due to its implications for attracting, managing, and retaining diverse workforces (Chung et al., 2020; Liggans et al., 2019; Shore & Chung, 2021). Researchers have emphasized the growing need for additional contributions to inclusion literature due to the limited body of knowledge that distinguishes this construct from diversity literature (Li et al., 2019). As this body of knowledge grows, there is a gap in the scholarly inquiry into the role that social identity plays with workers' perceived inclusion, how workers identify differently with workplace contexts, and how perceived inclusion engenders shared consequences, specifically amongst workers with shared identities. There are limited reviews of organizational inclusion differences by sex and minority status group within STEM contexts, how minority women's perceptions of inclusion impacted their turnover intentions, and if their global satisfaction acted as a mediator to this relationship.

Purpose of the Study

The purpose of this nonexperimental quantitative study was to examine the differences in organizational inclusion of workers within STEM work environments by sex and minority status group, to review the relationship between organizational inclusion and turnover intentions of minority women within these STEM workplaces using a correlation design, and to conduct a mediation analysis to determine if global satisfaction

mediates minority women's organizational inclusion and turnover intentions. The sex and minority status group variable within the first analysis was an independent variable with four corresponding categories (male nonminority, male minority, female nonminority, and female minority). For this analysis, organizational inclusion was the dependent variable, measured on a continuous scale. For the subsequent analysis, minority women's organizational inclusion was used as a predictor of the dependent variable, turnover intentions, which was coded with dichotomous *yes*/*no* values. Lastly, the continuous variable, global satisfaction, was reviewed for mediating effects on organizational inclusion and turnover intentions. These variables were investigated via secondary analysis of archival data from the 2019 Federal Employee Viewpoint Survey (FEVS). The FEVS is an annual organizational climate survey completed by U.S. federal employees. Responses to this instrument from workers within select STEM organizations were used to answer the subsequent research questions.

Research Questions and Hypotheses

Below are the research questions (RQs) and hypotheses that were investigated within this study:

RQ1: Is there a difference in organizational inclusion by sex and minority status group (male nonminority, male minority, female nonminority, and female minority) for workers within science, technology, engineering, and mathematics (STEM) workplaces?

$H_0$1: There is no significant difference in organizational inclusion by sex and minority status group (male nonminority, male minority, female nonminority, and

female minority) for workers within science, technology, engineering, and mathematics (STEM) workplaces.

H_a1: There is a significant difference in organizational inclusion by sex and minority status group (male nonminority, male minority, female nonminority, and female minority) for workers within science, technology, engineering, and mathematics (STEM) workplaces.

RQ2: Does organizational inclusion predict the turnover intentions of minority women within science, technology, engineering, and mathematics (STEM) workplaces?

$H_0 2$: There is no significant relationship between organizational inclusion and turnover intentions of minority women within science, technology, engineering, and mathematics (STEM) workplaces.

$H_a 2$: There is a significant relationship between organizational inclusion and turnover intentions of minority women within science, technology, engineering, and mathematics (STEM) workplaces.

RQ3: Does global satisfaction mediate the relationship between organizational inclusion and turnover intentions of minority women within science, technology, engineering, and mathematics (STEM) workplaces?

$H_0 3$: There is no mediating effect of global satisfaction on the relationship between organizational inclusion and turnover intentions of minority women within science, technology, engineering, and mathematics (STEM) workplaces.

H_a3: There is a mediating effect of global satisfaction on the relationship between organizational inclusion and turnover intentions of minority women within science, technology, engineering, and mathematics (STEM) workplaces.

Theoretical Framework for the Study

Tajfel and Turner's (1986) social identity theory (SIT) was the theory used to ground this study. SIT posits that people derive their identities from how they orient themselves within social groups. People can perceive themselves individually while concurrently perceiving group membership from social status and intergroup relationships. This personal assessment of in-group and out-group membership surfaces as harmony or dissonance based on perceived membership and motivates group members to pursue positive social identities based on engendered differences.

The logical connection between the SIT framework and the nature of this study is that Tajfel and Turner (1986) posited that workers form identities based on perceptions of group membership derived from personal affiliations and intergroup dynamics. This theory can be used to understand demographic groups and discord that arises due to differences between groups by sex and minority group identifications. SIT can also be used to explain social orientations within workgroups and how one's orientation within respective work units can generate shared inclusion perceptions by identity groups.

Specific to the stated research questions, SIT was used to interpret how group members with shared identities may perceive, act, and behave in accord with one another to resolve identity conflicts. As hypothesized, distinct groups by sex and minority status perceived organizational inclusion differently, and the perceptions of organizational

inclusion for minority women predicted their shared group turnover intentions. SIT also provided a framework for understanding the positive value minority women attributed to their organizations at large, such as organizational-level global satisfaction assessments, that affected their organizational inclusion and turnover intentions. A more detailed description of this theoretical framework and how it was applied to this analysis is within Chapter 2 of this document.

Nature of the Study

To address the research questions in this quantitative study, the research design included a nonexperimental research design to review mean difference and correlation between the study variables. This research design was applied to statistically evaluate the relationship between variables (Creswell & Creswell, 2018). A secondary analysis of cross-sectional data using the 2019 FEVS was used to evaluate relevant data to answer each research question. The use of self-reported employee survey instruments, such as the FEVS, has become commonplace within organizational research and practice, as these instruments measure workers' perceptions of their organization, work environments, and work-related interactions (Resh et al., 2021). Data from the 2019 FEVS was stratified by a subset of workers from three STEM organizations within the U.S. federal government. This inquiry began by reviewing organizational inclusion mean differences between groups of workers within these STEM organizations by sex and minority status group. Responses to 20 items from the 2019 FEVS grouped by the United States Office of Personnel Management's (OPM; 2019) index measuring habits of inclusion (fair, open, cooperative, supportive, and empowering) served as the five-factor organizational

inclusion variable. For this analysis, combinations of sex and minority status groups were the independent variable with four categorical values (male nonminority, male minority, female nonminority, and female minority), and organizational inclusion was the dependent variable measured on a continuous scale. From there, organizational inclusion served as the predictor variable to explore the second research question. For this second analysis, the outcome variable, turnover intentions, was evaluated based on dichotomous "yes" or "no" responses to the survey item, which asked, "Are you considering leaving your organization within the next year?" For the last research question, global satisfaction was evaluated for mediating effects on the relationship between organizational inclusion and turnover intentions based on responses to four items that align with a global satisfaction index. This variable was measured continuously, and it encompassed workers' satisfaction with their job, pay, and organization dimensions.

An analysis of variance (ANOVA), binary logistic regression, and a binary logistic regression with mediation analyses was used to answer the research questions. For RQ1, an ANOVA was used to evaluate responses from the identified STEM organizations. This analysis was used to review the mean difference in organizational inclusion by sex and minority status group. For this analysis, organizational inclusion was measured on a continuous scale, and the variable of sex and minority status group was categorical with four groups, labeled male nonminority, male minority, female nonminority, and female minority. For RQ2, the predictor variable was organizational inclusion. This variable was a composite of five factors with metric-level values. Turnover intentions was the outcome variable, with corresponding values of *yes* = 1 and

no = 0 to align with an intent to leave. Next, a mediation variable was added to the logistic regression model to review the intervening effects of global satisfaction. This continuous variable was used to evaluate minority women's overall work satisfaction. The results of the mediation analysis was used to answer RQ3.

Definition of Terms

Organizational inclusion: a psychological assessment of one's work contexts, not limited to evaluations of one's peer groups, leaders, social environments, or work policies and practices, that stimulate positive identification and a sense of belonging to a particular organization or work group (Li et al., 2019; Rezai et al., 2020; Shore et al., 2018). This variable encompasses five factors associated with habits of inclusion, as defined by OPM, that demonstrate inclusive practices, such being fair, open, cooperative, supportive, and empowering work environments (OPM, 2019).

Turnover intentions: the internal deliberation that workers undergo to assess their intent to voluntarily leave a workplace (Joe et al., 2018; Redondo et al., 2021).

Global satisfaction: general satisfaction assessments workers make of their work contexts as a whole, not limited to aspects of a specific job (Bowling & Zelazny, 2022; Judge et al., 2017).

Sex and minority status group: a person that identifies as a male or female and classifies themselves as belonging to either male nonminority, male minority, female nonminority, or female minority personal demographic group (OPM, 2019).

Minority women: a person identifying as a female of color that classifies themselves as belonging to nonWhite racial and nonmajority ethnic demographic groups (Kim et al., 2022; Lee et al., 2020).

STEM workplaces: work groups or organizations with a workforce primarily focused on science, technology, engineering, or mathematics innovations (Metcalf et al., 2018). Workers within these environments are employed in STEM-specific jobs that require functional post-secondary education or employed in nonSTEM support roles, such as administrative, sales, marketing, or management, requiring some level of scientific or technical knowledge (National Science Foundation, 2015; U.S. Bureau of Labor Statistics, 2022).

Assumptions

An assumption was that the 2019 FEVS underwent sound data collection, cleaning, and recoding processes, as outlined within the 2019 OPM FEVS technical report. The 2019 FEVS technical report detailed the methods used to clean and protect the data before its release. Another assumption was that these data were appropriate for industrial organizational (IO) academic research. Resh et al. (2021) explored a range of applications that included but were not limited to using FEVS data in IO psychology research. They assert that the FEVS supports an academic-practitioner approach that enriches scholars with theory-building and benefits industry in practice. Specific to scholarly inquiry, Resh et al. (2021) recommended that pre-inferential evaluations of the survey data should be exhaustive to ensure the appropriateness of the data in answering research questions when undergoing quantitative analysis.

A theoretical assumption was that SIT provided a relevant lens to evaluate and interpret the study variables. SIT has been applied to a range of scientific inquiries, and it has grown in application from its original theory of intergroup relations (Tajfel, 1982) and social identity (Tajfel & Turner, 1986). While some assert that SIT has been applied more broadly than its original intent, Ashforth and Mael (1989) were the first to document the theory's application to an organizational context. In the years since, scholars in psychology, business, and management have applied SIT in their study of organizational groups (Brown, 2020).

Scope and Delimitations

The scope of this study was a review of STEM work environments, not limited to STEM occupations, degrees, or workers with prior educational backgrounds in STEM. This study was intended to investigate STEM work environments, to expand the current knowledge of organizational inclusion perceptions of minority women working within these environments, and to explore their turnover intentions derived from inclusion perceptions. This study also investigated the overall global satisfaction of minority women and how this measure affected these workers' organizational inclusion and turnover intentions. A delimitation of this study was that it was a review of workers' perceptions of inclusion that identify with sex and minority demographic groups. No study parameters existed that were exclusive to the alignment of these workers to STEM occupations, the possession of STEM degrees, prerequisites of prior STEM education, or any specificity on the years of service working within STEM environments. Not including these constraints provided a more holistic assessment of the organizational

inclusion perceptions of those working within STEM workplaces, not constrained by STEM backgrounds or experiences.

This research was also delimited to SIT to frame and interpret the study results. Some studies have employed the social exchange theory (SET) to investigate links between inclusion, satisfaction, and turnover (Bentley et al., 2021; Chen & Tang, 2018). SET posits transactional processes and reciprocity between workers and organizations that conjures a sense of mutual value (Emerson, 1976). However, this theory is amiss in describing how workers' self-identification with work contexts engender workers' organizational perceptions and consequences. Hence, SIT was a more appropriate theoretical context for understanding these connections. These delimitating factors described in this section impacted the generalizability of the study results.

Limitations

A limitation of this study was the nonexperimental quantitative research design, which lacks a control group and does not offer robust inferences into the causal relationships between variables (Creswell & Creswell, 2018). Another limitation was the use of archival data for secondary analysis. While there are noted benefits of using this method, in terms of costs and time savings associated with data collection, locating scrupulous documentation of the original researchers' data handling processes may present challenges (Kiecolt & Nathan, 1985). Another limitation was that the 2019 FEVS secondary data source was used to collect static organizational climate data. External factors affecting U.S. federal organizations during the survey administration were unknown, which may have impacted participants' responses. To address these

limitations, the 2019 FEVS public data file was accompanied by a technical report and a code book to assist researchers with understanding the data collection procedures, settings, and contexts when using the data in the secondary analysis (OPM, 2019).

Another limitation was that all variables for this analysis were operationalized from the 2019 FEVS data. Using this single instrument for all variables introduced common method bias. A strategy to mitigate common method bias is to remove shared scale properties (Jordan & Troth, 2020). Each variable used in this study (predictor, dependent, and mediator) had different response option scales within the 2019 FEVS. These differences were indicated by varying response types or anchor labels. This technique of minimizing common scale properties can reduce common method bias (Jordan & Troth, 2020). A final limitation was that survey responses used for the analyses were limited to workers affiliated with the U.S. federal government working in STEM-based organizations. These characteristics may impact the generalizability of the study results to work contexts outside these organizations.

Significance

This study was significant in promoting the facets of workplace inclusion that enhance organizational inclusion for diverse groups within STEM workplaces. Organizational inclusion is a topic of growing consideration, as several scholars have devoted their research to broadening the representation and participation of diverse groups within the STEM workforce (Metcalf et al., 2018; Misra et al., 2022). Women from diverse backgrounds are gradually diminishing from the STEM workforce (Fry et al., 2021). Scholars have issued a call to action to fellow researchers and practitioners to

understand these issues and to find solutions to change this growing trend that threatens STEM organizations' global competitiveness (Alfred et al., 2019). Minority women are particularly underrepresented within today's STEM organizations (Alfred et al., 2019). The results of this research can fill gaps in understanding minority women's perceptions of organization inclusion when working within STEM work environments and how organizations can use these perceptions of inclusivity to predict the turnover intentions of these workers. This current study supports social change by delving into the differences in workers' perceptions of organizational inclusion within STEM workplaces, how minority women's organizational inclusion affects their turnover intentions, and how satisfaction with other work contexts may affect their perceptions of inclusion and turnover intentions.

The results of this research can be used to advocate for additional work environment solutions that support the retention and growth of diverse groups, such as minority women within the STEM workforce. This research contributes to the IO psychology community by expanding the scholarship relative to minority women's perceptions of inclusive work environments. IO psychology scholars and practitioners can use this research to develop and promote interventions to create inclusive work environments for minority women in STEM workplaces.

Summary

Inclusion is a burgeoning construct that has emerged from diversity research (Li et al., 2019). This construct links to many critical organizational outcomes (Chen & Tang, 2018). Inclusion researchers have noted that workers with intersectional identities

are understudied populations, and these groups have been recommended for future study (Corrington et al., 2020). I proposed this current study to examine the organizational inclusion differences of workers in STEM workplaces by sex and minority status group, to review if organizational inclusion predicts the turnover intentions of minority women within these environments, and to examine if their global satisfaction mediates the effects of organizational inclusion and turnover intentions. Within the preceding sections, I provided an overview of this current study's background, the social problem that warrants additional research, and the primary purpose of this current inquiry. I outlined the research questions and hypotheses, the theoretical framework, the nature of this study, and I defined relevant terminology. This chapter concluded with an overview of the study's assumptions, delimitations, limitations, and significance.

This research was aimed to expand the current knowledge of inclusion within STEM-based organizational contexts. This study explored perceptions of inclusion by personal demographic group, with a specific inquiry into the organizational inclusion of minority women and its effects on these workers' turnover intentions. This research also investigated the intervening qualities of global satisfaction on organizational inclusion and turnover intentions. The findings from this research are intended to contribute to the growing IO psychology scholarship relative to these topics. The results of this research can be used to identify practical solutions that STEM organizations can use to attract and retain diverse talent. The next chapter includes an exhaustive literature review of these topics to provide further justification for the study.

Chapter 2: Literature Review

This study aimed to review the organizational inclusion perceptions and turnover intentions of minority women of color within STEM work environments, while systematically analyzing if global satisfaction has mediating effects on these variables. While there is a growing number of women of color represented within STEM environments, existing disparities between this group and other groups within these workplaces pervasively contribute to the feelings of isolation these workers harbor that in turn limit participation (Metcalf et al., 2018). Thus, an increasing body of literature is dedicated to addressing these concerns to broaden participation for women of color within STEM work environments. This research aimed to contribute to this growing scholarship by examining differences in organizational inclusion by sex and minority status group, reviewing the relationship between organizational inclusion and turnover intentions of minority women within STEM workplaces, and by evaluating if global work satisfaction mediates the relationship between these workplace factors.

The corresponding literature review begins with the theoretical foundations that formed a basis for this research. The principles of SIT are covered to provide a framework for this evaluation. From there, inclusion is explored in the context of workplaces, along with relevant themes such as inclusion climate and organizational inclusion measures. Next, the literature review includes a synthesis of concepts related to inclusion coupled with work identities. This section explored perceptions of work identities from the context of minority workers, intersectionality, and women in STEM workplaces. The literature review concludes with a review of inclusion and turnover

intentions with highlights on the experiences of marginalized groups and a review of the current research on the concept of global work satisfaction as a mediator of workplace outcomes.

Literature Search Strategy

The literature search strategy for this review included identifying relevant scholarly sources using the Walden University library and Google Scholar. Specific databases used in the literature collection process were Thoreau Multi-Database, APA PsycInfo, Sage Journals, Sage Research Methods, Taylor Francis Online, and Emerald Insight databases. Date ranges for this search were 2017-2022 to identify primary scholarly sources to contribute to an exhaustive literature search. The relevant search terms were *inclusion, organizational inclusion, inclusive climate, climate for inclusion, organizational climate, turnover, turnover intentions, intent to leave, voluntary turnover, minority women, women of color, STEM, science, technology, engineering, mathematics, satisfaction, global satisfaction, work satisfaction, work identity, social identity,* and *social identity theory*. The literature search strategy also included a review of reference lists from relevant sources to identify seminal sources to include as a part of this comprehensive review.

Theoretical Foundation

The theoretical context used to frame this study was Tajfel and Turner's (1986) social identity theory (SIT). This theory evolved from Tajfel's (1978, 1982) earlier works on social group psychology and intergroup behaviors. According to SIT, within social groups, people undergo categorization processes rooted in subjective self-identification

activated by perceived comparative group differences (Tajfel & Turner, 1986). SIT posits that people engage in social identity processes and intergroup behaviors consistent with a three-step process:

1. Social categorization – the cognitive classification of social groups.
2. Social identification – a basis for one's orientation to groups.
3. Social comparison – a means that one identifies group differences and positive distinctions.

Thus, people undergo this process to derive identities with countless groups. Some common examples of group categorization as theorized by SIT are group demographics, such as age, gender, race, and ethnicity, or group affiliations, such as groups within organizational or religious contexts (Ashforth & Mael, 1989).

The social identification process outlined by SIT results in self-assignment to groups where shared group characteristics form a basis for membership, where close identification with a group forms in-group membership, and dissociation with a group forms out-group membership (Tajfel & Turner, 1986). According to SIT, when group conflict or discord arises, people use identity management strategies to maintain or restore a positive self-image relative to group status or esteem (Tajfel & Turner, 1986). Motivations to employ identity management stem from one's need for self-enhancement, uncertainty reduction, and optimal distinctiveness (Hogg, 2005). SIT postulates three hypothesized identity management strategies people utilize to resolve identity conflicts:

- Individual mobility - assimilating to out-groups by adopting majority group norms and disassociating with in-groups

- Social creativity - reframing perceived negative attributes in a positive way to challenge group norms
- Social competition - creating new positive group frames of reference to break away from conventional norms

SIT has had broad application in the study of social groups within the disciplines of social and organizational psychology behavioral research (Ashforth & Mael, 1989; Brown et al., 2020; Ellemers & Haslam, 2012; Greco et al., 2022; Hogg, 2005). SIT has been employed to predict the behaviors of group members presumed to share identities based on group characteristics, affiliations, and values as motivators for self-identification processes and identity management strategies outlined within the framework (Brown et al., 2020; Scheifele et al., 2021). From a general social psychology perspective, SIT has been used to understand the formation of biases, stereotypes, and discrimination between groups (Martiny & Nikitin, 2019). Group activism can also be explained from the context of SIT (Brown et al., 2020). Within organizational psychology, this theory has been used to evaluate shared workers' perceptions and their relationship to consequential work-related outcomes, such as being applied within a workplace context to predict workers' motivations (Greco et al., 2022). Recently, scholars have expanded upon the body of knowledge relative to SIT to extend the theory's utility to organizational climate and inclusion research, while also referencing alternative strategies workers use to manage their identities within workplaces (Ashikali et al., 2021; Bergsieker et al., 2021; Burrows et al., 2022).

SIT provided context for this current research. The research questions and hypotheses were reviewed based on SIT assumptions of shared group work identities shaped by group dynamics and the psychological meanings workers derive from their organizational interactions. As postulated by SIT, these perceptions should, in turn, motivate workers to take similar identity management actions to resolve any perceived incongruence with their work identities (Tajfel & Turner, 1986). Currently, there are limited empirical studies of SIT within a gender context (Scheifele et al., 2021). Specifically, this inquiry tested theory by reviewing organizational inclusion perceptions by sex and minority status group framed by the identification process outlined by SIT. Based on SIT, inclusion perceptions should serve as a motivator to workers' decisions to stay or leave a work group, which will be further explored by reviewing the turnover intentions of minority women. SIT was used to review minority women's positive identification with holistic organizational attributes in terms of global work satisfaction to see if satisfaction with work contexts mediated any perceived group discourse and consequential turnover intentions. This type of research inquiry was an understudied area of SIT, and this approach was used to determine if satisfaction with larger group contexts (such as on an organizational-level versus a group-level) mediated SIT outcomes.

Literature Review Related to Key Variables

Inclusion and Diversity

Often embedded within diversity research and practice, inclusion has emerged as a construct that enables meaningful organizational outcomes. Within a workplace context, diversity has been described as the heterogeneous makeup of workgroups,

whereas inclusion has been referred to as the feelings of value group members derive from being a part of a group (Brimhall & Mor Barak, 2018). However, inclusion philosophies commingled with diversity topics intertwined these concepts within some current literature (Corrington et al., 2020; Ward et al., 2021). Within organizations, it is also not uncommon for practitioners to refer to diversity and inclusion terminology interchangeably, which creates barriers in differentiating inclusion initiatives from those associated with diversity programs (Shore et al., 2018). While these concepts are correlated, Li et al. (2019) referred to inclusion as an understudied area within diversity research. A growing number of scholars have called for the delineation of inclusion as a distinct construct and have referenced inclusion as a mediator of organizational outcomes (Davies et al., 2019; Jaiswal & Dyaram, 2019; Li et al., 2019; Sabharwal et al., 2019). Some scholars have acknowledged that while diversity has the potential to increase intergroup conflict, inclusion has mitigated conflicts related to group differences (Brimhall & Mor Barak, 2018). However, inclusion researchers have also argued that increasing the diverse representation of organizational members does not immediately precipitate inclusion (Ashikali et al., 2021). Operationalized inclusion judiciously integrates diverse demographics, values, and perspectives (Roberson & Perry, 2021). Inclusion throughout various organizational levels buffered group-related conflicts often associated with diversity (Brown et al., 2020). A study by Şahin et al. (2019) found that differences in workers' perceptions of inclusion affected their collective work-related outcomes. When workers sensed dissimilarities at deep levels, such as dissimilar beliefs and values, those workers reported feeling lower levels of inclusion than when workers

sensed dissimilarities at surface levels, associated with visible differences, such as gender and race. Moreover, these researchers observed that organizations that promoted an inclusive climate buffered these effects. A scan of the current diversity and inclusion landscape illustrates the muddling of inclusion as a construct and highlights the need to delineate inclusion as a distinct construct from diversity in research and practice.

Inclusion Climate

An inclusive work climate emerges from organizational factors that shape workers' perceptions of inclusion. An inclusive climate engenders organizational inclusion by showing value for the range of diversity each individual brings to the workplace (Ashikali et al., 2021). This climate encompasses the shared perceptions of workers when they perceive inclusion and fairness in their work interactions (Brimhall & Palinkas, 2020; Brown et al., 2020; Li et al., 2019). Nishii (2013) defined a high climate for inclusion as work environments that honored group members' identities by equitable access to resources, idea-sharing, and collaborative problem-solving. Jonasson et al. (2018) found that organizational practices and communications influenced workers' perceptions of inclusion management, and consequently, their work outcomes. Correlations have been found between human resource management (HRM) practices, organizational inclusion, and the degree of organizational commitment (Liggans et al., 2019). Furthermore, inclusive management practices positively affected workers' experiences by reducing work-related stressors and job ambiguity (Jonasson et al., 2018). Other scholars have also highlighted the importance of HRM practices and leaders' engagement with their teams in fostering inclusive work environments (Ashikali et al.,

2021; Shore & Chung, 2021). Mor Barak et al. (2021) emphasized how ill-executed or gaps within organizational inclusion policies and practices can leave work groups to perceive work environments as less inclusive. Workers' experiences engaging with these organizational policies and practices ultimately shaped their inclusion perceptions (Ward et al., 2021). Mor Barak et al. (2021) argued that their conceptualized model effectively mitigated inclusion policy and practice incongruence to promote inclusive behaviors amongst workers within their work environments. In short, organizational policies and practices should not be overlooked as important factors that shape workers' inclusion perceptions and a collective inclusion climate.

Evaluating Inclusion. A practical way to evaluate inclusion within organizations is by assessing the inclusion climate. Organizational inclusion assessments provide valuable insights into the behaviors and actions that foster an inclusive climate (Rezai et al., 2020). Scholars have found that workers' perceptions of their work environments are influenced by their daily experiences (Ward et al., 2021; Webber, 2019). Moreover, many organizations have recognized a workplace climate as an important indicator of individual and organizational outcomes, such as turnover intentions and workplace satisfaction (Thompson & Siciliano, 2021). However, Li et al. (2019) contended that much of the current literature on evaluating an inclusion climate used organizational fairness as a sole indicator of inclusion. They asserted that while fairness is an important dimension of inclusion, assessing fairness alone can leave organizations with insufficient inclusion insights. Thus, organizations can evaluate inclusion by measuring inclusion climate facets within their workplaces.

An inclusion climate is viewed as point-in-time measures of workers' inclusion perceptions. These measures encompass assessments of workplace facets, such as the collective perceptions that workers attribute to an organization's value for differences, equitable experiences, and connectedness (Li et al., 2019). Climate measures are described as unit-level assessments with aggregations at a work group or an organization level to provide context for inclusion analyses (Thompson & Siciliano, 2021). While organizations often use traditional organizational levels to measure inclusion, such as within the organizational job ranks, some have argued there is also value in understanding shared group inclusion perceptions by groups who share identities, such as those associated with gender and ethnicity groups (Mor Barak et al., 2021). Conceptualized organizational inclusion has been described as an aggregated measure of workplace inclusion climate at a unit level, such as within a work group, team, or the organization as a whole (Li et al., 2019; Rezai et al., 2020). However, scholars have argued that there is a need for a comprehensive conceptualized model of inclusion and a need for expanding knowledge on the appropriate level of analysis for climate measures within work contexts (Mor Barak et al., 2021; Shore & Chung, 2021). Hence, it is imperative that organizations understand inclusion climate instrument inputs and at what level inclusion is assessed to gain valuable insights into work environments.

Organizational Inclusion Measures. There is not currently a superior standardized measure of organizational inclusion. The literature is scant on how best to conceptualize inclusion in a workplace context (Rezai et al., 2020). However, researchers have recognized organizational inclusion as a burgeoning construct (Chung et al., 2020;

Liggans et al., 2019; Shore & Chung, 2021). Despite the growing desire to broaden the literature on inclusion, at present, there is also no broadly accepted definition of inclusion for individuals within social environments, nor is there a consensus on how to measure inclusion within workplaces (Chung et al., 2020; Leemann et al., 2021; O'Keefe, 2020; Shore & Chung, 2021). Two systematic reviews of existing inclusion measures found that instruments used to evaluate workplaces for inclusion were inconsistent, and the domains assessed within these instruments varied (Cordier et al., 2017; Rezai et al., 2020). However, there appears to be agreement amongst the scholarly community that there is value in cultivating and measuring inclusion climates within organizations due to the construct's links to critical organizational outcomes.

Researchers have recommended factors that should be assessed within operationalized inclusion measures. Given that inclusion is a personalized construct derived from workers' perceptions of their experiences within their work environments, several frameworks have been developed to measure inclusion, all of which focus on capturing workers' experiences (Ashikali et al., 2021; Brown et al., 2020). Organizational indicators such as perceived organizational inclusion, has been noted as an indication of feelings of belonging and status perceived by workers, which have been referenced as a basis for organizational inclusion measures (Brimhall & Mor Barak, 2018; Chen & Tang, 2018; Ghosh & Tripathi, 2020). Others have emphasized how work environment perceptions of workers' interactions with their leaders, work teams, and social groups offered supplement assessment criteria of inclusion within work contexts (Ashikali et al., 2021; Rezai et al., 2020). Additionally, organizations that showed support for workers

through interpersonal interactions were viewed as having more inclusive and welcoming work environments (Rasheed et al., 2018). Empowering inclusion practices also enhanced the degree of value workers perceived from their workplaces (Jonasson et al., 2018). These workplace practices and trusting work relationships have been shown to influence workers' commitment and desire to stay with organizations (Liggans et al., 2019; Ward et al., 2021).

A common theme amongst workplace inclusion measures is that they have been used to assess the value and the integration of differences amongst workers, along with an organization's value for diverse perspectives, information sharing, fairness, and other diversity management practices (Brown et al., 2020). Scholars have urged that quality operationalized organizational inclusion measures are needed to gauge work environment effectiveness and determine if workplaces are conducive to reaching organizational goals (Rezai et al., 2020). In a model of work group inclusion tested by Chung et al. (2020), they found that their inclusion instrument had significant associations with organizational justice, inclusion climate, skillful leadership, and workers' turnover intentions. Thus, adequate assessments of inclusion-related facets can provide valuable insights into organizational inclusion effectiveness.

Inclusive Leadership. Leaders have a pivotal role in creating inclusive environments, particularly as it pertains to shaping workers' perceptions of inclusion. Through their interactions with their workers, leaders signal the degree of value they ascribe to each worker (Shore & Chung, 2021). Shore and Chung (2022) argued that through the lens of social identity and social learning theories, leaders either exemplify

inclusion or exclusion through their engagement with their team members. Leaders who emphasized workers' uniqueness have been successful in promoting an inclusive climate (Brimhall & Palinkas, 2020). In their study examining the effects of transformational leaders on workers' perceived inclusion, Brimhall (2019a) found that transformational leaders who influenced an inclusive climate led to improvements in workers' commitment and performance levels. However, in a separate mixed-methods analysis, Brimhall and Palinkas (2020) found that while some transformational leadership characteristics were integral in promoting a climate of inclusion, other transformational leader attributes were not. Therefore, leadership characteristics that promote an inclusive climate are of growing interest.

Several researchers have noted the ways in which inclusive leadership behaviors breed an inclusive climate. Randel et al. (2018) contend that inclusive leadership is in itself a distinct leadership style, which is separate from other leadership approaches, and they posited leadership behaviors that support group members' feelings of belonging and uniqueness are predecessors to group members' perceptions of inclusion as well as their behavioral outcomes. In a thematic analysis of inclusive leadership, Roberson and Perry (2021) further defined inclusive leadership from leaders' perspectives. They identified prevailing themes such as valuing differences and encouraging group collaboration, which aligned with other studies of inclusive leadership characteristics (Ashikali et al., 2021; Roberson & Perry, 2021; Shore & Chung, 2021). Inclusive leadership has also shown links to workers' psychological empowerment and innovative work behaviors (Fang et al., 2019; Javed et al., 2019; Zhu et al., 2020). Moreover, Liggans et al. (2019)

found that trust in leadership was a significant mediator between organizational inclusion and the degree of workers' commitment. However, Ward et al. (2021) did not find that same support within their conceptualized model that evaluated how work climate perceptions of trust affected workers' turnover intentions. These researchers referenced that a potential constraint of their study was the location of their sample group, which was within a rural region where limited alternative employment options may have influenced their study results. In effect, inclusive leaders are influential in setting the tone with how inclusive behaviors are exemplified throughout organizations.

Work Group Dynamics. Leadership interactions beget shared group behaviors, where an inclusive climate affects group dynamics and team-level work outcomes. Leaders who modeled inclusive behaviors influenced workgroup dynamics, work climate, and inclusive group behaviors (Shore & Chung, 2021, 2022). Team performance was shown to be positively associated with workers' sense of inclusion (Chen & Tang, 2018). Moreover, workgroups who perceived inclusion better-managed group conflicts and was also positively associated with team learning and creativity (Bochatay et al., 2019; Ghosh & Tripathi, 2020). Within culturally diverse work groups, an inclusive climate was perceived at higher levels in environments where inclusive leadership was prominent (Ashikali et al., 2021). Perceptions of a group-level inclusion climate was also affected by the saliency of diverse team members within a workgroup (Ashikali et al., 2021; Gündemir et al., 2019). Li et al. (2017) reviewed cultural diversity with team dynamics, creativity, and information sharing, and they found that an inclusion climate indirectly moderated the relationship between team information sharing and creativity.

Interestingly, perceived inclusion was not shown to be associated with team role performance when organizational commitment acted as a mediator (Chen & Tang, 2018). However, the general consensus amongst scholars is that perceived inclusion effects work group dynamics and acts as a predecessor to several group-level outcomes.

Social Networks (Communities). Inclusive environments act as gateways to social connections, and these environments are conduits to building a sense of community within organizations. An inclusive climate prevailed when all group members are treated fairly regardless of how workers identify within the workplace (Brown et al., 2020). However, role models and mentors, particularly those with shared identities, can signal to workers of similar shared identities feelings of belonging and reduce perceptions of work environment conflict (Burrows et al., 2022; Cortland & Kinias, 2019; Johnson et al., 2019). Workers who perceived inclusive workplaces displayed a stronger sense of community (Rezai et al., 2020). Many organizations have utilized diversity networks or other social groups to support underrepresented identity groups, such as groups with shared gender and ethnicity, by providing opportunities for career mentoring and development (Dennissen et al., 2019). Social networks have facilitated engaging communities that break down barriers for underrepresented groups (Leung, 2018). Furthermore, Cortland and Kinias (2019) found an indirect relationship between social support and work satisfaction by mitigating workplace stereotypes.

Chung et al. (2020) argued that workers' experiences from interpersonal interactions and the value they derive from workplace encounters form distinct impressions that shape inclusion perceptions. While programs such as diversity networks

can be beneficial for removing some barriers for groups, Dennissen et al. (2019) stressed that potential benefits could be short-lived due to ingrained systematic challenges related to gender and race disparities within workplaces that remain unchallenged. Therefore, workers' social support within work environments is one of many facets of inclusion that organizations should consider when assessing inclusion.

Inclusion and Work Identities

As workers orient themselves within work environments, they develop work identities, and these identities affect perceptions of inclusion. Workers' identification with work contexts is driven by their self-perception of being part of a group, and their perceived inclusion can vary by these group affiliations (Chung et al., 2020; Liggans et al., 2019). When workers felt devalued, identity threats surfaced (Burrows et al., 2022). However, promoting an inclusive climate has been shown to mitigate concerns about threats to work identities and a lack of perceived inclusion, which is often held by workers who identify with underrepresented groups (Burrows et al., 2022; Chordiya, 2021; Gündemir et al., 2019; Metcalf et al., 2018; Misra et al., 2022; Moore et al., 2020). Workers' identities can also vary based on perceived in-group and out-group affiliations (Bochatay et al., 2019). Affiliations with groups evoke positive and negative feelings in workers, and when workers' identification with groups was stigmatized or devalued, social identity threats emerged (Martiny & Nikitin, 2019). To support one's work identity, workers underwent complex processes where they struggled to belong to groups while simultaneously created boundaries between groups (Bochatay et al., 2019). Workers' relationships with their work environments are multifaceted, and organizations

seeking to promote inclusion must be aware of potential identity threats that can emerge when workers seek group membership and belonging.

Social Identity Theory in the Workplace

Workers' assessments of their work environments conjure judgments about their position and status within work groups, and theories that support these assumptions hypothesize context is pivotal in how workers derive and manage their identities within different work settings. Workers derive their identities from various contexts, such as affiliation with demographic or professional groups, which affect their perceived group status (Bochatay et al., 2019). Workers make summations of work environment elements and orient themselves when entering work environments (Rezai et al., 2020). According to the social identity theory (SIT), group members categorize themselves and others as in-groups or out-groups based on perceived similarities and differences (Tajfel, 1978; Tajfel & Turner, 2004). This categorization process influenced the degree of belonging and the quality of interactions group members experienced (Ashikali et al., 2021). The salience of perceived differences between in-groups and out-groups can lead to conflicts amongst group members (Bochatay et al., 2019). When comparisons between groups were unfavorable, conflicts with identities surfaced, and to restore positive social statuses, people engaged in identity management strategies (Scheifele et al., 2021). While this theory offers some insights into social identities and group behaviors, Chen and Tang (2018) argued that SIT provides one diversity management stance that can explain shared group perceptions. They suggested an alternative view by organizational group roles instead of group categories to extend SIT's group behavior insights. From the context of

this theory, SIT can be applied in understanding workers' psychological processes when perceiving inclusion from their work elements.

Interpersonal interactions between identity groups influence the perceptions and behaviors of group members. Workers with shared work identities frequently sought endorsements from current and former in-group employees about their experiences, which affected perceptions of inclusion (Burrows et al., 2022). Misra et al. (2022) explored elements such as vocation identity, agency, and belonging with women of color as dimensions to conceptualize inclusion. They found that perceptions of inclusion were multidimensional and molded by interactions, historical inferences, diversity integration, as well as formal and informal work policies and practices. Scheifele et al. (2021) argued that in accord with SIT assumptions, groups with shared identities employed strategies to relieve identity conflicts through assimilation, segmentation, or reframing one's group status. Scholars have also investigated self-distancing as an identity strategy to restore one's positive social status (Veelen et al., 2020). While this strategy may alleviate some identity-related group discourse, Veelen et al. (2020) argued that this strategy is likely counterproductive to promoting an inclusive climate. Nevertheless, many scholars have used SIT to hypothesize and interpret the behaviors and motivations of workers with shared identities.

Identities by Personal Demographics

Workers who identify with similar social identities tend to share in their experiences and reactions to their work environments. Scholars noted that the degree of heterogeneity amongst organizational members affected shared group members'

perceptions of their work environments (Ashikali et al., 2021). Li et al. (2019) documented in their multi-level analysis of inclusion climate that racial and gender differences between workers influenced workers' perceptions of inclusive organizations. Gündemir et al. (2019) also reviewed gender identities and racial minorities as separate inquiries to segment the experiences of these groups. These researchers proclaimed that they adopted this approach because the amassed literature has primarily focused on racial differences without a gender focus. Within their research report, they argued that initiatives targeted at increasing the representation of diverse groups could be effective but short-lived due to a lack of attention to the differences in psychological experiences between groups and how the experiences of minority groups likely differ from other workers who do not identify with underrepresented groups. These contributions to inclusion research illustrate how minority groups' work experiences are influenced by their perceptions of comparative differences between groups.

The experiences of minority groups navigating workplaces can be described as complex at best, with many intervening elements affecting these workers' perceptions of their work environments. Gündemir et al. (2019) found that organizational climates promoting multiculturalism showed more positive outcomes for racial minorities in regard to their perceived inclusion, work satisfaction, and turnover intentions. However, the researchers found that these effects held when minority groups were salient throughout workplaces, and outcomes were less evident when minority workers were not prominently represented within work environments. Conversely, Ashikali et al. (2021) found that workgroups who experienced high levels of ethnic and cultural diversity risked

lower levels of inclusion due to the social categorization of group members, as posited by SIT. Although, these researchers also argued that employing inclusive leadership practices effectively managed these consequences. Though, inclusive leadership is just one possible solution for these issues.

Organizational approaches aimed at recognizing differences between workers have not consistently remedied issues pertaining to perceived identity differences between groups. Diversity management practices focused on color-blindness were perceived as mitigating or cloaking group differences by emphasizing homogeneity of group characteristics, whereas multiculturalism showed value and appreciation for differences while honoring the heterogeneity of groups (Gündemir et al., 2019). However, researchers seemed to concede that there is no universal approach to managing diverse groups within organizations and suggest that blended approaches to communicating diversity philosophies may be best (Burrows et al., 2022; Gündemir et al., 2019; Wilton et al., 2019). Therefore, diversity management practices affect the psychological interpretations and the shared work experiences that contribute to workers' perceptions of inclusion.

Perceived group differences between workers can also engender conflicts between minority and nonminority groups. Li et al. (2019) found workers within diversely staffed organizations reported group incoherence and intragroup conflict. Wilton et al. (2019) posited that emphasizing racial differences through multiculturalism affirmed beliefs of race essentialism, where beliefs about racial differences were seen as innate traits of racial groups, and these perceptions of inherent differences created perceived boundaries

between racial groups. From the premise of SIT, group categorization may further promote intergroup biases and lower the acceptance of different groups (Ashikali et al., 2021). Li et al. (2019) argued that social identity groups are susceptible to stereotypes. They argued that although organizations may implement interventions to reduce discrimination between groups, other barriers permeated throughout social groups, which conversely propagated dissociative feelings between workers. However, organizational climates where majority groups are encouraged to advocate for racial differences generated positive organizational effects, such as reducing biases and increasing feelings of inclusion amongst workers (Gündemir et al., 2019). The dynamics within culturally diverse workgroups are complex, and these complex relationships affect how workers perceive and experience their work environments.

Intersectional Identities

The effects of perceived inclusion are amplified when workers identify with more than one historically marginalized social identity group within their workplaces. For example, discrimination within work environments was compounded for women of color due to overlapping identities of gender and ethnicity (Burrows et al., 2022; Velez et al., 2018). Given the complex nature of work identities, researchers such as Corrington et al. (2020) urged diversity and inclusion scholars to consider the multidimensional qualities of workers' identities. Reviewing the multidimensional nature of workers' identities aids researchers and practitioners in understanding the unique barriers to inclusion for historically marginalized groups (Liu et al., 2019). Systematic biases filtered the perceptions of inclusivity, particularly for women who identified with other undervalued

social groups (Kang & Kaplan, 2019). Women of color experienced social and economic disparities and other marginalization to a heightened degree compared to other groups (Kim et al., 2022). Corrington et al. (2020) argued that some researchers have oversimplified intersectionality by limiting their review of the elements of inclusive work environments to just the visible identities of workers, such as those associated with race and gender. Şahin et al. (2019) noted workers' inclusion perceptions are deeper than visible differences. Although several researchers have investigated minority groups individually, few have noted that workers' identities are often not mutually exclusive and have not taken steps to emphasize their intersectional nature (Corrington et al., 2020). Metcalf et al. (2018) suggested that inclusion researchers employ mixed-methodological approaches with intersectionality frameworks to broaden their understanding of the barriers to inclusion within underrepresented work environments, such as those often documented within STEM workspaces. Thus, intersectional inquiry into workers' identities provides a more robust view of barriers to inclusion for underrepresented groups.

Women in STEM Workplaces

The inclusion perceptions of workers identifying with underrepresented groups are uniquely affected by contextual cues from their work environments. Disparities within work environments influenced workers' perceptions of equality, self-identification, their sense of ability, and feelings of inclusion (Martin & Phillips, 2019). Alfred et al. (2019) investigated women of color within STEM fields from U.S. educational systems and organizations using social capital and intersectionality

frameworks. They found that systematic deterrents and a lack of social support created personal and social barriers for women of color in STEM academia and industry. Furthermore, in Wilson and VanAntwerp's (2021) literature review of women within the engineering fields, the researchers found that women struggled with developing a sense of belonging within these work environments, and these feelings were amplified for women with intersectional identities corresponding with other underrepresented groups. Hence, these are environmental-specific deterrents that impact the perceived inclusion of women working within these workplaces.

The barriers to inclusion are evasive and cannot be solved by simply hiring more workers from underrepresented groups into these workplaces. For example, Martin and Phillips (2019) noted that the issue of representation for women within STEM goes much deeper than representative headcounts within organizations. Within these environments, gender identity threats emerged from the proportionally lower representation of women and from being surrounded by male-dominated norms that led women to perceive these work climates as unwelcoming (Wilson & VanAntwerp, 2021). Beliefs about gender stereotypes also perpetuated workplace biases, not limited to men’s views about women (Webber & Rogers, 2018). Women also held beliefs about other women rooted in gender stereotypes, which propagated perceptions about their efficacy within STEM fields, and seemingly further contributed to the underrepresentation of women within these work environments (Martin & Phillips, 2019). Bergsieker et al. (2021) conducted three experiments on female students pursuing STEM majors and tested hypotheses regarding in-group avoidance and exclusion based on pervasive stereotypes. They found the women

selectively avoided other women who did not display stereotypical STEM interests, which aligned with SIT assumptions. According to SIT, social mobility is an identity management strategy used to assimilate to an out-group by deliberately distancing from an in-group (Scheifele et al., 2021). Within some organizational structures, women struggled to overcome lower statuses and inferiority complexes when comparing themselves to men (Webber & Rogers, 2018). Based on Bergsieker et al.'s (2021) experimental research, their sample groups' behaviors supported assumptions of perpetuated stereotypical norms, which exacerbated a lower sense of inclusion that women perceived within STEM environments. Le et al. (2020) conducted a qualitative analysis of women within an educational institution to inquire into their perceptions of other women who displayed behaviors consistent with male versus female norms within work settings. While women displaying male stereotypes were viewed as unfeminine, they found that women who failed to adopt male-dominated norms were viewed as less competent. Consequently, embedded gender stereotyping within male-dominated fields can influence the perceived inclusion of women within these environments (Martin & Phillips, 2019; Wilson & VanAntwerp, 2021). These studies reveal environmental norms and stereotypes in underrepresented workplaces, such as STEM environments, contribute to feelings of inclusion, particularly for female workers.

Workers' Turnover Intentions

Organizations consistently seek methods to grow and retain their diverse workforce due to the benefits to organizational outcomes, and attracting and retaining diverse talent has been a growing concern. Diverse workforces have shown connections

to increased creativity and innovation (Brimhall & Mor Barak, 2018). Diverse work environments promote different perspectives where employees feel empowered to make valuable contributions to organizations and society (Javed et al., 2019). Failure to retain talented employees comes with high costs in terms of the time, acquisition, and losses in performance associated with the loss of valuable employees (Brimhall & Mor Barak, 2018; Redondo et al., 2021). For these reasons, organizations have employed various interventions to retain their diverse talent (Alfred et al., 2019). Hence, organizations have seen the value in monitoring these organizational factors to retain a diverse workforce, and assessing these workers' turnover intentions has been of growing interest to organizations.

Assessments of workers' turnover intentions allow organizations to monitor workers' desire to stay or leave an organization before workers decide to exit the organization. *Turnover intentions* has been defined as employees presently employed but contemplating leaving an organization (Rasheed et al., 2018). This construct is correlated with worker engagement, satisfaction, and organizational trust, all of which have been vital to an organization's ability to reach its goals (Heyns & Rothmann, 2021). More organizations are recognizing the value of retaining their diverse workforce, particularly within organizations focused on innovation (Alfred et al., 2019; Fang et al., 2019). However, workers' impressions of their work environments can affect their turnover intentions (Le et al., 2020). Studies have shown that perceptions of work environments that lead to turnover were more evident within marginalized groups, especially when these groups sensed that organizations have poor diversity management practices (Li et

al., 2019). Hence, factors such as workers' perceptions of organizational inclusion, support, and fairness, are often viewed as indicators for organizations when monitoring workers' turnover intentions (Le et al., 2020; Li et al., 2019). Understanding and evaluating these influences on workers' turnover intentions provides organizations insights to reduce instances when diverse workers voluntarily exit their organizations.

Inclusion and Turnover Intentions

Perceived inclusion affects workers' turnover intentions and other critical work-related outcomes. In their comprehensive review of inclusion literature, Li et al. (2019) identified linkages between inclusion-oriented HRM programs, employees' inclusion perceptions, and organizational outcomes. They found work climates perceived by workers as positive had lower turnover intentions. Inclusive work environments mitigated the adverse effects of a diverse workforce by reducing stereotyping, biases, conflict, and turnover (Le et al., 2020). Chung et al. (2020) showed inclusion was significantly related to workers' turnover intentions within their conceptualized inclusion model. Moreover, organizational practices aligned with organizational inclusion have been shown to moderate the turnover intentions of workers (Chordiya, 2022). In a study of expatriate workers, Davies et al. (2019) also found that perceived organizational inclusion moderated workers' resilience and turnover intentions. These studies show empirical support for links between organization inclusion, workers' turnover intentions, and other important organizational factors. Scholars have emphasized worker turnover's effects on organizational effectiveness and performance (Brimhall, 2019a; Chung et al., 2020). Scheifele et al. (2021) tested hypotheses relative to the identity management strategies

outlined by SIT. They found that when group members perceived workplace identity threats, there were effects on organizational outcomes, such as organizational identification and turnover intentions. In their sample of local European and expatriates, Jonasson et al. (2018) found inclusive management programs with approaches aimed at empowering employees had positive effects on all workers with no difference or relevance to workers' inherent culture. However, workplaces that displayed inclusive practices, such as those viewed as being open and supportive, were positively correlated to workers' turnover intentions when workers felt these efforts were insincere (Li et al., 2019; Sabharwal et al., 2019). In summary, workers' perceived inclusion affects their turnover intentions, and positive turnover intentions impede workers' ability to contribute to organizations effectively.

Marginalized Groups

Workers who belong to marginalized groups have intricate backgrounds from which they filter their perceptions of inclusion and form their turnover intentions. The interracial differences between workers form their perceptions of organizational diversity practices and influence workers' turnover intentions (Chordiya, 2021). Workers identifying with marginalized groups were more likely to scrutinize an organization's ability to fulfill diversity management promises to support an inclusive work climate, affecting their perceived commitment to an organization (Li et al., 2019). Consequently, low organizational commitment adversely affected turnover intentions (Liggans et al., 2019). In a cross-sectional review of U.S. federal workers, workers of color were more likely to leave an organization, and policies encouraging inclusive climate elements such

as those focused on organizational diversity and justice mediated these results (Chordiya, 2022). Working women have also faced multiple constraints at work and home, balancing competing roles (Rasheed et al., 2018). To combat work-family conflicts, some organizations have employed inclusive HRM programs to reduce these role constraints, as role conflicts are positively associated with workers' turnover intentions (Rasheed et al., 2018). Availability of support resources has also contributed to overall workers' satisfaction and is related to their commitment and turnover (Buchanan & Wallace, 2020; Judge et al., 2017). However, factors such as inherent cultural norms, which can place different emphasis on family roles over work roles, may influence how effective these programs are for some groups, as Rasheed et al. (2018) saw within their sample group of Middle Eastern women. These researchers found the inclusion perceptions of these workers generated from the unique frames of reference they bought into their workplaces, thus affecting their degree of organizational commitment and turnover intentions. Programs aimed at increasing inclusion by providing support for marginalized workers are inconclusive in their effectiveness in mitigating the turnover intentions of these workers.

Global Satisfaction as a Mediator

Workers' satisfaction with various elements of workplaces provides organizations with insights into their perceptions of work environments, and workers' global satisfaction may mediate critical work outcomes. Work environmental factors, such as perceptions of fit, prestige, and support, each significantly influenced how satisfied workers were with their workplaces (Webber, 2019; Webber & Rogers, 2018). Moreover,

researchers have shown that satisfaction mediated the relationship between work environment elements and workers' intent to stay with an organization (Bangwal & Tiwari, 2018). However, Webber (2019) found that the correlation between workers' overall satisfaction and independent work variables was challenging to predict, as several intervening variables affected workers' global satisfaction. For example, despite the documented challenges women have faced within workplaces, women have reported average, and occasionally higher than average, work satisfaction when compared to other groups (Buchanan & Wallace, 2020). Subsequently, when these results were segmented, by other factors such as race, pay, or organization type, women showed differences in satisfaction (Webber, 2019). Thus, workers' satisfaction is an essential element for organizations to foster due to its links to significant work outcomes.

Workers' identification and perceptions of their work environments also influenced how satisfied they were within their workplaces. In accord with SIT, group members experienced dissonance in pursuing inclusion as a part of a group while simultaneously striving for the satisfaction of distinctiveness as an individual within a group context (Hogg, 2005). This type of conflict initiated from within and between department comparisons that workers made, which influenced their identification with their work groups, generated questions of belonging, and contributed to decisions to stay or leave an organization (Ward et al., 2021). However, in a study of academic work environments, when global satisfaction was reviewed with professionals from academic workplaces, there were no significant differences in perceived satisfaction between workers within STEM and non-STEM departments, and there were no significant

differences found in the global satisfaction of men and women within this sample group (Webber & Rogers, 2018). Hence, workers' identification with their work contexts influences workers' overall satisfaction with their work environments.

Workers' identification with their inherent and workplace cultures are also significant contributors to workers' satisfaction with their workplaces. In a study of migrant workers, researchers found that factors, such as cultural influences, had a strong effect on work satisfaction, with prominent effects on satisfaction when these workers perceived leadership support (Chang et al., 2022). Leaders who promoted an inclusive climate influenced workers' satisfaction with their workplaces (Brimhall, 2019a). Furthermore, satisfaction mediated the relationship between workplace inclusion and work outcomes, even when some experimental models did not account for leader engagement (Brimhall, 2019b). However, the mediating effects of work satisfaction on workers' perceived inclusion and turnover intentions remains unclear.

Measuring Global Satisfaction. Due to the array of potential inputs, measuring global satisfaction within a workplace context presents other challenges. Over the progressive organizational literature, researchers have identified links between workers' attitudes about their work environments and their work motivations (Judge et al., 2017). Specifically, the relationship between job satisfaction and workers' turnover intentions has been routinely documented within the scholarly literature; however global work satisfaction (a general satisfaction measure of workers' satisfaction with work contexts) has not been explored as robustly (Judge et al., 2017). On some accounts, global satisfaction has been referenced within scholarly literature as a general measure of life

satisfaction, where life satisfaction encompasses a holistic assessment of one's satisfaction with all aspects of their lives, not limited to aspects of their work (Nair et al., 2017). However, specific to workplace contexts, global satisfaction has been used to assess how satisfied workers are with their work as a whole with no regard to satisfaction with factors outside of a work context (Judge et al., 2017). Collecting workers' perceptions of their work environments has provided meaningful assessments of specific work factors and has proven to be more valuable to organizations in assessing global satisfaction than evaluating satisfaction with overall life factors (Chang et al., 2022). Therefore, these findings necessitate clearly defining a global satisfaction measure and its inputs within the appropriate context.

Global satisfaction assessments have utility in providing organizations with insights into work environments; however, it remains unclear whether a cumulative job satisfaction measure or a global work satisfaction assessment is most appropriate in gauging workers' attitudes towards aggregate work attributes. Scholars have utilized a job satisfaction construct as a measure of workers' attitudes towards job specific attributes and as a measure of workers' attitudes towards all aspects related to a job (Judge et al., 2017). Some researchers have used job satisfaction to collectively assess work environment satisfaction, where respondents have been asked to broadly consider their satisfaction with workplace facets and regular work interactions (Webber, 2019; Webber & Rogers, 2018). On the other hand, global satisfaction instruments have also been used to gauge worker's satisfaction with their work in general and with concurrent composite job satisfaction scales that assessed multiple facets of satisfaction at work,

such as satisfaction with leadership, coworkers, pay, or a workplace in general (Bowling & Zelazny, 2022). Unfortunately, the meager delineation between measures of job satisfaction and global work satisfaction adds to the current complexities in evaluating global satisfaction within workplaces.

The vagueness between cumulative job satisfaction and global satisfaction measures presents challenges to distinguishing which is most appropriate in conveying an aggregated work satisfaction measure and understanding its effects. An explanation for the apparent interchangeability of these measures is that they have shown strong convergence with the same underlying construct, which suggested the measures were of equal significance when evaluating overall work satisfaction (Bowling & Zelazny, 2022). Drawing from research on various types of satisfaction measures within a workplace context, Bowling and Zelazny (2022) advocated using job composite measures when specific global satisfaction data were not accessible. The often indistinguishable nature of global satisfaction measures and job satisfaction composites is possibly why these terminologies and instrumentations have been used interchangeably, although greater clarity on their distinctions is warranted (Judge et al., 2017). These insights present an opportunity for organizational researchers and practitioners to further the current knowledge of global satisfaction measures and inferences to workplaces.

Summary

Organizational inclusion is a flourishing construct with growing delineations from diversity research (Chung et al., 2020; Liggans et al., 2019; Shore & Chung, 2021). In general, there is a need for additional contributions to organizational behavior research on

inclusion. The current body of literature provided evidence of many workplace factors contributing to workers' perceived organizational inclusion and this construct's work-related outcomes. Workplace variables such as an inclusive work climate, self-identification with work facets, and marginalization within workplaces are documented as antecedents to workers' perceptions of inclusion (Burrows et al., 2022; Greco et al., 2022; Li et al., 2019). Scholars have also explored organizational inclusion consequences and used SIT as a framework for understanding the relationship between workplace variables, which suggests psychological and contextual cues that contribute to the formation of work identities that stem from a sense of perceived inclusion (Johnson et al., 2019; Scheifele et al., 2021; Veelen et al., 2020). Within the current literature, what has been reviewed to a lesser degree is how inclusion affects the turnover intentions of minority women of color, specifically when working within underrepresented organizations, such as STEM workplaces. Moreover, an investigation of global satisfaction as a mediator of these variables was largely undetectable within the current research.

This study aimed to contribute to the growing body of knowledge on organizational inclusion while examining the effects of the inclusion perceptions of minority women of color working in STEM environments with their turnover intentions. This study further contributed to inclusion research by examining the mediating effects of global work satisfaction (a measure of cumulative satisfaction with workplace facets such as pay, job, and general work environment) on these workers' organizational inclusion and turnover intentions. The proceeding chapter summarizes the research methodology

used to investigate these variables employing quantitative analyses of archival data from a sample of minority women working within STEM workplaces. These data were captured via an organizational climate assessment and were used to cross-sectionally review workers' perceptions of inclusion, turnover intention, and global satisfaction.

Chapter 3: Research Method

This study examined differences in perceptions of organizational inclusion and the relationship between organizational inclusion, turnover intentions, and global satisfaction of minority women of color within STEM workplaces. This chapter describes the method of analysis for this inquiry. This summary begins with an overview of the research design and rationale for this study. Next, the target population, sampling frame, and data collection processes are outlined. From there, study variables are operationalized, and data analysis plans are detailed. This chapter concludes with a summary of threats to validity and considerations of the ethical implications of this research.

Research Design and Rationale

A quantitative approach with a nonexperimental research design was applied to conduct statistical analyses of the relationships between the research variables. This study was designed to review organizational inclusion as an outcome and as a predictor. First, organizational inclusion was used as an outcome to review differences between workers by sex and minority status group in STEM workplaces. Next, organizational inclusion was used as the predictor variable of minority women's turnover intentions within these STEM work environments, where turnover intentions served as the binary dependent variable. Last, global satisfaction was added to the analysis of these workers as a mediating variable to review its effects on the relationship between their organizational inclusion and turnover intentions. A quantitative method is appropriate to test hypotheses that involve reviewing relationships between variables, as well as appropriate to use in

evaluating the effects of intervening variables on relationship outcomes (Creswell & Creswell, 2018).

I executed this inquiry by conducting a secondary analysis of archival data to review a cross-section of survey responses from an organizational climate survey that included the relevant study variables that were applied to answer the related research questions. Secondary data analyses are commonly used in social and organizational research because these data are time-efficient and cost-effective in data collection (Kiecolt & Nathan, 1985). Furthermore, it is not uncommon for organizational scholars to use secondary sources to evaluate workplace dimensions, such as perceptions of organization environments, satisfaction, and other work-related constructs (Resh et al., 2021).

Methodology

For my research design, I accessed secondary data from the 2019 Federal Employee Viewpoint Survey (FEVS). This survey was created by the United State Office of Personnel Management (OPM), a human resources agency that provides personnel support to U.S. federal agencies. OPM administers the FEVS annually to collect data from federal employees working within U.S. government workplaces. The 2019 FEVS was collected through census administration of U.S. federal workers, and it included employees' responses to 101 items across 11 dimensions (OPM, 2019).

The data within this instrument captures workers' perceptions of the work climate, including perceptions of organizational policies, procedures, performance behaviors, and shared culture (OPM, 2019). OPM publishes open access to previous

years' survey data and technical reports through their public release data files on the www.opm.gov/fevs/ website. A cross-section of survey responses from workers within three STEM U.S. federal workplaces was used to answer the research questions.

Population

The 2019 FEVS includes responses from 1,543,992 federal employees (full and part-time, nonpolitical, nonseasonal, permanently employed) working within 83 federal departments. Data from employees working within three STEM federal organizations were used to answer the research questions, which yielded a target population size of 32,480 for this current study.

Sampling and Sampling Procedure

To conduct the analyses, I used a cross-section of responses to the 2019 FEVS. The FEVS is an organizational climate assessment that collects data through the purposive sampling of U.S. federal employees working within full-time, part-time, nonpolitical, nonseasonal, or permanently employed positions (OPM, 2019). The sampling frame used for this current study included 2019 FEVS eligible employees working within three STEM workplaces. I first located responses from three STEM organizations to identify the target sample group. The three STEM workplace characteristics are further described in the proceeding methodology section. Respondents from the elected STEM workplaces served as the cross-section of interest. Participants must have responded to self-reported sex and minority status demographic questions to be included in this current study's sample group. This group was used to review the first research question. This target sample was segmented into four groups (male nonminority,

male minority, female nonminority, and female minority) based on their personal demographic elections on the 2019 FEVS. From there, data from this sample group was further stratified based on responses from participants who exclusively self-identified as a female and as a minority status. This target sample was used to investigate Research Questions 2 and 3. The 2019 FEVS respondents that did not align with the three STEM workplaces, workers that were not eligible for the FEVS (not full-time, part-time, nonpolitical, nonseasonal, or permanently employed), and any respondents with missing personal demographic data, were excluded from this review.

The required sample sizes to test hypotheses play a critical role in a researcher's decision to reject a null hypothesis and to accurately interpret the results of a statistical test; these concerns refer to the statistical power of an analysis (Wagner & Gillespie, 2019). In addition to statistical power, a projected magnitude of the effect should be obtained to estimate the meaningfulness of the inferences (Wagner & Gillespie, 2019). To inquire into the appropriate sample sizes to infer statistical power from the analyses, relevant literature with similar studies were consulted to surmise a reasonable estimate of effect size. In a recent study inquiring into workers' surface-level and deep-level similarities, felt inclusion, and their effects on organizational outcomes through inclusion, Şahin et al. (2019) conducted their analysis with an ANOVA of 887 survey responses from public service workers to review the types of workers' similarities with their perceived inclusion. They found that felt inclusion was lower for workers who identify with deep-level similarities and reported a medium effect, $F(1,872) = 46.08$, $p < 0.001$, $\eta_p^2 = 0.05$; however, they also found no effect on felt inclusion for workers who sensed

surface-level similarities ($F(1,872) = 2.99$, $p < 0.084$, $\eta_p^2 = 0.003$). In another study, Li et al. (2019) reviewed the relationship between gender, age, and racial/ethnic identity categories on workers' perceptions of inclusion climate as propagated by organizational identity management practices and the effects on affective commitment. These researchers conducted tests of association based on workers' gender, age, and racial/ethnicity categories using 3,229 workers to review the relationship with diversity promises fulfillment as a reflection of an organization's inclusion climate, and they found significant relationships with the variables, but little effect as reported by the independent variables' unstandardized path coefficients, ranging from $\beta = -.02$ to $-.07$ (p range $<.05$ to $<.01$). Given that prior studies have found no effect, a small effect, and a medium effect when comparing organizational groups on measures of inclusion, I estimated a small effect size for the ANOVA used for this current study where I analyzed differences in organizational inclusion by sex and minority status group in STEM workplaces.

This current study also used a logistic regression analysis to review the predictive qualities of organizational inclusion on the turnover intentions of minority women in STEM. In a review of the literature, Chordiya (2022) tested the odds of turnover intentions with organizational inclusion for workers with disabilities. Using a sample of 687,687 U.S. federal workers, significant results were identified for four of five organizational inclusion predictors on turnover intentions with odds ratios for each factor ranging from 0.80 to 1.05 for workers with disabilities. Chordiya (2022) also found that the odds ratio was 1.17 when reviewing their hypothesis with respondents who identified as racial minorities as a control variable. In another closely related study, Chordiya

(2021) reviewed the likelihood of organizational justice programs to mediate the relationship between workers' racial identity (specifically non-White race) to predict turnover intentions. Using a random sampling from 3,736,328 pooled survey responses with 1,000 Monte Carlo simulations of a probit regression model, they found a mean regression coefficient of .372 (p = .001) with probability marginal effects (dy/dx) of .095 for racial identity (non-White race) to predict turnover intentions and identified interaction with organizational justice programs. Considering these prior studies, I estimated a small odds ratio when building my logistic regression model for this current study where I reviewed if organizational inclusion predicts the turnover intentions of minority women in STEM environments.

A priori power analyses were conducted to determine the appropriate sample sizes to estimate the statistical power for each analysis. G*Power software 3.1.9.7 was used to estimate the power when conducting mean difference and regression analyses (Faul et al., 2007, 2009). Inputs for the analyses assumed an alpha value of $\alpha = .05$ and Power $(1-\beta) = .80$, which are two statistical estimates commonly used by researchers to consider the likelihood of incorrectly rejecting or incorrectly failing to reject the null hypothesis (Type I or Type II errors), respectively (Creswell & Creswell, 2018). Given the variance in effect sizes from prior related studies, I deferred to documented scholarly methods to estimate a small effect when comparing mean differences. According to Cohen (1977), when testing for the mean difference between groups, .10 can be used to detect a small effect between groups. Thus, f =.10 was used to review for a small effect using the one-way ANOVA with four groups. For this analysis, G*Power yielded 1096 as a minimum

total sample size. A preliminary scan of the 2019 FEVS responses showed that the estimated sample group for this analysis from the three STEM workplaces was about 32,480, which exceeded the recommended minimum sample from this power analysis.

The next set of inputs for the power analysis were used to calculate the adequate sample size for a two-tailed logistic regression. For a small effect size, 1.5 was used to estimate the odds ratio (Hosmer et al., 2013). With an odds ratio set to 1.5, the results of this power analysis revealed that an adequate sample size for this analysis was a sample size of 308 participants. Another preliminary review of the 2019 FEVS responses revealed that the proposed participant group for this analysis was approximately 2,860, which exceeded the suggested minimum sample size.

Procedures for Using Archival Data

I accessed the 2019 FEVS data from OPM's FEVS public release data files. These data were used to conduct a secondary analysis of a cross-section of the population to answer the research questions. OPM (2019) collected the 2019 FEVS data through census administration of eligible federal employees. Eligibility for participation within the 2019 FEVS included the following employment statuses: U.S. federal full-time, part-time, nonpolitical, nonseasonal, and permanently employed workers. OPM used internal personnel records maintained by their division to identify eligible employees and removed workers who were no longer employed. After completing this process, the population size for the 2019 FEVS came to 1,443,152. OPM sent email invitations to invite eligible workers to participate in the survey, and OPM sent a subsequent follow-up email to encourage participation.

Survey data from the 2019 FEVS and prior years' survey results are openly available for public use. The public release data files have been cleaned and recoded to protect respondents' identities. For example, many demographic variables were collapsed and recoded into dichotomous variables (OPM, 2019). Access to the raw 2019 FEVS data is limited to OPM and its business affiliates. Raw, unfiltered data are not authorized for public release.

From the 2019 FEVS public use data file, I targeted responses from workers aligned to three science, engineering, technology, and mathematics-oriented workplaces. The characteristics of these three STEM workplaces are described here: (a) a large subagency of the U.S. government where the department's mission is delivering engineering services, (b) a large federal agency where the primary goal of the department is to support aeronautical innovations, and (c) a mid-sized federal agency that supports general scientific research. Responses from employees working within these three organizations were used for this present study. Based on the parameters outlined, the target sample for this current study was 32,480 workers responding to the 2019 FEVS.

Instrumentation and Operationalization of Constructs

The FEVS evolved from the 2002 Federal Human Capital Survey, and this survey has been administered by OPM to U.S. federal workers on an annual basis since 2010 (OPM, 2019). The FEVS is an organizational climate survey that captures federal workers' responses on various organizational topics, such as workers' perceptions of their leaders, work groups, and general facets of the work environment (OPM, 2019). This instrument is administered to eligible federal work groups annually to assess dimensions

of U.S. federal workplaces such as inclusion, turnover intentions, and overall satisfaction with work environments (O'Keefe et al., 2020; Resh et al., 2021). Survey items from this instrument were operationalized to align with the study variables to answer the research questions.

Data from the FEVS has shown value in practice and empirical study (Resh et al., 2021). The FEVS has been revered for its frequency of distribution (annually) to the largest population of U.S. federal workers and for capturing the broadest range of themes relative to workplace inclusion (O'Keefe et al., 2020). In a systematic review of prior studies that documented the psychometric qualities when employing FEVS scales, two-thirds established content validity of single survey items, approximately half established convergent and discriminant validity of the FEVS measures, and lesser accounted for internal reliability of the measures (Resh et al., 2021). However, within another comprehensive review of previously employed FEVS measurement models, Cronbach's alpha (internal reliability) was the most widely used measure of psychometric quality (Somers, 2018). These discrepancies demonstrate the inconsistencies in reporting the psychometric qualities of the FEVS (Somers, 2018). However, even with the psychometric reporting discrepancies, there is strength in the use of the instrument's measures when thoughtfully applied. With standardized and judicious use, the FEVS can mimic primary research vigor with its scope and breadth of statistical application, which supports theory expansion and hypothesis testing (Somers, 2018). Given the proposed research questions and the historical use of the FEVS in evaluating work climate

elements relative to the population of interest, the FEVS scales were the most appropriate documented measures to use in this current study.

Sex and Minority Status Group (Personal Demographics)

When responding to the 2019 FEVS, participants were asked to provide personal demographic information. This section of the 2019 FEVS asked participants to choose from response options aligned to eight questions, which asked about demographic areas such as sex, gender, race, and ethnicity (OPM, 2019). Examples of survey items include: "Please select the racial category or categories with which you most closely identify (mark as many as apply);" and "Are you: [Male/Female]?" As part of the data cleaning process that took place before releasing the 2019 FEVS public data file, personal demographic variables were recoded to protect the respondents' identities (OPM, 2019). Responses to personal demographic questions that related to respondents' sex and minority status were also collapsed and dichotomized as a part of the data cleaning process (OPM, 2019). For this current study, the dichotomous sex and minority status variables were combined based on the respondent's elections to form four groups (male nonminority, male minority, female nonminority, and female minority), which were used as categories for the sex and minority status group variable.

Organizational Inclusion

Organizational inclusion is a burgeoning construct (Li et al., 2019). Given the nature of the growing contributions from scholars, several instruments have been utilized in prior research; however, many have limited documentation on the robustness of their psychometric properties (Rezai et al., 2020). For this study, organizational inclusion was

reviewed as an outcome and a predictor. This variable was represented by twenty items from the 2019 FEVS grouped by habits of inclusion (fair, open, cooperative, supportive, and empowering), which served as the five-factor organizational inclusion variable. OPM has also referred to this variable as the new inclusion quotient (OPM, 2019). Response options for these items were collected using a 5-point Likert scale. A sample item from this scale is "Policies and programs promote diversity in the workplace." Relevant literature has recorded Cronbach's alpha for each factor of the organizational inclusion variable at above 0.80 (Sabharwal et al., 2019).

Turnover Intentions

Turnover intentions was evaluated as a dependent variable based on responses to the 2019 FEVS item., which asks, "Are you considering leaving your organization within the next year?" Responses to this item were collapsed to create a dichotomous variable that aligns with *yes* or *no* responses that correspond to the survey question. Response options for this survey item were previously listed as: "no," "yes, to retire," "yes, to take another job within the federal government," "yes, to take another job outside the federal government," and "yes, other" (OPM, 2019). This current study's responses for the turnover intentions survey item was recoded *yes* = 1 and *no* = 0 based on the aligned responses. Prior studies have evaluated this survey item similarly when assessing turnover intentions within a workplace context (Caillier, 2017; Kang et al., 2021; Sabharwal et al., 2019).

Global Satisfaction

A global satisfaction variable was used to evaluate the mediating effects of the relationship between organization inclusion and turnover intentions. This variable was based on responses to four items from the 2019 FEVS that align with OPM's global satisfaction index. The global satisfaction index captures respondents' satisfaction with the job, pay, and organization dimensions (OPM, 2019). Four items were used to create the global satisfaction index and they were collected using a 5-point Likert scale. A sample question from the global satisfaction index is, "Considering everything, how satisfied are you with your organization?" Cronbach's alpha for this scale has been shown to be above 0.80 (Caillier, 2017; Lee et al., 2020).

Data Analysis Plan

The data from the 2019 FEVS that was used for this study was retrieved from public release data files located on https://www.opm.gov/fevs/public-data-file/. These data sets are prescreened and preauthorized for public use. Data within the public release 2019 FEVS data file were cleaned and recoded to protect respondents' identities (OPM, 2019). The 2019 FEVS public release data file was delivered by manual request via a compressed electronic file. This file included a document describing the components of the compressed file, a spreadsheet of the public release data file survey responses, data labeling files for SAS and SPSS data analysis software, and a codebook. For further insight into the initial data collection and handling processes, the 2019 FEVS technical report was also downloaded from https://www.opm.gov/fevs/reports/technical-reports/.

For the current study, IBM SPSS 28 software was used to conduct the statistical analyses to answer the research questions. To prepare the 2019 FEVS data to undergo these analyses, participant responses corresponding to the three STEM workplace department codes (ARCE, NN, and NF) were extracted for use. These data were used to investigate the first research question. For Research Questions 2 and 3, data were further stratified by respondents' demographics: (a) sex = B (female) and (b) minority status = A (minority). Only respondents with elections for personal demographic values were used for this study, and any respondents with missing data were excluded.

Study variables were formed from the 2019 FEVS survey items. Organizational inclusion was evaluated as an outcome and a predictor variable. The first analysis reviewed responses from workers within the identified three STEM organizations for mean differences in organizational inclusion by sex and minority status group. Within this analysis, organizational inclusion was the dependent variable. The categorical sex and minority status group (male nonminority, male minority, female nonminority, and female minority) was the independent variable. Organizational inclusion was derived from a composite of 20 items from the 2019 FEVS that OPM (2019) described as the new inclusion quotient index and grouped by five habits of inclusion (fair, open, cooperative, supportive, and empowering). This first analysis aims to review the four sex and minority status groups (male nonminority, male minority, female nonminority, and female minority) for mean differences in organizational inclusion. Next, minority women's organizational inclusion was reviewed as a predictor of their turnover intentions. The outcome variable, turnover intentions, was derived from a single survey item with

corresponding dichotomous values, coded *yes* = 1 and *no* = 0. This coding process was previously described within the variable operationalization section of this document. Lastly, global satisfaction served as a mediating variable. This variable was comprised of composite data from four survey items from the 2019 FEVS, corresponding to OPM's global satisfaction index (OPM, 2019). These data were used to answer the current research questions and to test study hypotheses:

RQ1: Is there a difference in organizational inclusion by sex and minority status group (male nonminority, male minority, female nonminority, and female minority) for workers within science, technology, engineering, and mathematics (STEM) workplaces?

$H_0$1: There is no significant difference in organizational inclusion by sex and minority status group (male nonminority, male minority, female nonminority, and female minority) for workers within science, technology, engineering, and mathematics (STEM) workplaces.

H_a1: There is a significant difference in organizational inclusion by sex and minority status group (male nonminority, male minority, female nonminority, and female minority) for workers within science, technology, engineering, and mathematics (STEM) workplaces.

RQ2: Does organizational inclusion predict the turnover intentions of minority women within science, technology, engineering, and mathematics (STEM) workplaces?

$H_0$2: There is no significant relationship between organizational inclusion and turnover intentions of minority women within science, technology, engineering, and mathematics (STEM) workplaces.

H_a2: There is a significant relationship between organizational inclusion and turnover intentions of minority women within science, technology, engineering, and mathematics (STEM) workplaces.

RQ3: Does global satisfaction mediate the relationship between organizational inclusion and turnover intentions of minority women within science, technology, engineering, and mathematics (STEM) workplaces?

$H_0 3$: There is no mediating effect of global satisfaction on the relationship between organizational inclusion and turnover intentions of minority women within science, technology, engineering, and mathematics (STEM) workplaces.

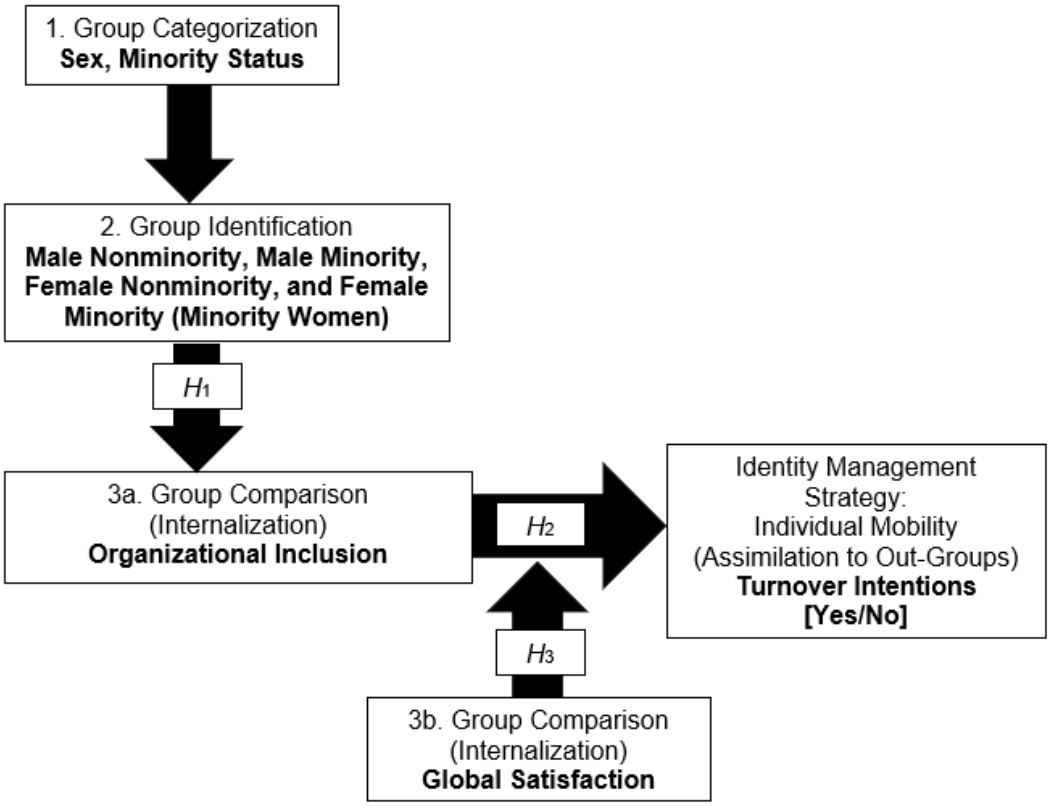
$H_a 3$: There is a mediating effect of global satisfaction on the relationship between organizational inclusion and turnover intentions of minority women within science, technology, engineering, and mathematics (STEM) workplaces.

The data analysis began with reporting the descriptive statistics for the cross-sectional data for the three STEM workplaces. This analysis included a review of areas such as the total number of responses, response rates for each division, the percentage of the population that aligns with the target sample, and any other relevant data characteristics. Evaluating these details prior to conducting inferential analyses is a best practice when using secondary data, such as the FEVS data, as it increases study transparency and invites future replication and inquiry (Resh et al., 2021). Next, an ANOVA was used to answer the first research question. An ANOVA is a statistical analysis to compare means between groups (Bird, 2004). This analysis was used to evaluate the organizational inclusion of workers within the three STEM workplaces by

sex and minority status group. The subsequent statistical analysis was a binary logistic regression to answer the second research question. This inquiry was applied explicitly to respondents identifying as minority women within the 2019 FEVS and who work within one of the three STEM organizations. A logistic regression analysis is appropriate when evaluating a predictor's effects on a dichotomous categorical dependent variable while estimating the probability of either value (Menard, 2010). The logistic regression analysis was used to evaluate the likelihood of minority women having an intent to leave as predicted by their organizational inclusion. For this analysis, the outcome variable, turnover intentions, aligned to categorical *yes*/*no* values, coded as *yes* = 1 and *no* = 0. The next step in this data analysis was to add the mediation variable to the binary logistic regression model to review for interaction. A mediation analysis can be used to evaluate the intervening effects within a regression model (Iacobucci, 2008). This analysis was used to answer the third research question. While the preceding analysis will be used to review the direct effects, the mediation analysis was used to review the indirect effects of global satisfaction on organizational inclusion and turnover intentions when this variable is added to the logistic regression model. To interpret the results of these analyses, statistical inferences were drawn, based on a significance level of .05 and a confidence interval of .95 for each analysis. Figure 1 depicts the hypothesized model of these analyses, with SIT as a theoretical framework for study interpretations.

Figure 1

Hypothesized Model Using Social Identity Theory (SIT) as a Theoretical Framework



Note: Hypotheses denoted by *H* values.

Threats to Validity

To ensure the integrity of a research design and the resulting study inferences, researchers should dutifully identify and report any potential threats to validity. Within quantitative research, any potential threats to the validity of the research design should be anticipated in advance, and procedures for addressing the concerns should be documented (Creswell & Creswell, 2018). Components of such a review typically include an assessment of potential threats to external and internal validity and threats to statistical

conclusions. The sections that follow outline the threats to the validity and the steps that were taken to address these concerns.

External Validity

External validity threats inhibit the generalizability of study inferences. This validity threat can arise when a researcher makes incorrect inferences about a study's results applying to other groups, settings, or time periods (Creswell & Creswell, 2018). External validity threats can limit the applicability of study findings to a broader range of audiences and situations. This validity threat stems from the unique characteristics of a study, such as sample demographics, specific study contexts, and limited time bounds (Creswell & Creswell, 2018). For this current study, a secondary analysis of cross-sectional data from the 2019 FEVS participants was used to draw conclusions relative to the stated hypotheses. The FEVS is an organizational climate survey used annually to collect data from U.S. federal employees (OPM, 2019). Given that the data for this analysis is specific to data collected for the 2019 FEVS, the study findings may not be generalizable to years before or after 2019.

Additionally, the characteristics of the study group included employees working within three STEM organizations (as defined within the sampling and sampling procedures section of this document) and are limited to workers eligible for participation in the 2019 FEVS. The sample group for this study includes workers within three STEM work environments that are U.S. federal employees who were working in full-time, part-time, nonpolitical, nonseasonal, or permanent positions. The 2019 FEVS responses from these individuals were used to investigate Research Question 1. A further stratified

sample within these three STEM-based workgroups was used in identifying minority women to support Research Questions 2 and 3. Due to the characteristics of the work settings and participants, the study findings may not be generalizable to other work groups that do not meet this study group's characteristics or work contexts. These external validity constraints were addressed by detailing the study's limitations within Chapter 5 of this document. Chapter 5 was used to disclose restrictions on the generalizability of the current study's findings, and this section will highlight future research opportunities (see Creswell & Creswell, 2018).

Internal Validity

Internal validity threats concern the treatment of study participants and data collection methods. Research components such as participant selection, treatment, and study instrumentation are common areas researchers should review for internal threats within quantitative research designs (Creswell & Creswell, 2018). A threat to the internal validity of this study relates to the secondary data source that was used in this analysis. The annual FEVS survey includes self-reported data from U.S. federal workers (OPM, 2019). Participants who have taken a prior year's survey may be familiar with the test questions and defer to prior responses when participating in the current survey (Creswell & Creswell, 2018). To mitigate this internal validity threat, during the survey development phase, several items within the 2019 FEVS instrument were modified and revised from the prior year's version (OPM, 2019). Also, the annual time frame between survey administration can reduce participant recall (Creswell & Creswell, 2018).

Another internal validity threat was specific to self-reported data gathered from an applied setting, such as those data commonly use in organizational surveys. These data risk common method bias (Jordan & Troth, 2020). Common method bias occurs when all variables used in a quantitative analysis are derived from responses from a single instrument (Jordan & Troth, 2020). This validity threat can result in incorrect interpretations of study variables. To mitigate this threat to internal validity, some steps researchers can take are to provide respondents with clear directions on how to complete the survey and how the survey results will be used, remove any ambiguous wording to improve the clarity of scale items, and remove common scale characteristics (Jordan & Troth, 2020). To mitigate these validity threats, OPM (2019) provided respondents with detailed instructions on completing the survey, advised respondents how the results would be used, and reverse-coded and altered anchor labels for some of the items. Additionally, when identifying the constructs for this study, I ensured that the survey items used for each variable were not convergent and had varied measurement scales. These actions ensured that the items selected from the survey to create the study variables did not share common scale properties for the criterion, predictor, dependent, and mediator variables (Jordan & Troth, 2020).

Statistical Conclusions

Common method bias can also threaten statistical conclusions. Threats to statistical conclusions can arise within a quantitative study when variables are inadequately defined, statistical power is insufficient, or statistical assumptions have been violated (Creswell & Creswell, 2018). Threats to statistical conclusions within this study

include using applied operationalized scales to measure each study variable. To address this threat to statistical conclusions drawn from these scales, I disclosed the names of the scales, how they have been used with similar populations, and provided the documented psychometric qualities reported by peer-reviewed scholarly sources. Describing the study's instruments, how they have been used in the past, and any reported psychometric qualities reduces threats to the statistical conclusions derived from the scales when applied similarly (Creswell & Creswell, 2018). To further address these statistical conclusion concerns, posthoc analyses were also conducted. Posthoc analyses can be used to statistically examine the variance amongst variables (Jordan & Troth, 2020), and to ensure the statistical power of the study inferences, G*Power software can also be applied in estimating the power of the analyses (Faul et al., 2007).

Ethical Procedures

This study utilized the 2019 public release data file of the FEVS published by the U.S. Office of Personnel Management (OPM, 2019) upon obtaining the appropriate permissions from the Institutional Review Board (IRB), approval number 11-11-22-0117554. These data are open to access and available for retrieval from https://www.opm.gov/fevs/public-data-file/. While informed consent was not required for this secondary analysis, OPM (2019) had taken lengths to inform individuals and to protect the survey respondents' identities within their primary data collection process. The dataset's technical report describes the procedures to protect the respondents' identities. Within this report, there is a copy of the email solicitation sent to eligible workers requesting their confidential and voluntary participation in the survey (OPM,

2019). Additional actions OPM took to protect these respondents included masking and mitigating data disclosure risks by limiting identifiable information by work unit and demographic profiles (OPM, 2019). These steps resulted in collapsing work units into recoded group variables by department type, and demographic data were recoded into dichotomous variables. OPM (2019) asserts that the public release file does not include information that can be linked to any specific participant.

Ethical procedures were followed in retrieving and storing the secondary data. The 2019 FEVS was delivered within an electronic compressed zip file that included the public release data file responses and a codebook. This file is stored on an individual-use computer within a password-protected electronic folder, where access is limited exclusively to the researcher of this current study. These data were only shared with authorized university personnel for official use in the completion of this dissertation study; such personnel include, but may not be limited to, the dissertation committee members and university reviewers. These data will be destroyed after obtaining approval of the dissertation.

Summary

The preceding methodology sections outlined the plans for this current study. Within these sections, I detailed the planned research design and rationale, instrumentation and the operationalization of the study variables, the plans for data analyses, relevant threats to validity, and ethical considerations. Upon approval of the research proposal, this study commenced and Chapter 4 details the study's data and data handling procedures.

Chapter 4: Results

The purpose of this nonexperimental quantitative study was threefold: to examine the differences in organizational inclusion of workers within STEM work environments by sex and minority status group, to review the relationship between organizational inclusion and turnover intentions of minority women within these STEM workplaces, and to determine if global satisfaction mediates minority women's organizational inclusion and turnover intentions. Below are the research questions and hypotheses that guided the statistical analyses. Table 1 summarizes the study variables.

RQ1: Is there a difference in organizational inclusion by sex and minority status group (male nonminority, male minority, female nonminority, and female minority) for workers within science, technology, engineering, and mathematics (STEM) workplaces?

$H_0$1: There is no significant difference in organizational inclusion by sex and minority status group (male nonminority, male minority, female nonminority, and female minority) for workers within science, technology, engineering, and mathematics (STEM) workplaces.

H_a1: There is a significant difference in organizational inclusion by sex and minority status group (male nonminority, male minority, female nonminority, and female minority) for workers within science, technology, engineering, and mathematics (STEM) workplaces.

RQ2: Does organizational inclusion predict the turnover intentions of minority women within science, technology, engineering, and mathematics (STEM) workplaces?

$H_0$2: There is no significant relationship between organizational inclusion and turnover intentions of minority women within science, technology, engineering, and mathematics (STEM) workplaces.

H_a2: There is a significant relationship between organizational inclusion and turnover intentions of minority women within science, technology, engineering, and mathematics (STEM) workplaces.

RQ3: Does global satisfaction mediate the relationship between organizational inclusion and turnover intentions of minority women within science, technology, engineering, and mathematics (STEM) workplaces?

$H_0$3: There is no mediating effect of global satisfaction on the relationship between organizational inclusion and turnover intentions of minority women within science, technology, engineering, and mathematics (STEM) workplaces.

H_a3: There is a mediating effect of global satisfaction on the relationship between organizational inclusion and turnover intentions of minority women within science, technology, engineering, and mathematics (STEM) workplaces.

Table 1

Summary of Study Variables

Name	Type	Study Variable Characteristics
Sex and Minority Status Group	Categorical	Independent (R1)
Organizational Inclusion	Continuous	Dependent (R1); Predictor (R2 & R3)
Turnover Intentions	Dichotomous	Dependent (R2 & R3)
Global Satisfaction	Continuous	Mediator (R3)

Note. R1, R2, and R3 indicates research question number.

This chapter is intended to provide an in-depth overview of the data used to evaluate these research questions. The subsequent details include the data collection process, which outlines the data characteristics with descriptive statistics of the sample. This chapter concludes with each analysis's results and a summary of answers to the research questions before transitioning to the interpretation of findings in Chapter 5.

Data Collection

This study used secondary data from the 2019 FEVS. The FEVS is an organizational climate survey that utilizes census administration to capture employees' perceptions of organizational dimensions (OPM, 2019). Eligible respondents to the 2019 FEVS were limited to full-time, part-time, nonpolitical, nonseasonal, and permanently employed U.S. federal positions. The timeframe used to collect the 2019 FEVS data was from May 13, 2018 to July 5, 2019, over two waves of administration, resulting in 1,543,992 surveys sent to employees. The 2019 FEVS had an average response rate of 42.6% for all departments, with varying response rates by work units. This response rate resulted in 615,395 completed surveys, representing the population from which the target sample for this current study was drawn. Each 2019 FEVS response had an assigned data weight based on a population nonresponse adjustment and raking by demographic characteristics to allow for a better representation of the total population within plus or minus one percentage point (OPM, 2019). These data weights were not utilized within this current study due to the analyses aligning to a subset of the population as opposed to the total population.

Data Cleaning

As a part of this secondary analysis, data from the 2019 FEVS were stratified, recoded, and operationalized into study variables for the analyses. First, the target sample group was identified by filtering and extracting responses from the 2019 FEVS by department codes corresponding to the three STEM organizations described in Chapter 3. The adjusted estimated population based on the three STEM organizations was 48,397. This filtering and extracting of responses to the 2019 FEVS yielded 32,480 responses, which equated to an average response rate of 67.1% of total workers within the three STEM organizations. Survey responses with no self-elections for the sex or the minority status questions were removed from the dataset, including self-elections to only one of these fields. This process reduced the number of 2019 FEVS eligible responses to 28,535, equating to 1.8% of the U.S. federal workers and 59% of the population within the three STEM organizations. This group was the target sample used to analyze Research Question 1. These data were further stratified by responses exclusive to minority women, yielding a total of 2,860 responses used to explore Research Questions 2 and 3. This group was 5.9% of the population within the three STEM organizations. These sample sizes exceeded the minimum target sample size proposed for this research. The a priori analyses that were used to calculate the minimum sample sizes were detailed in Chapter 3.

Other survey responses that had blanks or “X,” to indicate “I don’t know” (an additional option for responses that did not align with the Likert scale options) were

removed from the dataset and recoded to 99 and 98, respectively. Additional data recoding to operationalize survey responses into study variables are shown in Table 2.

Table 2

Recoded 2019 Federal Employee Viewpoint Survey (FEVS) Variables

Description	2019 FEVS Variable	Recoded Variable
Sex and Minority Status Group	DSEX A – Male B – Female DMINORITY A – Minority B – Nonminority	SEX_MINORITYGR 0 = Nonminority Males 1 = Minority Males 2 = Nonminority Women 3 = Minority Women
Organizational Inclusion	New Inclusion Index (20 FEVS questions with five subindices) *Fair* Q23, Q24, Q25, Q37, Q38 *Open* Q32, Q34, Q45, Q55 *Cooperative* Q58, Q59 *Supportive* Q42, Q46, Q48 Q49, Q50 *Empowering* Q2, Q3, Q11, Q30	ORG_INCLUSION [a]
Turnover Intentions	DLEAVING A = No B = Yes, to take another Federal job C = Yes, to take a job outside Federal Gov D = Yes, Other	TURNOVER_INTENT 0 = No 1 = Yes
Global Satisfaction	Global Satisfaction Index Q40, Q69, Q70, Q71	GLOBAL_SAT [a]

Note. [a] Indices aligned with OPM scales. ORG_INCLUSION represents the average of unrounded subindex scores, averaged by the five subindices to calculate an overall score. GLOBAL_SAT represents the average of unrounded four survey items (see OPM, 2019).

For the sex and minority status group variable, variable labels and values were updated from “Male nonminority,” “Male minority,” “Female nonminority,” “Female minority” to 0 = Nonminority Males, 1 = Minority Males, 2 = Nonminority Women, 3 = Minority Women for consistency in group identification and to support data computations within SPSS. All other data operationalization plans outlined within Chapter 3 were retained.

Statistical Results

This section provides an overview of the results of the current analyses, which included evaluating the descriptive statistics, statistical assumptions, and statistical test findings.

Descriptive Statistics

The sample used for this analysis included 28,535 U.S. federal employees working within three STEM organizations. Of these STEM organizations, Workplace A was a large subagency where the department’s mission was delivering engineering services, Workplace B was a large federal organization whose primary goal was supporting aeronautical innovations, and Workplace C was a mid-sized agency that supported general scientific research. The 2019 FEVS had participants select responses to demographic questions relative to their sex, minority status, tenure, education, supervisor status, and work unit (OPM, 2019). Table 3 depicts the sample demographic characteristics. Within the sample group, of the demographics that were the most apparent, 52.6% were nonminority males, 38.5% had 10 or fewer years of tenure, 41.3%

had more than a bachelor's degree, 81.9% worked within nonsupervisory roles, and 68% were aligned with STEM workplaces.

Table 3

Sample Demographics of Workers within STEM workplaces

Characteristics	*N*	%
Sex		
Male	18,717	65.6
Female	9,818	
Minority Status		
Minority	6,564	23
Nonminority	21,971	77
Sex and Minority Status Group		
Nonminority Males	15,013	52.6
Minority Males	3,704	13
Nonminority Women	6,958	24.4
Minority Women	2,860	10
Tenure [a]		
10 or fewer years	10,991	38.5
Between 10 – 20 years	8,170	28.6
More than 20 years	9,350	32.8
Education [b]		
Less than Bachelor's degree	5,263	18.4
Bachelor's Degree	11,478	40.2
More than Bachelor's degree	11,784	41.3
Supervisor Status		
Nonsupervisor	23,379	81.9
Supervisor/Manager/Senior Leader	5,156	18.1
STEM organization		
Workplace A	19,394	68
Workplace B	8,562	30
Workplace C	579	2
Total	28,535	

Note. [a] 24 missing Tenure responses. [b] 10 missing Education responses.

Table 4 includes the demographic information of this sample group further stratified by minority women working within the three STEM organizations. Within this

group, the most frequently reported demographics were minority women with more than 20 years of tenure (37.8%), more than a bachelor's level degree (39.2%), working in nonsupervisory roles (88.7%), and aligned to STEM workplace A (67.8%).

Table 4

Sample Demographics of Minority Women Within STEM Workplaces

Characteristic	*N*	%
Tenure		
10 or fewer years	1,028	35.9
Between 10 – 20 years	750	26.2
More than 20 years	1,082	37.8
Education		
Less than Bachelor's degree	664	23.2
Bachelor's Degree	1,074	37.6
More than Bachelor's degree	1,122	39.2
Supervisor Status		
Nonsupervisor	2,536	88.7
Supervisor/Manager/Senior Leader	324	11.3
STEM organization		
Workplace A	1,938	67.8
Workplace B	763	26.7
Workplace C	159	5.6
Total	2,860	

Next, the dichotomous outcome variable, turnover intentions, was also evaluated to determine frequency amongst minority women within STEM workplaces. This variable had two values, where 0 = *no* and 1 = *yes*, to investigate Research Questions 2 and 3. Of the 2,860 minority women respondents, 2,839 responded to the question related to their turnover intentions. Twenty-one minority women from the three STEM organizations did not respond to the turnover intentions question (0.7%), 1,975 (69.1%) responded *no*, and 864 (30.2%) responded *yes*.

The descriptive statistics and internal reliability for each of the study's measurement scales were also evaluated using Cronbach's alpha statistic. Organizational inclusion and global satisfaction were captured within the 2019 FEVS using a 5-point Likert scale. For organizational inclusion, Cronbach's α ranged from .92 for the five subscales (fair, open, cooperative, supportive, and empowering) and .96 for the individual 20 survey items that correspond to the organizational inclusion index. The four items from the 2019 FEVS used to create the global satisfaction index had a Cronbach's α of .85. Table 5 summarizes the descriptive statistics of the study variables, and correlations between variables are shown in Table 6. The Pearson correlation coefficient (*r*) ranges from 1 to -1, representing the strength of positive or negative associations between variables (Laerd Statistics, 2018). Organizational inclusion had a low negative correlation with turnover intentions and a strong positive association with global satisfaction. Moreover, global satisfaction also revealed a moderate negative correlation with turnover intentions.

Table 5

Descriptive Statistics of Study Variables

Variable	*N*	% Sample	Mean	*SD*	95% Confidence Interval for Mean	
					Lower	Upper
Organizational Inclusion [a] (STEM workers)	20,715	72.5%	3.93	.756	3.92	3.94
Organizational Inclusion [b] (Minority Women)	2,029	70.9%	3.81	.807	3.77	3.84
Turnover [c] Intentions	2,839	99.5%				
Global Satisfaction [b]	2,817	98.5%	3.83	.871	3.80	3.86

Note. [a] Sample STEM workers 28,535. [b] Sample minority women within STEM workplaces 2,860. [c] Dichotomous variable.

Table 6

Variable Correlations

Variable	1	2	3
1. Organizational Inclusion [a]	—	-.387**	.826**
2. Turnover Intentions [b]	-.387**	—	-.435**
3. Global Satisfaction	.826**	-.435**	—

Note. ** Correlation is significant at the $p < 0.01$ level (2-tailed). [a] Organization Inclusion STEM workers (N = 20,715) and minority women within STEM workplaces (N = 2,029) measured with the same scale. [b] Turnover Intentions is a dichotomous variable.

Statistical Assumption and Hypothesis Testing

Before running the analyses, I first evaluated the statistical assumptions for each proposed analysis. Once these assumptions were evaluated, I tested each research question's hypothesis. Statistical assumptions were tested with the proposed analysis methods detailed within Chapter 3. Furthermore, where appropriate, I used the proposed methods and additional analyses to test hypotheses based on the support or violation of the statistical assumptions for each test. These steps were taken to limit the risk of Type I or Type II errors and retain the inferences' statistical power.

Research Question 1 (RQ1)

An ANOVA was the proposed statistical test to evaluate Research Question 1, which reviewed organizational inclusion mean differences by sex and minority status group. How data are distributed amongst sample groups is an important consideration for an ANOVA test and other statistical analyses (Elliott & Woodward, 2007). To conduct an ANOVA, data must be normally distributed, without outliers, and the homogeneity of variances must be assumed (Elliott & Woodward, 2007). There were no outliers in the sample group. Table 7 shows descriptive statistics by groups on the organizational inclusion variable, including the data skewness and kurtosis for each group in the sample. These data violated tests of normality and homogeneity of variance for organizational inclusion across sex and minority status groups. Violations of normality and homogeneity of variance were confirmed by the Kolmogorov-Smirnov and Shapiro-Wilk tests of normality statistics and the Levene statistic (Elliott & Woodward, 2007). These analyses had significance levels at less than .05, indicating the data were not normally distributed,

and there was no homogeneity of variance across groups. Results for the homogeneity of variance analysis are shown in Table 8.

Table 7

Descriptive Statistics for Organizational Inclusion by Sex and Minority Status Group

Sex and Minority Status Group	*N*	Mean	*SD*	95% Confidence Interval for Mean		Skewness	Kurtosis
				Lower	Upper		
Nonminority Males	11,001	3.97	.714	3.96	3.97	-.856	1.002
Minority Males	2,704	3.94	.773	3.91	3.97	-.984	1.162
Nonminority Women	4,981	3.90	.764	3.88	3.92	-.879	.889
Minority Women	2,029	3.81	.807	3.77	3.84	-.860	.801
Total	20715	3.93	.746	3.92	3.94		

Table 8

Levene's Test of Homogeneity of Variances

		Levene Statistic	*df*1	*df*2	Sig.
Organizational Inclusion	Based on Mean	19.682	3	20711	<.001
	Based on Median	15.935	3	20711	<.001
	Based on Median and with adjusted *df*	15.935	3	20446.891	<.001
	Based on trimmed mean	17.177	3	20711	<.001

Although there were violations of the ANOVA statistical assumptions, I opted to proceed to interpret the results of this analysis due to the large sample size and with the consideration that equal variances were not assumed. According to the central limit

theorem, sample means are estimated to be normal for exceptionally large samples sizes (Elliott & Woodward, 2007). The sample size used in this analysis was 20,711. The Games-Howell posthoc analysis was used to review the mean difference by group because equal variances were not assumed. The Games-Howell posthoc analysis can be used to interpret the results of an ANOVA further when there is a violation of the homogeneity of variance assumption (Kremelberg, 2011). Thus, the results of the one-way ANOVA were that there was a significant difference in organizational inclusion means between nonminority males, minority males, nonminority women, and minority women sex and minority status groups, $F(3, 20711) = 34.01$, $p < .001$. The eta-squared value showed a very small effect at $\eta^2 = .005$, whereby the differences between sex and minority status group can explain .05% of the variability in organizational inclusion within STEM workplaces. Table 9 summarizes the result of the Games-Howell posthoc analysis. The Games-Howell posthoc analysis reported a significant difference in the organizational inclusion mean between nonminority males and all other groups, except minority males ($p < .001$). There were no significant differences in means between nonminority males and minority males ($p = .189$). Minority males had a significant mean difference with minority women ($p < .001$) and no significant difference between nonminority males ($p = .189$) and nonminority women ($p = .099$). Nonminority women also had a significant mean difference with minority women, $p < .001$. Lastly, minority women showed significant mean differences between all groups, with $p < .001$ for all comparisons. The null hypothesis for Research Question 1 was partially rejected, as there

were some significant differences in organizational inclusion between sex and minority status groups in STEM workplaces.

Table 9

Multiple Comparisons of Organizational Inclusion by Sex and Minority Status Group Games-Howell Posthoc Analysis

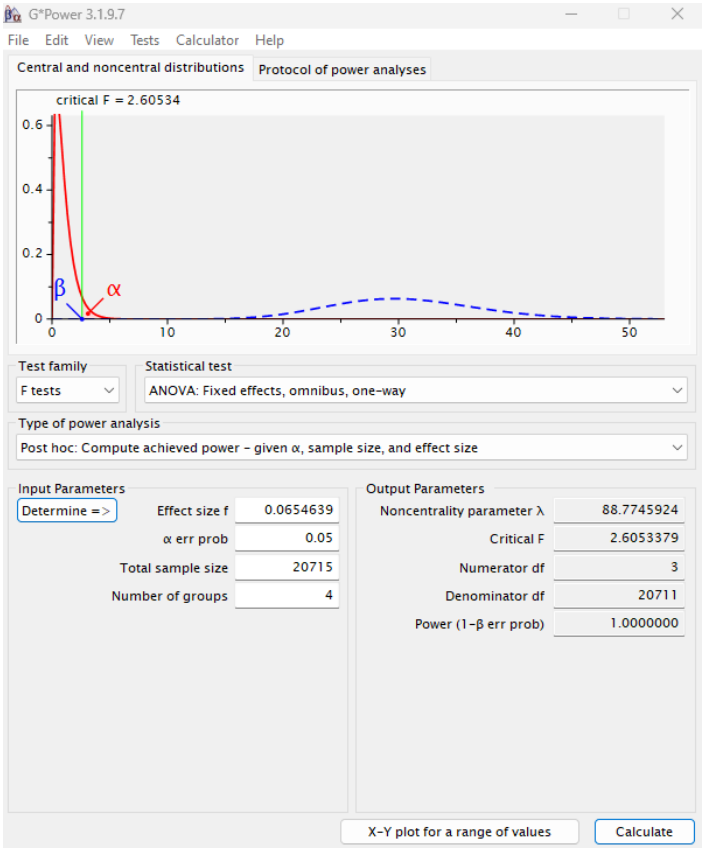
Sex and Minority Status Group	Sex and Minority Status Group	Mean Difference	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Nonminority Males (NM)	MM	.03269	.01636	.189	-.0094	.0747
	NW	.07493*	.01279	<.001	.0421	.1078
	MW	.16707*	.01917	<.001	.1178	.2164
Minority Males (MM)	NM	-.03269	.01636	.189	-.0747	.0094
	NW	.04224	.01839	.099	-.0050	.0895
	MW	.13439*	.02329	<.001	.0745	.1942
Nonminority Women (NW)	NM	-.07493*	.01279	<.001	-.1078	-.0421
	MM	-.04224	.01839	.099	-.0895	.0050
	MW	.09215*	.02094	<.001	.0383	.1460
Minority Women (MW)	NM	-.16707*	.01917	<.001	-.2164	-.1178
	MM	-.13439*	.02329	<.001	-.1942	-.0745
	NW	-.09215*	.02094	<.001	-.1460	-.0383

Note. * The mean difference is significant at the 0.05 level.

A posthoc Power analysis using G* Power (Faul et al., 2007) was also conducted to review the statistical power of these inferences, using the group sizes and means to calculate the Power using effect size of .0654639, $\alpha = .05$, and a total sample of 20715 across four groups. The results of this analysis showed Power $(1 - \beta) = 1.00$. These results are shown in Figure 2.

Figure 2

*G*Power ANOVA Posthoc Analysis*



Supplemental Analysis. The ANOVA test inferences presented risks due to the violations of the homogeneity of variance. The risk of a Type I error increases when using a parametric test on a sample with unequal variances (Elliott & Woodward, 2007). Given this increased risk, I elected to supplement this analysis with a nonparametric test to further review the difference in organizational inclusion by sex and minority status group. The Kruskal-Wallis test was the nonparametric method used to conduct the nonparametric analysis to review the differences between the sample groups. The Kruskal-Wallis analysis does not assume normality or homogeneity of variance, and it is

used to evaluate differences between independent samples on mean ranks (Laerd Statistics, 2018). The results of the Kruskal-Wallis test showed a significant difference in organizational inclusion between sex and minority status groups, at the $\alpha = .05$, where $H(3) = 80.82$, $p = .000$. A box-plot of organizational inclusion comparisons by sex and minority status group as a result of the Kruskal-Wallis test is shown in Figure 3, and the pairwise comparisons between sex and minority groups adjusted by the Bonferroni correction are shown in Table 10.

Figure 3

Independent Samples Kruskal-Wallis Test of STEM Workers' Organizational Inclusion

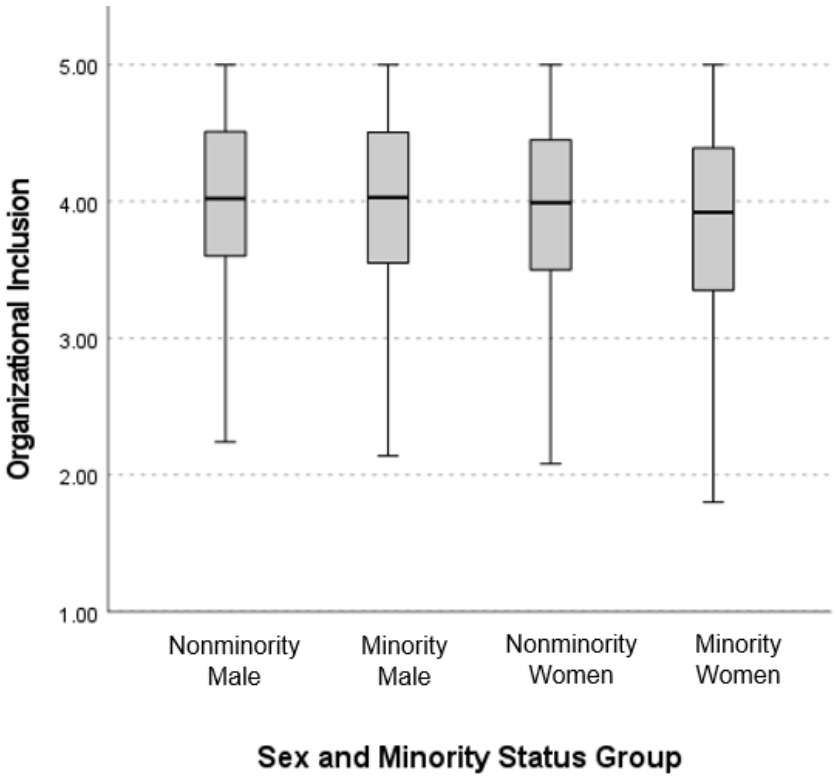


Table 10

Pairwise Comparisons of Organizational Inclusion by Sex and Minority Status Group

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.[a]
MW-NW	667.850	157.481	4.241	<.001	.000
MW-MM	1092.375	175.627	6.220	<.001	.000
MW-NM	1186.070	144.472	8.210	<.001	.000
NW -MM	424.525	142.833	2.972	.003	.018
NW-NM	518.219	102.120	5.075	<.001	.000
MM-NM	93.695	128.348	.730	.465	1.000

Note. MW = minority women, NW = nonminority women, MM = minority males, NM = nonminority males. Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is .050. [a] Significance values have been adjusted by the Bonferroni correction for multiple tests.

The Bonferroni correction for multiple tests revealed results aligned with the Games-Howell analysis, except for organizational inclusion differences between nonminority women and minority males, which showed significant mean rank differences at $p = .003$. There were significant differences in organizational inclusion between three sex and minority status groups. However, the test showed no difference between nonminority males and minority males. In evaluating these results, my decision to partially reject the null hypothesis for Research Question 1 was retained, as there were significant differences in organizational inclusion between some groups by sex and minority status.

Research Question 2 (RQ2)

A binary logistic regression was the proposed statistical test to evaluate Research Question 2. This analysis was used to review the predictive relationship between

organizational inclusion and turnover intentions of minority women in STEM workplaces. To perform this analysis, there should be no outliers, observations should be independent, and there should not be multicollinearity, meaning the data are not highly correlated (Laerd Statistics, 2018). Since there is only one predictor variable for this logistic regression model, no multicollinearity was assumed.

The logistic regression was used to predict group membership of the minority women in STEM workplaces to be either *yes* or *no* turnover intentions relative to their organizational inclusion. The binary logistic regression model was a good fit, as Table 11 shows no significance for the Hosmer and Lemeshow goodness-of-fit test (p = .152). The outcome of the binary logistic regression analysis of minority women (N = 2012) within STEM workplaces was that organizational inclusion predicted turnover intentions. Within this analysis, the -2 Log likelihood = 2140.25, and the pseudo R^2 value for the Nagelkerke R^2 statistic was .199. Nagelkerke R^2 ranges from 0 to 1, with closer values to 1 revealing the strength of the variation within the model (Laerd Statistics, 2018). Referencing the Nagelkerke R^2 value, 19.9% of the variability in the turnover intentions of minority women within STEM workplaces can be explained by their organizational inclusion. The logistic regression model was significant, as organizational inclusion was shown to be a predictor of turnover intentions. According to the logistic regression, there was a decrease in turnover intentions for every one unit increase in organizational inclusion (β = -1.126, *S.E.* = .072, p = < .001). The estimated odds ratio showed turnover intentions decreased by 67.6% for every unit increase in organizational inclusion, [Exp(β)

.324, 95% C.I. (.282, .374)]. The results of the binary logistic regression analysis are summarized in Table 12.

Table 11

Hosmer and Lemeshow Test

Step	Chi-square	*df*	Sig.
1	11.979	8	.152

Table 12

Variables in the Binary Logistic Regression Equation

		B	S.E.	Wald	*df*	Sig.	Exp(*B*)	95% C.I. for Exp(*B*)	
								Lower	Upper
Step 1[a]	Organizational Inclusion	-1.126	.072	243.709	1	<.001	.324	.282	.374
	Constant	3.301	.268	151.780	1	<.001	27.142		

Note. [a] Variable(s) entered on Step 1: Organizational Inclusion.

The null hypothesis associated with this research question was rejected, as there was significance shown for organizational inclusion to predict the turnover intentions of minority women within STEM workplaces.

Research Question 3 (RQ3)

For Research Question 3, a binary logistic regression with mediation analysis was proposed to review global satisfaction's mediating effects on organizational inclusion and turnover intentions of minority women within STEM workplaces. As with the prior research questions, a priori analyses were conducted to evaluate the assumptions for this mediation analysis. Assumptions are that the observations are independent, without outliers, and there is no multicollinearity (Laerd Statistics, 2018). The Pearson correlation

coefficient was used to evaluate correlations between organizational inclusion and global satisfaction. The previously displayed Table 6 included the Pearson correlation coefficients for the study variables. The Pearson coefficient revealed that organizational inclusion and global satisfaction were highly correlated at $r = .83$, $p < .001$. Next, multicollinearity was reviewed by inspecting the variance inflation factor (VIF) using a linear regression analysis. The VIF estimates the degree the variables within a regression model are related (Salkind, 2007). The VIF for the independent and the mediator variables was 3.159. Values less than 10 are a good indication that there is no multicollinearity (Salkind, 2007). I elected to proceed with the binary logistic regression with mediation analysis; however, the high degree of correlation between the independent and the mediation variables was a consideration when interpreting the model outputs. Another assumption for performing the statistical analysis with a mediation model is that there is already a significant relationship that exists between the predictor variable and the outcome variable, on which a change in the degree of effect can be detected with a mediation analysis (Baron & Kenny, 1986). This assumption was previously supported by the prior analysis of Research Question 2, which revealed a significant relationship where organizational inclusion predicted the turnover intentions of minority women within STEM workplaces.

The Haynes PROCESS macro was used within SPSS to conduct the mediation analysis. This macro is widely used to test mediation and moderator models for direct and indirect effects (Hayes, 2022). Amongst the variables, organizational inclusion was the predictor variable, turnover intentions was the outcome variable, and global satisfaction

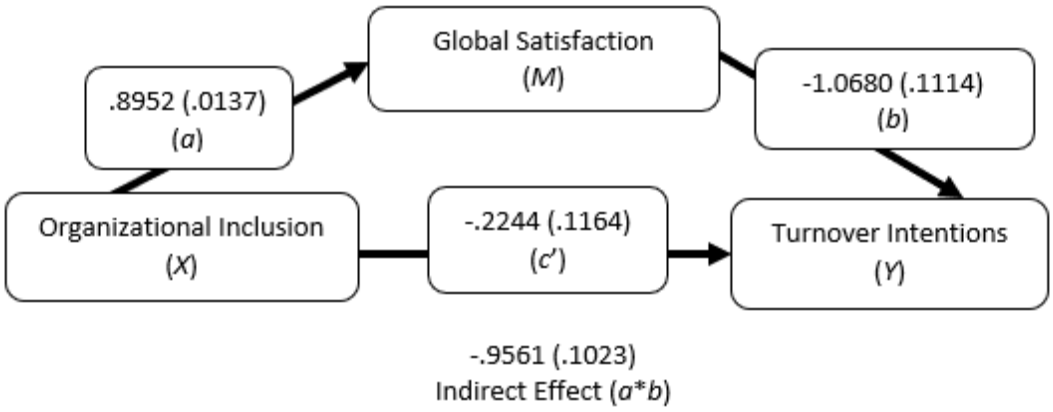
was the mediator variable. I used Haynes PROCESS (2022) model 4 to test for simple mediation between variables. Other parameters were set to 95% confidence intervals and 5000 for the number of bootstrap samples. These inputs were used to investigate Research Question 3, which asked, does global satisfaction mediate the relationship between organizational inclusion and turnover intentions of minority women within science, technology, engineering, and mathematics (STEM) workplaces?

The analysis of Research Question 3 was conducted using a sample of minority women (N = 1988) from STEM workplaces. The results were interpreted assuming an alpha level of $\alpha = .05$ to infer statistical significance. Based on the binary logistic regression with mediation model, the direct effect of organizational inclusion on global satisfaction, as a mediator, was statistically significant, B = .8952, $S.E.$ = .0137, p = .000, C.I. (.8684, .9220), the direct effect of global satisfaction on turnover intention was statistically significant, B =-1.068, $S.E.$ = .1114, p = .000, C.I. (-1.2863, -.8498), and the direct effect of organizational inclusion on turnover intentions was no longer statistically significant, B = -.2244, $S.E.$ = .1167, p = .0539, C.I. = -.4526, .0038). The indirect effect of organizational inclusion on turnover intentions mediated through global satisfaction was statistically significant within the bootstrapped model, ab =-.9561, 95% C.I. (-1.1650, -.7633). These results suggested full mediation of global satisfaction within the model. Additionally, the Nagelkerke R^2 value showed .2603, which suggested 26% of the variation in minority women's turnover intentions when working in STEM workplaces was explained by the interaction between organizational inclusion and global satisfaction. Based on these results of the mediation analysis, I rejected the null hypothesis as global

satisfaction was shown to mediate the turnover intentions and organizational inclusion of minority women within STEM workplaces. Figure 4 summarizes the results of the mediation model.

Figure 4

Mediation Model for Binary Logistic Regression Assessing the Mediating Effect of Global Satisfaction on the Organizational Inclusion and Turnover Intentions of Minority Women in STEM Workplaces



Note. X = predictor/independent variable, Y = outcome/dependent variable, M = mediator variable, *a, b, c'* = relative mediation model path. Values shown are the mediation path coefficients with standard errors shown in parentheses.

Summary

The preceding analyses were used to statistically review the relationship between the study variables using both comparative and correlation designs. Research Question 1 evaluated the differences in organizational inclusion by sex and minority status group for workers within STEM workplaces. To conduct this analysis, an ANOVA and a nonparametric Kruskal-Wallis supplemental analysis were used to review the mean and

mean ranks, since there was a violation in the homogeneity of variance. These tests supported significant differences between groups on means and mean ranks. Posthoc analyses where equal variances were not assumed revealed that there were differences between paired groups. However, some pairs were statistically significant, and some were not. Additionally, the effect of these differences was very small ($\eta^2 = .005$). The answer to Research Question 1 was that they are differences in organizational inclusion by sex and minority status group for workers within STEM workplaces, although these differences only occur between some groups.

Research Questions 2 and 3 were focused solely on reviewing a subsegment of minority women from the STEM workplace sample group. Research Question 2 was used to determine if organizational inclusion predicts minority women's turnover intentions within STEM workplaces. This research question used a binary logistic regression to determine the relationship between these variables. This analysis showed that organizational inclusion was statistically significant in predicting minority women's turnover intentions. The odds were that turnover intentions decreased by 67.6% for every unit increase in organizational inclusion. Next, research question three was used to investigate further if global satisfaction mediates the relationship between organizational inclusion and turnover intentions for minority women within STEM workplaces. The mediation model was appropriately fitted and found statistical significance for global satisfaction to mediate minority women's organizational inclusion and turnover intentions within STEM workplaces. The model supported total mediation of global satisfaction on organizational inclusion and turnover intentions. The Nagelkerke R^2

revealed the interaction between organizational inclusion and global satisfaction explained 26% of the variation in minority women's turnover intentions.

Within Chapter 5, I present the interpretation of these research findings using the previously presented literature review to guide theoretical and practical applications. Additionally, I share the limitations of this study, recommendations for future research, and conclude with the implications for social change.

Chapter 5: Discussion, Conclusions, and Recommendations

Interpretation of the Findings

The purpose of this nonexperimental quantitative study was to use comparative and correlation designs to examine the differences in organizational inclusion of workers within STEM work environments by sex and minority status group, to review the relationship between organizational inclusion and turnover intentions of minority women within these STEM workplaces, and to determine if global satisfaction mediated minority women's organizational inclusion and turnover intentions. These study variables were investigated using a cross-sectional analysis of secondary data from the 2019 FEVS. The target sample included 28,535 workers from STEM workplaces, which were used to examine Research Question 1 to determine if there were differences in organizational inclusion by sex and minority status group for workers within STEM workplaces. Mean and mean rank differences between groups were statistically tested using ANOVA and Kruskal-Wallis analyses. The sample respondents to the 2019 FEVS were further stratified by minority women within the elected STEM workplaces to review Research Questions 2 and 3. This stratification yielded 2,860 minority women STEM workers from the three STEM workplaces. The research questions reviewed with this group were, "Does organizational inclusion predict the turnover intentions of minority women within STEM workplaces?" and "Does global satisfaction mediate the relationship between organizational inclusion and turnover intentions of minority women within STEM workplaces?" Research Question 2 was evaluated using a binary logistic regression, and Research Question 3 utilized a binary logistic regression with mediation analysis.

Organizational Inclusion

The extant literature on inclusion is undeveloped, as it has been shrouded within diversity research with little emphasis on inclusion's unique relationship to many factors (Corrington et al., 2020; Shore et al., 2018). However, of those who have undergone scientific inquiry of inclusion, they have found that this construct has shown antecedent and consequential relationships with other variables (Davies et al., 2019; Li et al., 2019). This current study broadens the extent of inclusion literature by exploring inclusion both as a predictor and outcome of workplace variables. These objectives support the expansion of knowledge relative to inclusion and deepen the understanding of inclusion within workplace contexts. The exploration of the relative research questions supported these study goals. Research Question 1 explored the comparative differences in organizational inclusion by sex and minority status groups within STEM workplaces. Research Question 2 delved into the predictive relationship between organizational inclusion and the turnover intentions of minority women within these workplaces. Last, Research Question 3 inquired into the mediating effect of global satisfaction on minority women's organizational inclusion and turnover intentions within STEM workplaces. Each empirical inquiry showed statistical significance with organizational inclusion and other study variables. These study results substantiate the utility of organizational inclusion as an antecedent and an outcome of relevant workplace factors.

Sex and Minority Status Group Differences

Prior research has shown that women of color reported a lower sense of inclusion, manifesting as a lack of belonging or feeling of isolation in part due to

underrepresentation within STEM environments (Alfred et al., 2019; Leung, 2018; Rainey et al., 2018). Group differences by sex and minority status within STEM workplaces were reviewed in this current study. For the analysis of Research Question 1, sex and minority status groups from three STEM workplaces were categorized into four groups. Those groups were nonminority males, minority males, nonminority women, and minority women. A comparative analysis was conducted using ANOVA and Kruskal-Wallis tests. Both analyses showed statistically significant differences between minority women and other groups. At the .05 alpha level, the ANOVA revealed $F(3, 20711) = 34.01$, $p < .001$, and the Kruskal-Wallis showed $H(3) = 80.82$, $p = .000$, with a nominal effect ($\eta^2 = .005$), where it is estimated that less than a fraction of 1% in variability in organizational inclusion within STEM workplaces can be explained by the differences between sex and minority status group. However, these analyses resulted in a partial rejection of the null hypothesis ($H_0 1$). Posthoc pairwise comparisons between groups showed little to no difference between other groups. While the findings were statistically significant, the overall effect of these findings lacked practical significance. While there were disparities in group size, where minority women encompassed a smaller proportion of the total sample of STEM workers, the results of this current analysis did not show that these disparities in representation resulted in a substantial difference in perceptions of organizational inclusion for minority women in STEM workplaces by comparisons of group means or mean ranks (see Table 9 and Figure 3).

The analysis above was used to review the differences in organizational inclusion by sex and minority status group for workers within STEM workplaces. In reference to

prior studies that have reviewed demographic differences amongst STEM groups, Alfred et al. (2019) found that, in their systematic analysis of 86 studies on underrepresented workers within STEM environments, lower representation led to a general sense of lower inclusion, as reported by many women of color working within these environments. Moreover, Rainey et al. (2018) found in their interviews with women of color that they less frequently reported feelings of belonging within STEM environments compared to other demographic groups. The current results of this analysis align with these prior research findings. However, there remains uncertainty on the practicality of these findings due to the diminutive effect of these differences on organizational inclusion between groups.

Turnover Intentions

This study also investigated if organizational inclusion predicted the turnover intentions of minority women within STEM workplaces. Using a binary logistic regression, organizational inclusion was shown to be a significant predictor of turnover intentions for minority women within STEM workplaces, which supported the alternative hypothesis (H_a2). At .05 = α, turnover intentions decreased by 67.6% for every unit increase in organizational inclusion, as revealed by the estimated odds ratio, Exp(β) .324, 95% C.I. (.282, .374). Interpreting the pseudo R^2 value, minority women's organizational inclusion explained 19.9% of the variability in turnover intentions. The results of the analysis revealed both statistical and meaningful relationships between organizational inclusion and turnover intentions for minority women working within STEM workplaces. In reviewing groups of U.S. federal workers from various work environments, Chordiya

(2021) found in a study of organizational inclusion that minority groups were more likely to express turnover intentions than nonminority groups, and in another study of inclusion using a similar population Chordiya (2022) found that the odds of turnover were higher amongst workers who identified as minorities. The current results reached a similar conclusion with a sample of U.S. federal employees within STEM workplaces.

Global Satisfaction

This current study also explored the mediating effect of global satisfaction on organizational inclusion and turnover intentions of minority women within STEM workplaces. Researchers have found significance for global satisfaction to mediate aspects of organizational justice and commitment (Veress & Gavreliuc, 2018). Organizational justice has been documented to facilitate a climate of inclusion (Le et al., 2020). Moreover, organizational commitment, amongst other work-related factors, has been shown to be a predecessor to turnover intentions (Kang & Sung, 2019). Organizational justice and commitment are different but relative constructs to organizational inclusion and turnover intentions, which were focal points of this current review. It was hypothesized (H_a3) that global satisfaction would show a similar mediating effect on organizational inclusion and turnover intentions, as shown with organizational justice and commitment within prior studies.

Specifically, Research Question 3 asked, “Does global satisfaction mediate the relationship between organizational inclusion and turnover intentions of minority women within science, technology, engineering, and mathematics (STEM) workplaces?” Using a binary logistic regression with mediation analysis, statistically significant results were

found for global satisfaction to mediate the relationship between organizational inclusion and turnover intentions of minority women in STEM workplaces. The indirect effect of organizational inclusion on turnover intentions was mediated through global satisfaction (*ab* =-.9561, 95% C.I. [-1.1650, -.7633]). These results supported full mediation of global satisfaction on organizational inclusion and turnover intentions. The findings were further interpreted as 26% of the variation in minority women's turnover intentions when working in STEM workplaces is explained by the interaction between organizational inclusion and global satisfaction (Nagelkerke R^2 = .2603). The null hypothesis ($H_0$3) was rejected, as global satisfaction was shown to be statistically significant and meaningful as an intervening variable with the organizational inclusion and turnover intentions of minority women within STEM workplaces. These results supported other findings that showed global satisfaction as a mediator to workplace factors (Kang & Sung, 2019; Veress & Gavreliuc, 2018).

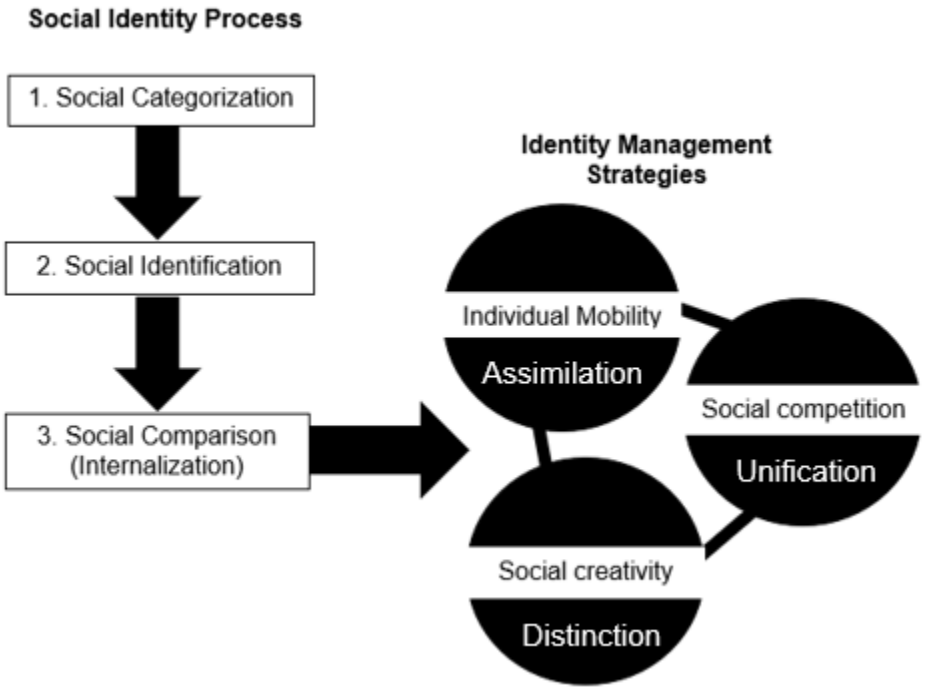
Theoretical Implications

This current study used SIT as a theoretical foundation for study development and interpretations. This theory postulates that group members follow a three-step process whereby they identify as individuals and group members concurrently through group categorization, identification, and comparison (Tajfel & Turner, 1986). Next, group members contextually assess group membership as harmonious or dissentious and seek to resolve any detected conflict through three possible identity management strategies: individual mobility, social creativity, and social competition. These strategies can be best described as out-group assimilation (individual mobility), in-group distinction (social

creativity), and in-group unification (social competition). The crux of this theory is that group members who share identities will behave and act in accord with each other. Figure 5 provides a visual depiction of SIT.

Figure 5

Tajfel and Turner (1986) Social Identity Theory (SIT)



In addition to applying SIT in developing the research study components, this current study also tested the theory by evaluating if minority women in STEM workplaces would follow the posited group behavior model of SIT. According to this study's hypothesized model (see Figure 1), sample group members would follow the three-step process outlined within Tajfel and Turner's (1986) social identity theory of intergroup behaviors. This research utilized archival data from the 2019 FEVS via a secondary analysis of self-reported data, where participants responded to a series of

questions relative to their perceptions of their work environments. A portion of this survey was dedicated to demographic questions, where respondents were asked to self-identify with personal and work unit demographic response options. With the focus of this study being minority women, it was found that minority women within STEM workplaces contextualized personal demographic category options relative to sex and minority status groups (Step 1 of SIT), self-identified with the minority women group, (Step 2 of SIT), and together assessed in-group vs. out-group membership via organizational inclusion (Step 3 of SIT). Alternative hypothesis one (H_a1) proposed that based on group membership with the sex and minority status group, these members would perceive organizational inclusion differently than other groups. Relative to minority women, this hypothesis was supported. Next, it was hypothesized that the minority women's organizational inclusion would predict their turnover intentions (H_a2). This alternative hypothesis was also supported with the sample group of minority women, where their organizational inclusion predicted their turnover intentions. Collective turnover intentions would illustrate the shared group identity management strategy. Last, it was hypothesized that minority women's global satisfaction would mediate their organizational inclusion and turnover intentions (H_a3),where global satisfaction intervened organizational inclusion and turnover intentions, as group members underwent an internalized assessment of the harmony or dissonance of group membership. Global satisfaction was shown to mediate these variables, and thus, supported this alternative hypothesis, showing full mediating effects on organizational inclusion and turnover intentions.

Limitations of the Study

This study was limited by the characteristics of the sample group used within this research. This study used a sample of employees working in STEM workplaces. However, the makeup of the sample group was heavily influenced by employees working within an engineering workplace, which accounted for more than 50% of the sample group. The study results are generalizable to the study population used within these analyses. These results are generalizable to U.S. federal workers within STEM workplaces who meet the eligibility guidelines for participation in the FEVS. Other limitations of the study are akin to some employing secondary analysis of archival data. Those limitations are employing a nonexperimental quantitative research design, where designs lack strength in inferring the causal relationships between variables (Creswell & Creswell, 2018). Another limitation was entrusting there was diligence used in primary data handling and documentation. The FEVS is a U.S. federally directed survey that has been administered on an annual basis to eligible U.S. federal employees since 2010, previously named the federal human capital survey (OPM, 2019). The FEVS measures and scales have been widely used in practice and empirical studies to assess organizational climate dimensions (O'Keefe et al., 2020; Resh et al., 2021; Somers, 2018). The demonstrated utility of the FEVS instrumentation justified its usefulness within this current study. Nevertheless, the operationalization of the study variables relied heavily on the thoroughness of the accompanying technical documentation and code book, which were used in defining the scales used within the analyses mentioned above. Last, due to using a single preestablished instrument to operationalize all study variables,

there was a risk of common method bias. This risk was minimized by limiting the shared scale properties for each measure by ensuring there were varied response types or anchor labels. Prior researchers suggested this strategy to limit common method bias (Jordan & Troth, 2020).

A theoretical limitation of this research was that although SIT was used to provide the framework for this study's construction and interpretations, testing the theory's model was limited to the areas described in this document. While this study found results that substantiated SIT's three-step social identity process and the group's shared outcome of identity management, these findings should not be intended to infer that the identity management outcome was evaluated, as that assessment was outside of the realm of the current study parameters. Instead, the SIT model was tested to show that groups with shared identity will act in accord, as predicted organizational inclusion would yield shared turnover intentions by group (H_a2). The current study was not used to predict which of the three posited identity management strategies would be the outcome of groups with shared identities. While this is a minor distinction, it is important so as not to overstate the current study's research findings and not to limit a potential opportunity for future study.

Recommendations

While the results of these analyses contribute to the broadening of organizational inclusion research, more quantitative analysis of the study variables may be warranted. Qualitative approaches were invariably used within the current extant literature. This study employed a sample of U.S. federal workers from STEM work environments. Future

studies involving different STEM work environments across varying STEM contexts and industries will contribute to gaps within the literature. Additionally, what remains to be seen is the magnitude of difference in organizational inclusion that can be accounted for from demographic differences and the practical nature of inclusion differences in application. The relationship between organizational inclusion and turnover intentions has been previously studied within different contexts. Future researchers should focus on the consequences of organizational inclusion with other work outcomes, particularly by demographic groups. Furthermore, additional research on inquiring into the SIT identity management strategies is warranted, as an in-depth analysis of the three possible SIT identity management outcomes was separate from this current review. Last, there is a need to employ different newly developed instrumentation to evaluate organizational inclusion. With organizational inclusion being an understudied area of inclusion literature, there is a need for empirical testing of its new conceptualized models. There is a demand for validity and reliability testing of organizational inclusion measures (Rezai et al., 2020). Models that have been conceptualized by inclusion researchers such as those developed by Chung et al. (2020), Mor Barak et al. (2021), and Shore et al. (2018), who offer measurement models of workplace inclusion, are recommended for application in future studies.

Implications

Researchers have called for additional contributions to inclusion research as there are currently a limited number of studies dedicated to furthering the knowledge of this construct within workplace contexts (Chung et al., 2020; Li et al., 2019; Liggans et al.,

2019; Shore & Chung, 2021). Perceptions of inclusion and its impacts on work outcomes have been a reemerging topic within inclusion research and practice (Li et al., 2019). This current study is intended to contribute to gaps in workplace inclusion knowledge by evaluating STEM work environments holistically and not limiting this review as so many prior studies have to workers in a STEM occupation or successive career paths from STEM academia to industry. The results of this study are intended to contribute to the understanding of minority women's perceptions of organizational inclusion within STEM workplaces and how their perceptions of inclusivity can predict their turnover intentions. This study further delves into these workers' global satisfaction with work contexts as a whole and how these factors may mediate minority women's organizational inclusion and turnover intentions within STEM workplaces. These results can be practically applied to STEM workplaces to promote positive social change relative to minority women within STEM workplaces and can be used to advocate solutions to the gradual loss of women of color from the STEM workforce. This phenomenon has been referred to in the literature as a leaky pipeline within the STEM workforce (Alfred et al., 2019; Fry et al., 2021; Liu et al., 2019). This research can be used to support the strategies focused on the retention and growth of minority women within STEM workplaces.

This study also has theoretical implications with contributions to SIT and to the IO psychology community. This research fills gaps in understanding social identity's behavior model and its role in organizational inclusion differences amongst workers with shared identities. Specifically, this research contributes to how groups with shared social identities may perceive inclusion differently, which engenders shared consequences by

group. This study also expands IO psychology by equipping scholars and practitioners with additional empirical knowledge to further workplace inclusion research and insight that can be used to develop interventions to foster inclusive work environments within STEM workplaces.

Conclusions

The efforts to increase the representation of diverse groups within STEM workplaces have been evident. There have been increases in STEM educational opportunities for diverse groups and attempts at broadening representation through recruitment into STEM organizations. However, there continues to be a documented loss of competent women of color once aboard STEM workplaces (Alfred et al., 2019; Liu et al., 2019). This study was devoted to broadening the knowledge relative to this issue, as there have been meager attempts at a holistic review of perceived organizational inclusion for minority women within STEM workplaces and how these perceptions may contribute to decisions to remain with or leave an organization. The findings of this research support statistical mean differences in how minority women view organizational inclusion compared to other sex and minority status groups. While this difference may be slight in the practical sense, the study findings provide evidence of how minority women's perceptions of organizational inclusion can predict their turnover intentions. These results were statistically significant and meaningful, as organizational inclusion has been shown to predict the turnover intentions of minority women within STEM workplaces by more than 67%. These factors were mediated by minority women's global satisfaction with their work contexts. The findings show when minority women are

globally satisfied, the effects of organizational inclusion on turnover intentions can alter, as global satisfaction was shown to fully mediate minority women's organizational inclusion and turnover intentions within STEM workplaces. The results of this research contribute to applied knowledge, IO research, and theory. Minority women are noted as the largest underrepresented group within STEM workplaces (Alfred et al., 2019). This current study supports social change by providing insights into the organizational inclusion differences of workers within STEM workplaces, how minority women's organizational inclusion affects their turnover intentions within these environments, and how satisfaction with other work contexts affects organizational inclusion and turnover intentions for minority women within the STEM workforce.

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Appendix: 2019 Federal Employee Viewpoint Survey (FEVS) Operationalized Questions

Category and Questions	Response Options					
Personal Demographics						
93. Are you Hispanic, Latino, or Spanish origin?	Yes	No				
94. Please select the racial category or categories with which you most closely identify (mark as many as apply).	American Indian or Alaska Native	Asian	Black or African American	Native Hawaiian or Other Pacific Islander	White	
98. Are you:	Male	Female				
Organizational Inclusion						
Fair						
23. In my work unit, steps are taken to deal with a poor performer who cannot or will not improve.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
24. In my work unit, differences in performance are recognized in a meaningful way.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
25. Awards in my work unit depend on how well employees perform their jobs.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
37. Arbitrary action, personal favoritism and coercion for partisan political purposes are not tolerated.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
38. Prohibited Personnel Practices (for example, illegally discriminating for or against any employee/applicant, obstructing a person's right to	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know

compete for employment, knowingly violating veterans' preference requirements) are not tolerated.						
Open						
32. Creativity and innovation are rewarded.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
34. Policies and programs promote diversity in the workplace (for example, recruiting minorities and women, training in awareness of diversity issues, mentoring).	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
45. My supervisor is committed to a workforce representative of all segments of society.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
55. Supervisors work well with employees of different backgrounds.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
Cooperative						
58. Managers promote communication among different work units (for example, about projects, goals, needed resources).	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
59. Managers support collaboration across work units to accomplish work objectives.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
Supportive						
42. My supervisor supports my need to balance work and other life issues.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
46. My supervisor provides me with constructive	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know

suggestions to improve my job performance.						
48. My supervisor listens to what I have to say.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	
49. My supervisor treats me with respect.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	
50. In the last six months, my supervisor has talked with me about my performance.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	
Empowering						
2. I have enough information to do my job well.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	
3. I feel encouraged to come up with new and better ways of doing things.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	
11. My talents are used well in the workplace.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
30. Employees have a feeling of personal empowerment with respect to work processes.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
Turnover Intentions						
91. Are you considering leaving your organization within the next year, and if so, why?	No	Yes, to retire	Yes, to take another job within the Federal Government	Yes, to take another job outside the Federal Government	Yes, other	
Global Satisfaction						
40. I recommend my organization as a good place to work.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	
69. Considering everything, how satisfied are you with your job?	Very Satisfied	Very Satisfied	Neither Satisfied nor Dissatisfied	Dissatisfied	Very Dissatisfied	
70. Considering everything, how satisfied are you with your	Very Satisfied	Very Satisfied	Neither Satisfied nor Dissatisfied	Dissatisfied	Very Dissatisfied	

pay?					
71. Considering everything, how satisfied are you with your organization?	Very Satisfied	Very Satisfied	Neither Satisfied nor Dissatisfied	Dissatisfied	Very Dissatisfied