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Teacher Job Satisfaction by Principal Support and Teacher Cooperation: Results from the Schools and Staffing Survey

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Abstract: Although turnover rates are alarmingly high for early career and veteran teachers, turnover rates are even higher for those who identify as a teacher of color. To increase the retention of teachers, job satisfaction has become an important construct to analyze. Teacher cooperation and principal support within the school are two influential factors that directly relate to job satisfaction. Using the restricted 2011-2012 Schools and Staffing Survey, a nationally representative dataset, principal support, teacher cooperation, and their moderation effects were analyzed in relation to teacher job satisfaction using a series of multilevel models. After controlling for teacher- and school-level characteristics, principal support and teacher cooperation were statistically significant predictors of job satisfaction for all teachers. The moderation effect between the two variables of interest and race were also statistically significant. These findings emphasize the need to maintain professional communities where teachers can interact and collaborate with the support of their school leaders.

Keywords: Schools and Staffing Survey; Principal Support; Teacher Cooperation; Teacher Job Satisfaction

Satisfacción laboral del docente por el apoyo del director y la cooperación docente: Resultados de la *Schools and Staffing Survey*

Resumen: Aunque las tasas de rotación son alarmantemente altas para todos los maestros, las tasas de rotación son aún más altas para aquellos que se identifican como maestros de color. Para aumentar la retención de docentes, la satisfacción laboral se ha convertido en una construcción importante para analizar. La cooperación docente y el apoyo del director dentro de la escuela son dos factores influyentes que se relacionan directamente con la satisfacción laboral. Utilizando la *Schools and Staffing Survey 2011-2012*, se analizaron un conjunto de datos nacionales, el apoyo del director, la cooperación de los maestros y sus efectos de moderación en relación con la satisfacción laboral de los maestros utilizando una serie de modelos de varios niveles. Después de controlar las características del maestro y de la escuela, el apoyo del director y la cooperación del maestro fueron indicadores estadísticamente significativos de satisfacción laboral para todos los maestros. El efecto de moderación entre las dos variables de interés y raza también fue estadísticamente significativo. Estos hallazgos enfatizan la necesidad de mantener comunidades profesionales donde los maestros puedan interactuar y colaborar con el apoyo de sus líderes escolares.

Palabras clave: *Schools and Staffing Survey*; Apoyo principal; Cooperación docente; Satisfacción laboral

Satisfação profissional do professor pelo apoio do diretor da escola e cooperação do professor: Resultados do *Schools and Staffing Survey*

Resumo: Embora as taxas de rotatividade sejam alarmantes para todos os professores, as taxas de rotatividade são ainda maiores para aqueles que se identificam como professores de cor. Para aumentar a retenção de professores, a satisfação no trabalho tornou-se um importante construto a ser analisado. A cooperação entre professores e apoio do diretor dentro da escola são dois fatores influentes que se relacionam diretamente com a satisfação no trabalho. Utilizando a *Schools and Staffing Survey* de 2011-2012, um conjunto de dados nacional, apoio do diretor da escola, cooperação de professores e seus efeitos de moderação foram analisados em relação à satisfação no trabalho dos professores usando uma série de modelos multiníveis. Depois de controlar as características do professor e do nível da escola, o apoio do diretor e a cooperação entre professores foram preditores estatisticamente significativos de satisfação no trabalho para todos os professores. O efeito de moderação entre as duas variáveis de interesse e raça também foi estatisticamente significativo. Essas descobertas enfatizam a necessidade de manter comunidades profissionais nas quais os professores possam interagir e colaborar com o apoio de seus líderes escolares.

Palavras-chave: *Schools and Staffing Survey*; Apoio do Diretor da Escola; Cooperação de Professores; Satisfação no trabalho

Teacher Job Satisfaction by Principal Support and Teacher Cooperation: Results from the Schools and Staffing Survey

Beginning in the 1980s, teacher-staffing problems have emerged as issues within school systems across the United States (Borman & Dowling, 2008). Teacher turnover costs school districts across the country over 7.2 billion dollars each year and has increased the burden on veteran teachers who must devote additional resources to support new teachers (National Commission on Teaching and America's Future, 2012; Sass, Seal, & Martin, 2014). In addition, the 2012-2013 Teacher Follow-Up Survey by the National Center for Education Statistics (NCES) reported that 8% of public teachers left the field, with 53% indicating that working conditions were better in their current position (Goldring, Taie, & Riddles, 2014). These high rates of turnover disrupt program and lesson coherence within schools and can negatively impact student outcomes (Guin, 2004; Newman, 2001).

Although turnover rates are high for public school teachers, turnover rates are even higher for teachers who identify as a person of color (Ingersoll & May, 2011). Research suggests that teachers of color (ToCs), or teachers who identify as non-White, are more likely to change schools or leave the profession compared to their White counterparts (Ingersoll & May, 2011). In the 2003-2004 academic year, 47,600 ToCs entered the profession and 56,000 left (Ingersoll & May, 2011). This "revolving door" of ToCs is especially harmful for students of color (SoCs), or students who identify as non-White (Dee, 2005; King, 1993). Due to these high rates of teacher turnover, the objective of the current study is to explore the interactions between principal support, teacher cooperation, and teacher race on job satisfaction.

Importance of ToCs

The prevalence of ToCs is important considering the changing demographics of students. In 2004, 42% of public school students identified as non-White, compared to 50% of students in 2014 (NCES, 2005, 2017). In 2004, only 16% of public school teachers identified as non-White, while approximately a decade later in 2015, 20% of public school teachers identified as a ToC (NCES, 2017; 2018). These descriptive statistics demonstrate that although the number of SoCs has increased, the number of ToCs has remained stagnant or decreased over time (Dilworth & Coleman, 2014; Luciano & Hooks, 2017).

The discrepancy between the number of ToCs and SoCs has several implications. First, ToCs can serve as role models for SoCs (Dee, 2005). When students see successful individuals with whom they share common characteristics, their motivation and self-worth have been found to increase (Dee, 2005; King, 1993). Furthermore, White students are also thought to benefit from the presence of ToCs and interactions between White students and ToCs may dispel common misconceptions and communicate that anyone, regardless of race, can be successful (Carver-Thomas, 2018).

Second, ToCs improve academic outcomes for SoCs. This was demonstrated by Dee (2004), who found that when students were randomly assigned into classrooms with racially similar teachers, test scores improved. In the third and fourth year of exposure, SoCs saw their academic achievement increase by approximately 2 to 3 percentile points with an effect size greater than 0.30 (Dee, 2004). Supporting this finding, research by Egalite, Kisida, and Winters (2015) using outcomes from the Florida Comprehensive Assessment Test (FCAT) for students in Grades 3-10 found that when Black and White students were taught by teachers of the same race reading scores increased, and when Black, White, and Asian/Pacific Islander students were taught by teachers of the same race, math scores increased. Just the presence of ToCs within schools has been found to produce

positive effects. When the proportion of racial/ethnic teachers matched that of the student population, SoCs had higher passing rates for high school graduation exams (Meier, 199; Pitts, 2007).

Finally, the presence of ToCs improve the overall school experience for SoCs. Recent research has shown that students with the same racial/ethnic teachers are less likely to experience exclusionary disciplinary practices such as suspensions (Lindsay & Hart, 2017) and are also more likely to be identified as gifted students (Grissom & Redding, 2016) allowing access to more challenging curricula. These examples illustrate that a student's school experience can be positively impacted by teachers who are able to connect with their students. Due to the importance of ToCs, it becomes necessary to investigate possible ways to increase their job satisfaction.

Job Satisfaction

Given that many teachers are choosing to leave the profession (Ingersoll, 2001; Johnson, 2006), it is important to understand why. One measure that can be used is the construct of job satisfaction as it has been strongly linked with teacher retention (Ladd, 2011; Skaalvik & Skaalvik, 2011). Job satisfaction within the teaching profession has been operationally defined by many researchers, with most definitions including the degree to which an individual identifies, contributes positively, or feels valued within their school (Darling-Hammond, 1995; Shen et al., 2012; Skaalvik & Skaalvik, 2011). Evidence suggests that when job satisfaction is high, turnover lessens among teachers (Johnson, Kraft, & Papay, 2011; Ladd, 2011).

Teachers who identify as non-White have lower levels of job satisfaction when compared to White teachers (Fairchild et al., 2012). Possible reasons to explain this trend include experienced ToCs retiring or leaving the field, decreasing opportunities for mentorship (Clotfelter, Ladd, Vigdor, & Wheeler, 2006), and an increased likelihood of teaching in high-poverty or urban schools (Fairchild et al., 2012; KewalRamani, Gilbertson, Fox, & Provasnik, 2007; Kirby, Berends, & Naftel, 1999). As a result, ToCs often report higher levels of stress (Reilly, Dhingra, & Boduszek, 2014) and are more likely to leave the profession or move out of urban districts (Fairchild et al., 2011; KewalRamani et al., 2007). Due to the importance of job satisfaction on teacher retention, it is important to identify malleable protective factors or elements that could buffer the adverse aspects of teaching to increase satisfaction among both White teachers and ToCs (Muller, Gorrow, & Fiala, 2011). Two possible protective factors that have been found to strongly influence job satisfaction are related to school climate, specifically principal support and teacher cooperation (Durksen, Klassen, & Daniels, 2017; Grissom, 2011).

Principal Support

Principal support has been consistently associated with teacher job satisfaction (Brown & Wynn, 2009; Griffith, 2004; Grissom, 2011; Moir, 2009; Petzko, 2004). Research from multiple disciplines, including education, have demonstrated that supervisors in workplaces greatly influence employee satisfaction (Grissom & Keiser, 2011; Grissom, Nicholson-Crotty, & Keiser, 2012; Trottier, Van Wart, & Wang, 2008). As the school leader, principals have considerable influence over the school climate (Richards, 2005). Petzko (2004) established that principals who created supportive environments that fostered recognition and appreciation had more satisfied teachers and Brown and Wynn (2009) found that principals who actively supported their teachers were more committed to personal growth and retained teachers at higher rates compared to their peers. More successful principals have the ability to create a culture of learning, mentoring, and improved teaching conditions within the school (Meyers & Hitt, 2017; Moir, 2009), demonstrating that

principal support is imperative for both the retention and satisfaction of new and veteran teachers (Brown & Wynn, 2009; Roberson & Roberson, 2009).

Although the literature suggests that principal support is beneficial for all teachers due to increased satisfaction and retention levels, there is less evidence on whether principal support is specifically beneficial for the satisfaction of ToCs (Fairchild et al., 2011; Ingersoll & May, 2011; Viano & Hunter, 2017). Although it is not possible to manipulate the racial identities of the actual teachers and principals within a school, some of the literature focused on ToCs and principal support has centered on principal-teacher race congruence (Fairchild et al., 2011; Grissom & Keiser, 2011; Viano & Hunter, 2017). According to Viano and Hunter (2017), White teachers in schools led by Black principals reported lower levels of job satisfaction compared to ToCs. Similar findings were also reported by Grissom and Keiser (2011) who found that teachers who shared the same race as their principal turned over less frequently. It is speculated that when principal-teacher race congruence is present, similar cultural values are shared increasing understanding and resulting in heightened job satisfaction levels (Viano & Hunter, 2011). Due to the relationship between principal support and job satisfaction, principal support has been identified as a predictor of interest in the current study.

Teacher Cooperation

In addition to principal support, teacher cooperation, defined as teacher interdependence, collaboration, and collegiality has also been shown to be an important predictor of job satisfaction (Durksen et al., 2017; Leithwood, Leonard, & Sharratt, 1998; Madiha, 2011; Vangrieken, Dochy, Raes, & Kyndt, 2015). Collaboration and cooperation among individuals have been valued as a way to develop innovative ideas, increase self-efficacy, and increase job satisfaction (Decuyper, Dochy, & Van den Bossche, 2010; Vangrieken et al., 2015). According to Leithwood et al. (1998) and Woods and Weasmer (2004), when teachers, especially new teachers who are at the highest risk for turnover, displayed high levels of cooperation and collaborated with each other, their job satisfaction increased. Furthermore, when novice and veteran teachers formed partnerships, the benefits were mutual as novice teachers could become more informed about their job responsibilities and veteran teachers could learn new teaching practices and strategies to implement in their classrooms (Bickmore, 2013).

Similar to principal support, teacher cooperation has been studied mostly in the context of all teachers, suggesting there is little evidence on whether teacher cooperation is beneficial for specifically ToCs. However, in one of the few studies that addressed ToC cooperation, enacting team-based cooperation was found to damage both the personal and professional lives of ToCs (Johnson, 2003). This was because cooperation resulted in silent dissent and debate that encouraged White norms and practices (Johnson, 2003). Based on this study, it is important to continue exploring this topic as teacher cooperation may not be beneficial for all teachers if racial biases are not addressed. Therefore, teacher cooperation has also been identified as a predictor of interest in this study.

Moderating Roles Between Principal Support, Teacher Cooperation, and Teacher Race

According to the literature, when there are strong levels of principal support and teacher cooperation within a school, there are higher levels of job satisfaction (Brown & Wynn, 2009; Durksen et al., 2017; Griffith, 2004; Grissom, 2011; Leithwood et al., 1998; Moir, 2009; Petzko, 2004; Vangrieken et al., 2015). However, little is known about the moderation effects or interactions between principal support and teacher cooperation on job satisfaction for ToCs and White teachers, as this has not been examined in previous studies. Investigating the moderation effects is important because principal support and teacher cooperation in relation to job satisfaction may have stronger

associations for either ToCs or White teachers, as seen in Johnson's (2003) study. In addition, the direction (e.g., positive or negative) of the association for the varying races can be investigated. Implications from this analysis could inform school policy and possibly district, state, and federal policy, as principals and administrators would know whether principal support and teacher cooperation predict job satisfaction at the same rates for both White teachers and ToCs. By understanding the need to engage teachers and principals of differing racial, ethnic, and cultural backgrounds, educational policies could constructively work to create more inclusive school climates.

Teacher-level Characteristics Associated with Job Satisfaction

Teacher-level characteristics can influence the degree of job satisfaction. For instance, job satisfaction can be related to the teacher's gender, race/ethnicity, salary, degree level, status as a full-time or part-time teacher, and total years of experience. For gender on job satisfaction, there have been three different findings reported. According to Lui and Ramsey (2008) who used the 2000-2001 SASS Teacher Follow-Up Survey, women reported lower levels of job satisfaction when compared with men. However, Stockard and Lehman (2004) found that gender was not associated with job satisfaction, while Bogler (2001) and Kearney (2008), found that female teachers were more likely to be satisfied with their jobs compared with male teachers.

There were also divergent findings about whether a teacher's race is associated with his/her satisfaction level. Renzulli, MacPherson, and Beattie (2007) found that White teachers who were in schools with higher rates of SoCs, displayed lower levels of job satisfaction. Similar to Renzulli et al. (2007), Master, Sun, and Loeb (2018) found ToCs had statistically significantly lower levels of job satisfaction compared to White teachers when using three years of the nationally representative Baccalaureate and Beyond datasets. Specifically, 78% of Black and Hispanic teachers reported being satisfied compared to 86% of White teachers (Master et al., 2018). In an older study by Culver, Wolfle, and Cross (1990), Black teachers were found to have higher levels of satisfaction compared to White teachers.

The amount of money teachers earn from the profession is also an important characteristic of teacher-level job satisfaction. In two studies, teachers reported that they were underpaid and that their job satisfaction could be increased by raising their salaries (Feistritz, 1986; Klassen & Anderson, 2009). This finding was supported with research by Albert and Levine (1988), who suggested that salary level is linked to occupational prestige within the teaching profession. The higher the salary, the higher level of prestige and job satisfaction was reported.

There have also been conflicting reports on whether a teacher's total years of experience in the profession is associated with job satisfaction. Research has suggested that the number of years in the profession is associated with three different outcomes. Bogler (2001), and Klassen and Chiu (2010) found that number of years in the profession was not predictive of job satisfaction, while Lui and Ramsey (2008) found it was positively associated, and Renzulli et al. (2007) found it was negatively associated. However, years of experience has been identified as a significant predictor of colleague trust within the school and has been found to positively impact teachers' self-efficacy, likely due to their increased experience and credibility in the classroom (Klassen & Chiu, 2010; Van Maele & Van Houtte, 2012).

Additionally, it is important to account for degree level obtained, due to alternative certification tracks and emergency certification programs that were created to decrease teacher shortages (Cohen-Vogel & Smith, 2007). These alternative pathways to certification can result in licensure without earning a bachelor's degree. Individuals who have been trained through alternative certification pathways have reported lower levels of job satisfaction and higher levels of turnover, compared with traditionally certified teachers (Redding & Henry, 2018; Redding & Smith, 2016).

Regarding employment status, research conducted by Ferguson, Frost, and Hall (2012) found there were no significant differences between job satisfaction for teachers who were employed full-time and teachers employed part-time.

Contextual Characteristics Associated with Job Satisfaction

Much like the teacher-level characteristics associated with job satisfaction, the evidence regarding contextual characteristics for school-level variables is also mixed. These differences suggest that accounting for school-level variables is necessary. In our study, school-level, school setting, school type, principal's race, principal's highest degree, principal's gender, principal's total years of experience, percentage of SoCs, rates of free and reduced priced meals (FRPL), and school enrollment size were added as covariates (Bogler, 2001).

The type of school (i.e., elementary, secondary, or combined) is an important variable to control for in relation to job satisfaction. Bogler (2001) and Kearney (2008) determined that elementary school teachers were more satisfied as compared with secondary level teachers, while Renzulli et al. (2007) indicated that high school teachers were more satisfied compared to both middle and elementary school teachers. For school setting (i.e., rural, suburban, town, or city), Ballou and Podgursky (1995) found that teachers were more satisfied in rural schools due to smaller class sizes and a less stressful work environment. Another study reported that there were no differences between urban and rural teachers with job satisfaction (Mahmood, Nudrat, Asdaque, Nawaz, & Haider, 2011). Heyns (1988) documented that teachers were less satisfied in suburban areas. School types were also investigated where teachers were less satisfied at alternatives types of schools due to lower salaries, longer work hours, and less job security compared to regular schools (Free, 2017; Gross & DeArmond, 2010; Stuit & Smith, 2012), although Lange (1998) found that teachers were more satisfied in alternative schools due to increased levels of autonomy and freedom.

The percentage of SoCs enrolled in a school is also related to teacher job satisfaction. Schools that enrolled high percentages of SoCs had teachers who reported lower levels of satisfaction (Perie & Baker, 1997). Schools reporting high rates of SoCs also had higher percentages of students requesting FRPL. Free and reduced priced meals, a common proxy for socioeconomic status, has strong links to teacher satisfaction. Schools with higher rates of FRPL, tended to have less satisfied teachers (Kelly, 2004), while teachers located at affluent schools displayed higher levels of satisfaction (Stockard & Lehman, 2004).

School setting (i.e., urban, city, town, rural) and school enrollment size have been found to influence teacher satisfaction. Research conducted by Perie and Baker (1997) using the 1993-1994 SASS dataset found that school setting and school size were the only two school contextual factors that influenced job satisfaction. Specifically, individuals teaching in suburban schools had the highest satisfaction levels and individuals teaching in urban schools had the lowest levels of job satisfaction. Larger schools tended to have less satisfied teachers (Perie & Baker, 1997), although it should be noted that Henke, Choy, Geis, and Broughman (1996) did not find such a relationship.

To isolate differences between principal support and general indicators of principal effectiveness, principal characteristics, including race, highest degree earned, gender, and total years of experience, were accounted for in the analytic models. A study by Grissom and Keiser (2011) found that a principal's race was an important predictor of teacher job satisfaction. When there is race congruence between the principal and teacher, higher levels of satisfaction were reported (Grissom & Keiser, 2011). Grissom and Keiser (2011) hypothesized this result occurred because race influences how principals treat teachers and how teachers perceive the treatment they receive. For the principal's highest degree, results indicated there was no relationship between the highest degree of the principal and teacher job satisfaction (Shen et al., 2012; von Fischer & De Jong, 2017). Grissom et al. (2012) also found that when there was gender congruence between principals and

teachers, such as male principals with male teachers and female principals with female teachers, there was less turnover and higher teacher job satisfaction. Total years of experience as a principal was also investigated. In a multilevel model using the 2003-2004 SASS dataset, Shen et al. (2012) investigated principal total years of experience and the total years of being principal at their current school. Neither predicted teacher job satisfaction. Based on these studies it is important to control for principal characteristics in this study.

Results from the literature demonstrate that it is important to control for a wide-variety of teacher- and school-level characteristics, as many of these contextual variables have varied results in research studying outcomes similar or related to job satisfaction. By accounting for these various contextual factors, differences at the teacher- and school-level can be isolated. This will help increase our understanding of how contextual factors, in addition to principal support, and teacher cooperation influence teacher job satisfaction.

The Current Study

The objective of the current study is to explore how principal support and cooperation among teachers may be associated with teacher job satisfaction. We were interested in determining whether ToCs, compared to White teachers in public schools, had lower levels of job satisfaction and if possible differences in satisfaction were associated with the perception of principal support and the perception of teacher cooperation. Furthermore, due to the importance of retaining ToCs, we addressed a gap in the literature by investigating whether the race/ethnicity of a teacher was moderated by the perception of principal and colleague support on job satisfaction (Dee, 2005; Egalite et al., 2015; King, 1993, Lindsay & Hart, 2017; Grissom & Redding, 2016). We also investigated the divergent evidence on whether teacher race is associated with job satisfaction, (Culver et al., 1990; Renzulli et al., 2007), the positive effects of principal support (Brown & Wynn, 2009; Roberson & Roberson, 2009), and the contradictory data regarding the benefits of teacher cooperation (Bickmore, 2013; Johnson, 2003; Madiha, 2011; Woods & Weasmer, 2004).

Prior studies have discussed teacher satisfaction as applied to principal support and collegial cooperation individually (Brown & Wynn, 2009; Sass et al., 2011; Shen et al., 2012). However, no study has used a nationally representative dataset to analyze the moderation effects between perceived principal support and teacher race, and perceived colleague cooperation and teacher race while controlling for contextual and individual-level variables. Given the limited number of studies addressing these issues, a nationally representative dataset was used to answer the following research questions:

1. Do ToCs differ in their levels of job satisfaction when compared with White teachers?
2. Are perceptions of principal support and perceived colleague cooperation associated with teacher satisfaction?
3. Is the association of job satisfaction and teacher race/ethnicity moderated by the perception of principal support and colleague cooperation?

Methods

Dataset

The data used for this study was from the restricted 2011-2012 Schools and Staffing Survey (SASS) Questionnaire¹ conducted by the National Center for Education Statistics (NCES), as the 2015-2016 National Teacher and Principal Survey dataset was not fully available for analysis at the

¹ Additional information is available at <https://nces.ed.gov/surveys/sass/>

time of this study. The goal of the SASS was to obtain information about teachers regarding their education, training, workload, perceptions, and attitudes regarding teaching (Cox, Parmer, Strizek, & Thomas, 2016). As part of the data collection, a stratified probability proportion to size sampling design was used, meaning that schools were randomly selected and stratified by state, public/private/charter sectors, and school level.

The SASS² dataset includes data from PreK-12 public schools and teachers. In the present study, the data were narrowed to exclude 7% of individuals who were not regular full-time or regular part-time teachers, such as long-term substitute teachers, student teachers, or librarians. All continuous variables were standardized into z-scores ($M=0$, $SD=1$). Data were inspected for univariate outliers ($>+/- 3$ SDs) which led to approximately 5% of the data being excluded ($N=2,000$). The final analytic sample used in this study consisted of 30,670 teachers from 6,620 public schools, representing a weighted sample of approximately 2.71 million teachers out of a weighted total of 3.22 million teachers.

Measures

Items used to create the scales for the dependent and independent variables came from the SASS teacher questionnaire. The response options included a Likert-type scale ranging from 1 (*strongly agree*) to 4 (*strongly disagree*). Responses were reverse coded to reflect that higher scores indicated greater agreement. Factor structures for all scales were investigated using exploratory factor analysis with principal axis factoring. Communalities were $>.40$ and appreciable factor loadings were $>.35$ indicated support for the scales (Thompson & Daniel, 1996). Additionally, internal consistency was investigated using ordinal coefficient omega with scores $>.80$ indicating excellent reliability (McNeish, 2017). Scaled scores were created by summing the unit weighted items. To make the SASS dataset generalizable, appropriate survey weights were used (TFNLWGT represented the final teacher sampling weight). The weights in the analysis were normalized by taking the raw weight and dividing it by the mean of the weights (Hahs-Vaughn, 2005).

Satisfaction. Three items were used to investigate the dependent variable of perceived teacher satisfaction. Teachers were asked: “I am generally satisfied with being a teacher at this school” (T0451; reverse coded; $M=3.41$, $SD=0.74$, $Range=1$ to 4), “The teachers at this school like being here; I would describe us as a satisfied group” (T0466; reverse coded; $M=3.02$, $SD=0.83$, $Range=1$ to 4), and “I like the way things are run at this school” (T0467; reverse coded; $M=2.94$, $SD=0.87$, $Range=1$ to 4). Internal consistency of the scale ($M=9.38$, $SD=2.08$, $Range=3$ to 12) was acceptable based on a coefficient omega of .92.

Teacher cooperation. Three items were used to investigate the independent variable of perceived teacher cooperation. Teachers were asked: “Rules for student behavior are consistently enforced by teachers in this school, even for students who are not in their classes” (T0442; reverse coded; $M=2.74$, $SD=0.90$, $Range=1$ to 4), “Most of my colleagues share my beliefs and values about what the central mission of the school should be” (T0443; reverse coded; $M=3.17$, $SD=0.71$, $Range=1$ to 4), and “There is a great deal of cooperative effort among the staff members (T0445; reverse coded; $M=3.14$, $SD=0.81$, $Range=1$ to 4). Internal consistency of the scale ($M=9.23$, $SD=2.00$, $Range=3$ to 12) was acceptable based on a coefficient omega of .85.

Principal support. Four items were used to investigate the independent variable of perceived principal support. Teachers were asked: “The school administration’s behavior toward the staff is supportive and encouraging” (T0435; reverse coded; $M=3.27$, $SD=0.87$, $Range=1$ to 4), “My

² As part of the restricted use data agreement with the NCES, all counts were rounded to the nearest 10.

principal enforces school rules for student conduct and backs me up when I need it” (T0441; reverse coded; $M=3.28$, $SD=0.85$, $Range=1$ to 4), “The principal knows what kind of school he or she wants and has communicated it to the staff” (T0444; reverse coded; $M=3.28$, $SD=0.85$, $Range=1$ to 4), and “In this school, staff members are recognized for a job well done” (T0446; reverse coded; $M=2.96$, $SD=0.89$, $Range=1$ to 4). Internal consistency of the scale ($M=12.82$, $SD=2.89$, $Range=4$ to 16) was acceptable based on a coefficient omega of .87.

Teacher demographic information. In the SASS questionnaire, teachers identified as either female (77%) or male (23%), dummy coded with male teachers as the reference group. Teacher race/ethnicity, specifically White (83%), Hispanic (7%), Black (6%), and Other (4%) was dummy coded with White teachers as the reference group. Asian, Pacific Islanders, and Native American teachers were combined into the Other category due to small numbers which result in the higher standard errors of the individual race/ethnicity categories as done by Cox et al. (2016). Teacher status, full-time (97%) or part-time (3%), was accounted for with full-time teachers as the reference group. Salary, in thousands, was also controlled for ($M=\$51.26$, $SD=\$14.71$, $Range = \$3.00-\96.06) in addition to total years of experience in the profession ($M=13.58$, $SD=9.24$, $Range=1-42$). Highest degree held was dummy coded as a binary variable, where the reference group was a bachelor’s degree or higher (96%) and the comparison group was an associate degree or no degree (4%).

School-level characteristics. The SASS also included a principal- and school-level questionnaire that was typically completed by the school principal. Continuous school-level characteristics used for the present study included: the percent of students eligible for free or reduced priced meals ($M=48.23\%$, $SD=29.02\%$, $Range=0-100\%$), school enrollment size ($M=752.87$, $SD=679.47$, $Range=10-2,360$), the percentage of SoCs enrolled ($M=43.50\%$, $SD=32.29\%$, $Range=0-100\%$), and principal’s years of experience ($M=6.86$, $SD=5.55$, $Range=0-26$). Categorical variables included: school level, specifically elementary (65%), secondary (29%), or combined (6%) with elementary as the reference group; school setting, including city (27%), suburb (31%), town (13%) and rural (29%), with rural as the reference group; principal race, specifically White (80%), Black (11%), Hispanic (6%), or Other (3%), with White as the reference group; the principal’s highest degree with bachelor’s or lower (1%), master’s (60%), education specialist (27%), or doctorate (12%) with master’s as the reference group; and principal gender, male (50%) or female (50%) with male as the reference group. Due to the small number of alternative schools, special program emphasis schools, career/technical/vocational schools, and alternative/other schools were combined into the alternative school category (7%), and dummy coded with regular schools as the reference group (93%).

Table 1
Descriptive Statistics

	%	M	SD	Range	SASS Variable Names
Teacher Level (N = 30,670)					
Teacher Gender					T0525
Male	23%				
Female	77%				
Teacher Race					
White	83%				T0528
Black	6%				T0529
Hispanic	7%				T0527
Other	4%				T0530, T0531, T0532
Teacher Status					T0025
Full-Time	97%				
Part-Time	3%				
Teacher Highest Degree					HIDEGR
Associates Degree or No Degree	4%				
Bachelor's Degree or Higher	96%				
Salary (in thousands of dollars)		51.26	14.71	3.00-96.06	T0508
Years of Experience		13.58	9.24	1-42	TOTYREXP
Principal Support		12.82	2.89	4-16	T0435, T0441, T0444, T0446
Teacher Cooperation		9.23	2.00	3-12	T0442, T0443, T0445
School Level (N = 6,620)					
School Setting					URBANS12
Rural	29%				
City	27%				
Suburban	31%				
Town	13%				
School Level					SCHLEVEL
Elementary School	65%				
Secondary School	29%				
Combined School	6%				
School Type					S0055
Regular School	93%				
Alternative School	7%				
Principal Race					
White	80%				A0322
Black	11%				A0323
Hispanic	6%				A0321
Other	3%				A0324, A0325, A0326
Principal Highest Degree					A0058
Bachelor's or Lower	1%				
Master's	60%				
Education Specialist	27%				
Doctorate	12%				
Principal Gender					S0320
Male	50%				
Female	50%				
Principal Years of Experience		6.86	5.55	0-26	A0025
% Eligible for FRPL		48.23	29.02	0.00-100.00	S0273, S0274, S0039
% SoCs		43.50	32.29	0.00-100.00	S0046
Enrollment		752.87	679.47	10-2,360	S0039, S0271

Notes: FRPL means free and reduced-price meals. SoCs means students of color.

Data Analysis Approach

Since teachers were nested within schools, teacher responses could have become correlated due to shared commonalities (Raudenbush & Bryk, 2002). To address the clustering effect, multilevel modeling was used, with level 1 representing the teachers and level 2 representing the schools. To account for schools nested within states, state fixed effects models were used to control for any variability attributed to the state level (Huang, 2016).

R 3.3 (R Core Team, 2016) was used for all data management and analyses. A two-level random intercepts model with state fixed effects was modeled using the lme4 package (Bates et al., 2016) with full maximum likelihood estimation. The outcome variable was the standardized teacher satisfaction scale and the predictors were the school- and teacher-level variables including the standardized teacher cooperation and standardized principal support scale. All continuous variables in the model, including the outcome variable were standardized to allow the regression coefficients to be interpreted as standardized regression coefficients for continuous predictors and as an effect size measure for binary predictors. Comparisons between dummy coded variables such as race/ethnicity groups can be interpreted using Cohen's (1992) d with the commonly used effect size interpretation guidelines (0.20 = small, 0.50 = moderate, and 0.80 = large).

For this study, three multilevel models were developed to answer the research questions in addition to an unconditional or baseline model necessary to determine the amount of variability at both the school- and teacher-level. Building the models over several stages allowed us to assess improvements in model fit using a likelihood ratio test (LRT; where a statistically significant LRT suggested better model fit compared to the prior model). The three models included predictors related to:

1. The race/ethnicity model that compared ToCs and White teachers on their levels of job satisfaction.
2. The principal support and teacher cooperation model that adjusted for school setting, school level, school type, principal race, principal highest degree, principal gender, principal years of experience, percent eligible for FRPL, percent SoCs, enrollment, teacher gender, teacher race, teacher status, teacher highest degree, teacher salary, teacher years of experience, principal support, and teacher cooperation.
3. The interaction model that accounted for the variables in the principal support and teacher cooperation model but also included the interactions between teacher race and principal support, and teacher race and teacher cooperation.

The basic level 1 and level 2 formulas can be expressed as:

Level 1 (teacher-level)

$$\gamma_{ij} = \beta_{0j} + \beta_{1j}TC_{ij} + \beta_{2j}PSupport_{ij} + \beta_{3j}TCooperation_{ij} + r_{ij}$$

Level 2 (school-level)

$$\beta_{0j} = (\alpha_0 + \alpha_2 Alaska_2 + \dots + \alpha_{51} DC_{51}) + \gamma_{01} SC_j + \gamma_{02} PC_j + u_{0j}$$

$$\beta_{1j} = \gamma_{10} \dots \beta_{3j} = \gamma_{2j}$$

where γ_{ij} represents the outcome measure of teacher i in school j . TC is a vector of teacher background characteristics, $PSupport$ is principal support, $TCooperation$ is teacher cooperation, and r_{ij} is the level 1 residual term. At the school level, SC is a vector of school characteristics, PC is a vector of principal characteristics, and u_{0j} are the random effects that capture group differences

after controlling for school-level predictors. Instead of γ_{00} typically found in a standard two-level random intercept model, a set of dummy coded state coefficients (Huang, 2016) were used to absorb any variability at the state-level (where α_0 represents the population average value of the outcome in the reference state while the remaining alpha coefficients represent the difference between the means of each state compared to the reference state).

Results

Variability of Teacher Job Satisfaction

The variance in teacher job satisfaction was partitioned into both school- and teacher-level variance using a multilevel model. The intraclass correlation (ICC) from the unconditional or baseline model was .30, demonstrating that approximately 30% of the variance in teacher job satisfaction was between schools and 70% of the variance was within schools. This indicates that a majority of the variance resulted from differences between teachers from the same school.

Teacher Job Satisfaction Based on Race/Ethnicity

In the race/ethnicity model or Model 1, job satisfaction was predicted using only the teacher race/ethnicity variables entered at level 1 (see Table 2). Results indicated that race/ethnicity-based differences in comparison with the White teacher reference group were not statistically significant. When there were no covariates accounted for, these results indicated that ToCs appeared to be equally satisfied when compared to White teachers, $p > 0.05$.

Principal Support and Teacher Cooperation on Teacher Job Satisfaction

For Model 2, school- and teacher-level variables were added to Model 1 including principal support and teacher cooperation, the variables of interest (see Table 2). At the school-level, teachers employed by alternative schools reported higher job satisfaction than teachers employed in regular schools ($B = 0.07, p < .01$). Principals' race and gender were also statistically significant predictors, where teachers with Black principals had lower levels of job satisfaction compared with teachers who had White principals ($B = -0.10, p < .001$), and teachers with female principals had lower job satisfaction compared with teachers who had male principals ($B = -0.03, p < .05$). Principals with more experience also predicted higher levels of teacher job satisfaction ($B = 0.02, p < .01$). However, for every one unit increase in the percent of SoCs, teacher job satisfaction decreased by 0.09 SDs ($p < .001$) and for every one unit increase in the percent eligible for FRPL, teacher satisfaction decreased by 0.03 SDs ($p < .001$), holding all other variables in the model constant. With the addition of these covariates, the standard errors from Model 1 decreased in Model 2, increasing the precision of the estimates.

At the teacher-level, Black teachers reported lower job satisfaction ($B = -0.05, p < .05$) compared to White teachers, although the Other category of teachers reported higher levels of satisfaction ($B = 0.05, p < .01$) compared to White teachers. In addition, teachers who worked part-time reported higher levels of satisfaction compared with individuals who worked full-time ($B = 0.05, p < .05$). Salary, in thousands, was also a statistically significant predictor of job satisfaction. For every thousand dollar increase in salary, job satisfaction increased by 0.03 SDs, holding all other variables in the model constant ($p < .001$). When analyzing the variables of interest, principal support and teacher cooperation had the largest effects in the model. Specifically, for every one unit increase in principal support, teacher satisfaction increased by 0.57 SDs ($p < .001$) and for teacher cooperation, job satisfaction increased by 0.20 SDs ($p < .001$), holding all other variables in the model constant. Since the continuous variables were standardized, the beta coefficients can be interpreted as effect

sizes, suggesting that the addition of principal support and teacher cooperation to the model were practically meaningful. This demonstrates that both principal support and teacher cooperation can significantly increase job satisfaction for all teachers.

Teacher Cooperation and Principal Support Interactions on Job Satisfaction

The final model, Model 3, included all the variables that were run previously with the addition of the interactions between principal support and race, and teacher cooperation and race. The results, shown in Table 2, indicate that the variables in Model 2 that were statistically significant, remained significant in Model 3 with the exception of teacher status, suggesting there is no difference in job satisfaction between teachers employed part-time and teachers employed full-time ($p > .05$). Enrollment became statistically significant in Model 3, where larger schools resulted in higher levels of job satisfaction ($B = 0.02, p < 0.05$). Furthermore, there were statistically significant interactions between teacher cooperation and teacher race for job satisfaction. Specifically, when White individuals perceived less teacher cooperation, they reported lower levels of job satisfaction compared with Hispanic teachers and Black teachers. However, when White teachers perceived more colleague cooperation within their schools, they reported higher levels of job satisfaction compared to both Black and Hispanic teachers as indicated by the statistically significant interaction terms for Hispanic X teacher cooperation ($B = -0.10, p < 0.001, CI = -0.13$ to -0.06) and Black X teacher cooperation ($B = -0.10, p < 0.001, CI = -0.14$ to -0.06).

Additionally, there was a statistically significant interaction for principal support and teacher race. With low levels of principal support, Black and Hispanic teachers were the least satisfied compared to White teachers. However, when there were high levels of principal support, Hispanic and Black teachers were more satisfied when compared with White teachers as seen by the statistically significant interaction terms for Hispanic X principal support ($B = 0.05, p < 0.01, CI = 0.01$ to 0.09) and Black X principal support ($B = 0.06, p < 0.01, CI = 0.02$ to 0.10). These results demonstrate that when different races of teachers perceive similar degrees of principal support and colleague cooperation, they may have varying levels of job satisfaction.

Table 2
 Multilevel Models Predicting Teacher Satisfaction (N = 30,670)

	Model 1	Model 2	Model 3
Teacher Race			
Black ⁴	-0.04 (0.03)	-0.05 (0.02) *	-0.05 (0.02) **
Hispanic ⁴	0.04 (0.03)	0.03 (0.02)	0.03 (0.02)
Other ^{4,8}	-0.03 (0.03)	0.05 (0.02) **	0.06 (0.02) **
Teacher Gender			
Female ⁶		0.01 (0.01)	0.01 (0.01)
Teacher Highest Degree			
Associates or No Degree ⁵		0.01 (0.02)	0.01 (0.02)
Teacher Status			
Part Time ⁷		0.05 (0.03) *	0.05 (0.03)
Salary		0.03 (0.01) ***	0.03 (0.01) ***
Teacher Total Years of Experience		0.01 (0.01)	0.01 (0.01)
Principal Support		0.57 (0.01) ***	0.57 (0.01) ***
Teacher Cooperation		0.20 (0.01) ***	0.22 (0.01) ***
Hispanic ⁴ : Teacher Cooperation			-0.10 (0.02) ***
Black ⁴ : Teacher Cooperation			-0.10 (0.02) ***
Other ⁴ : Teacher Cooperation			0.04 (0.02)
Hispanic ⁴ : Principal Support			0.05 (0.02) **
Black ⁴ : Principal Support			0.06 (0.02) **
Other ⁴ : Principal Support			-0.02 (0.02)
School Level			
Secondary ¹		0.001 (0.02)	0.004 (0.02)
Combined ¹		-0.01 (0.02)	-0.01 (0.02)
School Setting			
Rural ²		0.01 (0.02)	0.02 (0.02)
Suburb ²		0.01 (0.02)	0.01 (0.02)
Town ²		-0.03 (0.02)	-0.03 (0.02)
School Type			
Alternative/Other School ^{3,9}		0.07 (0.02) **	0.07 (0.02) **
Principal Race			
Black ⁴		-0.10 (0.02) ***	-0.10 (0.02) ***
Hispanic ⁴		-0.01 (0.03)	-0.01 (0.03)
Other ^{4,8}		-0.05 (0.03)	-0.05 (0.03)
Principal Highest Degree			
Bachelor's Degree or Lower ⁵		0.004 (0.05)	0.001 (0.05)
Education Specialist ⁵		-0.01 (0.01)	-0.01 (0.01)
Doctorate ⁵		0.0001 (0.02)	0.001 (0.02)
Principal Gender			
Female ⁶		-0.03 (0.01) *	-0.03 (0.01) *
Principal Total Years of Experience		0.02 (0.01) **	0.02 (0.01) **
% SoCs		-0.09 (0.01) ***	-0.09 (0.01) ***
% Eligible FRPL		-0.03 (0.01) ***	-0.03 (0.01) ***
Total Enrollment		0.02 (0.01)	0.02 (0.01) *

Notes: * $p < .05$, ** $p < .01$, *** $p < .001$. ¹Elementary is the reference group. ²City is the reference group. ³Regular school is the reference group. ⁴White is the reference group. ⁵Bachelor's degree is the reference group. ⁶Male is the reference group. ⁷Full time is the reference group. ⁸The Other category is comprised of individuals who identified as Asian, Pacific Islander, or Native American. ⁹Alternative schools are comprised of special program emphasis schools, career/technical/vocational schools, and alternative/other schools. Standard errors are shown in parenthesis. FRPL means free and reduced priced meals. SoCs means students of color.

Simple Slopes Analysis on the Final Model

After analyzing the three different models, we determined that Model 2 and Model 3 fit the data well. To determine the best fitting model, a likelihood ratio test was used. The results were statistically significant, suggesting that Model 3 with the interaction terms best fit the data, $p < .001$. To better understand the moderation effects in Model 3, the interactions were probed using simple slopes analysis as suggested by Hayes and Montoya (2017). First, the moderation effect between teacher race and the perception of principal support on job satisfaction was tested. For only Hispanic teachers, the interaction was statistically significant when there were low levels of perceived principal support (i.e., less than -1.5 SDs). Specifically, Hispanic teachers had 0.07 lower levels of satisfaction compared to White teachers. For only Black teachers, the interaction was significant when there were low levels of principal support (i.e., principal support less than -1 SDs). Only when compared to White teachers, Black individuals had 0.04 lower levels of satisfaction.

Second, the moderation effect between teacher cooperation and teacher race on job satisfaction was tested. For only Hispanic teachers, the interaction was statistically significant when there were high or low levels of perceived teacher cooperation (i.e., teacher cooperation less than 1 SDs and teacher cooperation greater than 0.50 SDs), but not when there were moderate levels of teacher cooperation. When there were low levels of perceived teacher cooperation, only Hispanic teachers had 0.06 higher degrees of job satisfaction compared with White teachers, although when there were high levels of perceived teacher cooperation, only Hispanic teachers had 0.08 lower levels of job satisfaction compared with White teachers. Similar to Hispanic teachers, for only Black teachers, the interaction was statistically significant when there were high and low levels of teacher cooperation (i.e., teacher cooperation less than 0.50 SDs and teacher cooperation greater than 1.5 SDs). Specifically, when there were low levels of teacher cooperation, only Black teachers reported 0.10 higher levels of job satisfaction compared to White teachers, but when there were high levels of teacher cooperation, only Black teachers had 0.09 lower job satisfaction compared to White teachers.

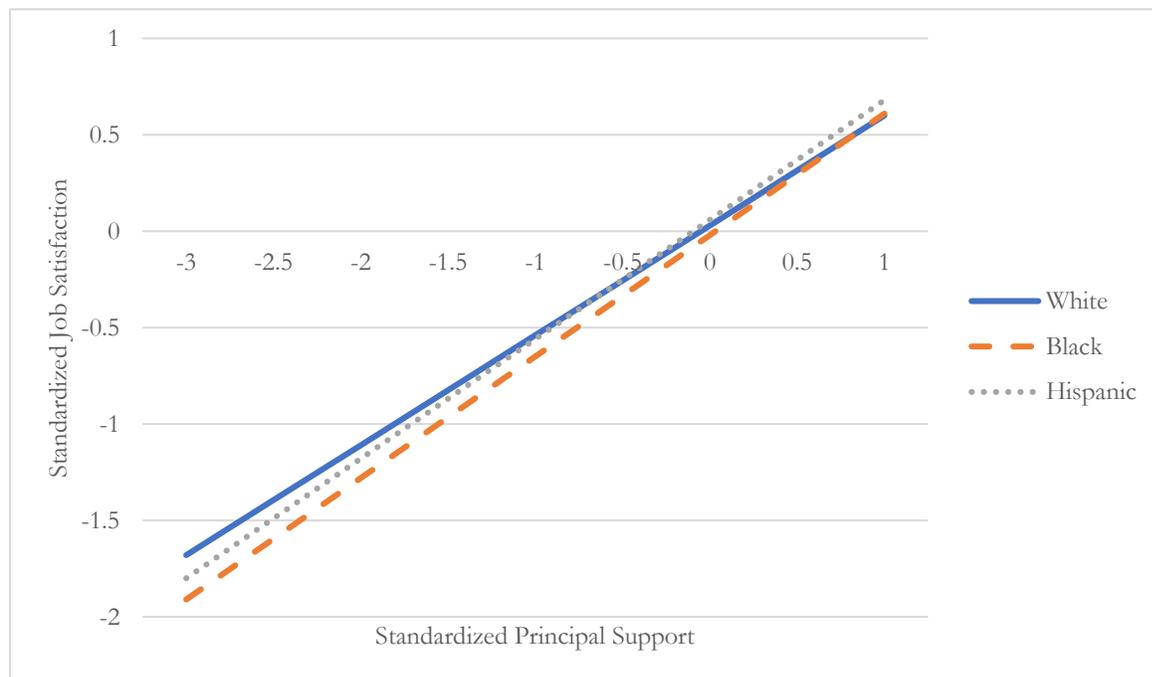


Figure 1: Interaction between principal support and teacher race on job satisfaction

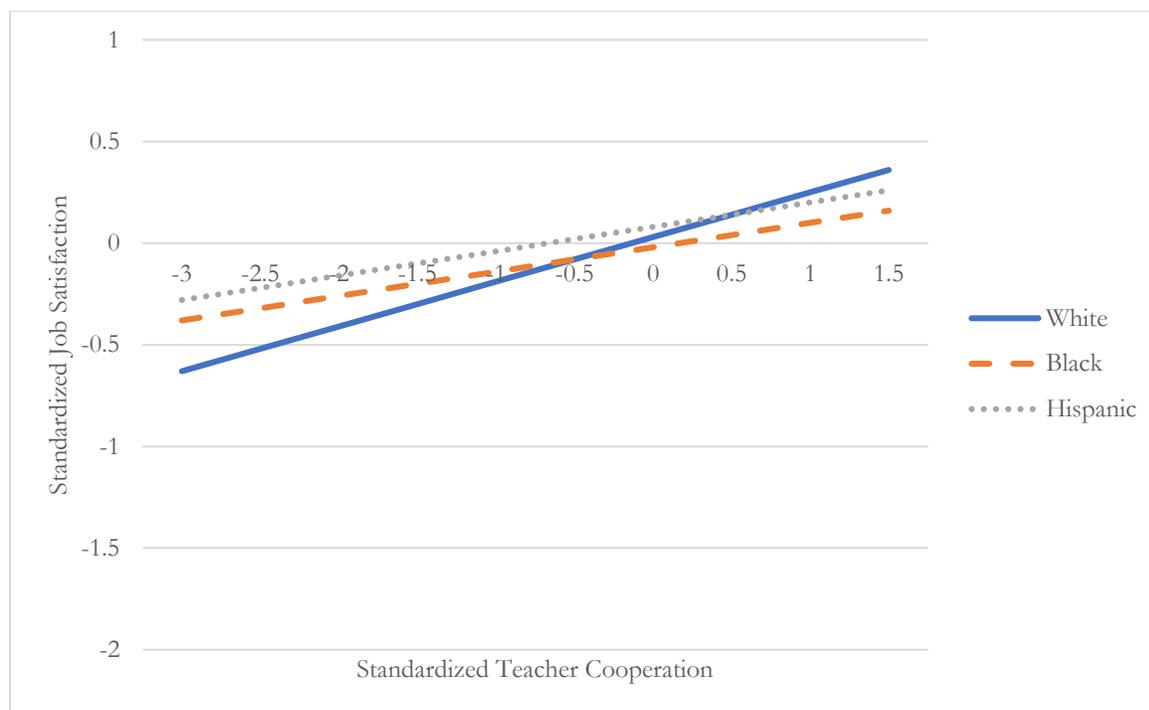


Figure 2: Interaction between teacher cooperation and teacher race on job satisfaction

Discussion

The goal of the present study was to identify whether principal support and teacher cooperation were significant predictors of teacher job satisfaction and whether there was a significant moderation effect between these two variables of interest and teacher race on job satisfaction. The research questions were examined using a series of multilevel models with random intercepts and state fixed effects where teachers were nested within schools. A total of three different models were executed, utilizing different variables and analyzing different interactions. Since a nationally representative dataset was used with the appropriate survey weights, the results are generalizable to PreK-12 public school teachers across the United States.

Teacher Race and Job Satisfaction

To address the first research question, teacher race was regressed onto teacher job satisfaction in Model 1 (see Table 2). When covariates were not in the model, there were no differences between ToCs and White teachers in terms of job satisfaction. This demonstrates the importance of the additional variables accounted for in Model 2 and Model 3 as they influence the relationship between teacher race and job satisfaction.

Principal Support and Colleague Cooperation and Job Satisfaction

To answer research question 2, teacher- and school-level covariates were added in Model 2 (i.e., school level, school setting, school type, principal's race, principal's highest degree, principal's gender, principal's total years of experience, percentage SoCs with in the school, percentage eligible for FRPL, total school enrollment, teacher's race, teacher's gender, teacher's highest degree, teacher's status, teacher's salary, and total years of experience as a teacher) in addition to principal support and teacher cooperation, the variables of interest (see Table 2).

Findings regarding the demographic variables appear to align with the literature. Teachers in alternative schools (i.e. special program emphasis schools, career/technical/vocational schools, and alternative/other schools) were more satisfied than teachers in regular schools. However, this variable should be interpreted with caution due to how alternative schools were operationalized. In studies analyzing different types of alternative schools, teachers were less satisfied due to longer work hours, less job security, and smaller salaries compared to similar teachers employed by regular public schools (Free, 2017; Gross & DeArmond, 2010; Redding & Henry, 2018; Redding & Smith, 2016; Stuit & Smith, 2012), although it should be noted that Lange (1998) found different results where teachers reported higher levels of autonomy or freedom within the school resulting in increased satisfaction (Lange, 1998).

For the principal's characteristics at the school-level, teachers reported lower levels of job satisfaction when their principal was Black as compared with White and when their principal was a female versus a male. Multiple studies have suggested that when there is race or gender congruence between teachers and principals, job satisfaction increases (Grissom, 2011; Grissom & Keiser, 2011; Grissom et al., 2012). Based on the demographic characteristics within this study, a majority of principals (80%) and teachers (83%) were White, compared to Black principals (11%) and teachers (6%). Based on these percentages for race, it is probable that there were many schools where teacher-principal race congruence did not occur, justifying why teachers reported lower levels of job satisfaction when in a school with a Black principal. This same argument could be applied to gender as 23% of teachers were male and 77% of teachers were female compared to 50% of principals being either male or female. Based on these lopsided percentages, it is possible that there were schools where teacher-principal gender congruence did not occur, perhaps explaining why teachers were less satisfied with female principals.

The percentage of SoCs and percentage of students eligible for FRPL were also significant predictors of teacher job satisfaction. This result was not unexpected as schools with higher percentages of SoCs often report higher percentages of students with FRPL (Perie & Baker, 1997). Commonly associated with socioeconomic status, school rates of FRPL have strong links to teacher satisfaction, where schools with higher rates of FRPL reported less satisfied teachers compared to more affluent schools (Kelly, 2004; Stockard & Lehman, 2004). Our findings have replicated the results in the literature, suggesting that the percentage of SoCs and percentage of FRPL are statistically significant predictors of job satisfaction.

At the teacher-level, teacher's salary and teacher's race were significant predictors of job satisfaction. Salary was predictive of job satisfaction, as most teachers believe they are underpaid (Feistritzer, 1986; Klassen & Anderson, 2009). This finding also aligned with Albert and Levine's (1988) study that reported a link between salary and occupational prestige. For teacher race, after controlling for both teacher- and school-level characteristics, Black teachers were less satisfied and the Other category, composed of Asians, Pacific Islanders, and Native Americans, were more satisfied, as compared with White teachers. These results appear to conflict with Banks (1987), who found that Black teachers reported higher levels of job satisfaction as compared with White teachers, although Albert and Levine's (1988) results do align with Culver et al. (1990) who found that White teachers exhibited higher levels of job satisfaction compared to Black teachers. A meta-analysis examining studies analyzing Black-White mean differences on job satisfaction provided little clarity, but concluded that job satisfaction is strongly influenced by context (Koh, Shen, & Lee, 2016). In addition to teacher, principal, and school demographic characteristics, two important variables that influence school climate or the context within a school are principal support and teacher cooperation.

Teachers' perceptions of principal support had the largest effect size in Model 2 at 0.57, while teacher's perceptions of teacher cooperation had the second largest effect size in the model at 0.20 (see Table 2). According to Cohen's (1992) standards, these are medium and small effect sizes respectively. When compared with other effect sizes within Model 2, principal support and colleague cooperation were very strongly and positively associated with teacher job satisfaction for all teachers, suggesting these variables are significant and practically meaningful.

As suggested by the literature, perceptions of principal support have been consistently associated with teacher job satisfaction (Brown & Wynn, 2009; Griffith, 2004; Grissom, 2011; Moir, 2009; Petzko, 2004). As the school leader, the principal has influence over school climate and can create environments that foster recognition and provide support (Petzko, 2004; Richards, 2005). This study's results suggest that principal support could be a malleable protective factor that increases job satisfaction potentially reducing teacher burnout and turnover. In addition, perceived teacher cooperation within a school is also an important predictor of job satisfaction. As commonly observed in education, collaboration and cooperation is necessary to develop innovative ideas, increase self-efficacy, and increase job satisfaction, potentially resulting in reduced turnover (Decuyper et al., 2010; Vangrieken et al., 2015; Woods & Weasmer, 2004).

Although principal support and teacher cooperation are conceptually distinct measures, they are both positively associated with school climate and have been found to be malleable protective factors for job satisfaction and turnover (Decuyper et al., 2010; Ladd, 2011; Skaalvik & Skaalvik, 2011). As malleable protective factors they have the ability to buffer teachers from factors that decrease job satisfaction. Since schools employ a diverse range of teachers and principals, these findings suggest that principal support and teacher cooperation should be addressed when attempting to improve the school climate for all teachers.

Principal Support, Colleague Cooperation, and Teacher Race Interactions

To answer research question 3, the moderation effects between perceived principal support and teacher race, and perceived colleague support and teacher race on job satisfaction were investigated in Model 3 (see Table 2). Results demonstrated statistically significant interaction effects between teacher cooperation and teacher race, and principal support and teacher race, $p_s < 0.05$ (see Figure 1 and Figure 2). This suggests that principal support and teacher cooperation were positively associated with job satisfaction, indicating that principal support and teacher cooperation are positive factors for all teachers, regardless of race. On average, teachers with more positive perceptions of their school climate had higher degrees of job satisfaction. This aligns with findings in the literature as strong levels of principal support and teacher cooperation have been found to be predictive of satisfaction (Brown & Wynn, 2009; Durksen et al., 2017; Griffith, 2004; Grissom, 2011; Leithwood et al., 1998; Moir, 2009; Petzko, 2004; Vangrieken et al., 2015).

However, the association between principal support and job satisfaction differed slightly based on teacher race. Although the relationship was positive, the association for principal support on job satisfaction was marginally weaker for White teachers, evidenced by the slightly flatter slope when compared to Black and Hispanic teachers (see Figure 1). This variability may affirm that there are differences between White teachers and ToCs such as salary levels, years of experience, or degree levels (Albert & Levine, 1988; Lui & Ramsey, 2008) that could have influenced satisfaction levels.

The relationship between teacher cooperation and job satisfaction also contrasted slightly based on teacher race. Although all relationships were positive, the association for teacher cooperation on job satisfaction was considerably stronger for White teachers, illustrated by the much steeper slope when compared to Black and Hispanic teachers (see Figure 2). This variability may reflect differences between White individuals on multiple teacher-level variables (Albert & Levine, 1988; Lui & Ramsey, 2008). These results may also support Johnson's (2003) study that concluded

team-based cooperation between White teachers and ToCs may result in silent dissent or debate that encourages White norms and practices. Although teacher cooperation is still associated with positive job satisfaction for all teachers, Johnson's (2003) work may help explain why the slopes for Black and Hispanic teachers were flatter when compared with White individuals. Overall, our findings support the need to continue investigating variables related to school climate, such as principal support and teacher collaboration, as these variables may act as protective factors for job satisfaction resulting in possible reduced turnover.

Limitations

Although there are many benefits to using a nationally representative data such as the SASS, there are limitations that accompany the use of secondary datasets. Since this was correlational data, it is not possible to establish causal results. Second, the teacher satisfaction scale, teacher cooperation scale, and principal support scale were based on self-reported perceptions from teachers. Often self-report scales are criticized for lacking objectivity, although, research has demonstrated that self-report scales may be beneficial for assessing theoretical constructs such as attitudes, beliefs, perceptions, or emotions, as was done in this study (Haefel & Howard, 2010). Additionally, although this was a nationally representative dataset, these findings can only be generalized to the 2011-2012 school year.

Implications for Policy

Due to the positive association of principal support and teacher cooperation on job satisfaction, it is important that school principals and administrators explore strategies that promote favorable school climates for teachers, as Kirkland, Villavicencio, and Fergus (2016) argued that recent educational policy has been "anemic" (p. 2) regarding systematic changes that would benefit teachers. The findings presented in this study indicate that perceived principal support and perceived teacher cooperation should warrant the attention of school principals, administrators, and policy makers to develop and implement solutions that foster healthy principal-teacher relationships and teacher-teacher relationships as these relationships are crucial for maintaining or increasing job satisfaction and possibly reducing teacher turnover. This has educational policy implications as 4.35 billion federal dollars have been spent specifically to increase the recruitment and retention of maintaining effective teachers and principals (Shelton, 2011).

As leaders within the school, principals have the unique ability to create inclusive and effective school climates (Richards, 2005). Principals can accomplish this goal by supporting their teachers by being competent leaders. This entails recognizing the strengths and weaknesses of faculty and staff, knowing how to make data driven decisions, and by being open to learning new techniques and skills (Spiro, 2013). However, principals are rarely trained on strategies necessary to increase their leadership capabilities (Garrison-Wade, Sobel, & Fulmer, 2007). This finding is surprising as policymakers in 2010 declared principal leadership as one of the most crucial issues facing public schools (The Wallace Foundation, 2013). In 2008, the Interstate School Leaders Licensure Consortium standards updated the requirements for principal licensure and on-the-job training and Race to the Top, a federal effort, emphasized the need and importance of effective principals within schools (The Wallace Foundation, 2013).

Based on the results from the current study, there is still a need for educational policy makers to recognize the links between school leadership, teacher satisfaction, and teacher retention. One solution that educational policy makers could prioritize is designating resources to accelerate the recruitment of teachers who have demonstrated the capacity, ability, interest, and cultural competence to become a principal. To strengthen this recruitment pipeline, the Coalition for

Teaching Quality has recommended that policy makers continue investing in high quality teacher training programs that also aim to diversify the workplace (Coalition for Teaching Quality, 2015). By bolstering the recruitment pipeline and leadership training programs for qualified individuals interested in becoming a principal, policy makers can directly influence the leadership ability of principals, which the current study has shown to be potentially beneficial for increasing teacher job satisfaction.

One topic that should be emphasized in educational policy targeted for principal leadership development are strategies on how to successfully implement professional learning communities (PLCs) into their schools (Bush, 2018). When PLCs are implemented and supported by school leadership, the culture within the school can change to create an environment that is more conducive to collaboration, mutual goals, and increased understanding (Bush, 2018; Hausman & Goldring, 2000, Little, 1982; Louis, Marks, & Kruse, 1996). Bryk and Driscoll (1988) supported this finding as communally organized schools have reported higher levels of teacher satisfaction and morale.

The results from the current study, specifically that White teachers appear to value cooperation more than ToCs, could inform educational policy makers on how PLCs could be successfully implemented in schools. According to Merritt (2017), due to distinct differences between schools at the state-level, school districts in particular have started incorporating team-building time into the school day, often through PLCs. Recently policy makers at the district-level have recognized the necessity of PLCs and teachers have been given the opportunity to collaborate with colleagues who teach the same grade-level or subject. This has allowed teachers to collectively make decisions about students and instruction (Merritt, 2017). Although educational policy focused on increasing teacher cooperation has been effective, policy initiatives could be taken further by providing resources or programming on strategies aimed at developing effective collaborative skills. This is important because as Johnson (2003) noted, the key to implementing these professional communities is to promote inclusiveness, where all teachers, regardless of race are asked to contribute and are not excluded due to different perspectives.

Given the positive influences of principal support and teacher cooperation on teacher job satisfaction, principals, administrators, and policy makers should consider implementing educational policies aimed at strengthening the pipeline for recruiting qualified candidates for administrative positions. By increasing the recruitment of quality candidates and providing access to leadership training programs, policy makers can help develop a pipeline of future leaders who will continue supporting teachers (Coalition for Teaching Quality, 2015). In addition to changing educational policy regarding how principals are recruited and trained, policy makers can continue supporting the development of PLCs, particularly by increasing programming to strengthen collaboration skills with individuals who may have different ideas, beliefs, or contributions (Bush, 2018). Possible future policy initiatives should aim to determine whether principals differentially give out support and encouragement or whether they treat teachers equally, but teachers perceive those efforts differently.

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